BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Original Application No. 45/2024/EZ

IN THE MATTER OF:

News item titled "Hazaribagh mei nadiyon se avaidh balu khanan kar roj kee kamai 10 lakh se jyada sarkari adhikariyo kee bhi hai mileebhagat" appearing in the Prabhat Bharat dated 14.12.2023.

AFFIDAVIT ON BEHALF OF THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE.

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06 NOV 2024

ASHWINI KUMAR TIWARI NOTARY PUBLIC RANCHI Reg. No 445/11 Government of Jharkhand (India)

BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Original Application No. 45/2024/EZ

Authorised under Notaries Act-1952 Notaries Rules 1956 by Govt. of India Jharkhand, Ranchi

06 NOV 2024

Date.....

2161

Ref No.....

IN THE MATTER OF:

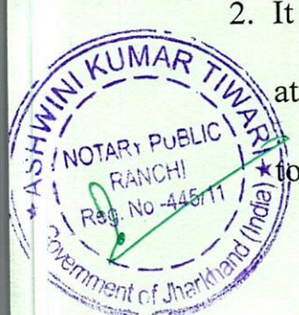
News item titled "Hazaribagh mei nadiyon se avaidh balu khanan kar roj kee kamai 10 lakh se jyada sarkari adhikariyo kee bhi hai mileebhagat" appearing in the Prabhat Bharat dated 14.12.2023

AFFIDAVIT ON BEHALF OF THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE.

MOST RESPECTFULLY SHOWETH:

I, Pasupala Ravi, son of Shri Pasupala Sunkanna, aged 47 years, presently employed as Scientist 'D' at the Ministry of Environment, Forest, and Climate Change (hereinafter referred as MoEF&CC), Regional Office, Ranchi, having office located at 2nd floor, Headquarters - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand -834 002, solemnly affirm and state as under: -

1. That I, in my official capacity of Scientist 'D' in the Ministry Environment, Forest and Climate Change, Regional Office Ranchi i.e; Respondent No.3 in the above mentioned matter, am conversant with the facts and circumstances of the case on the basis of official records, and as such authorized and competent to swear this affidavit
2. It is submitted that a short affidavit is being filed by the answering respondent at this stage and craves leave and liberty to file a detailed Counter Affidavit to the aforesaid application, as and when required.



3. It is submitted that an additional affidavit is being filed in compliance to the direction issued by the Hon'ble Tribunal vide order dated 06.08.2024. The Answering Respondent at this stage craves leave and liberty to file a detailed Affidavit to the aforesaid application, as and when required.

4. It is humbly submitted that, the Hon'ble Tribunal vide order dated 06.08.2024 directed the MoEF&CC to file its reply with respect, "*to place on record the Rules/Rates with regard to computation of Environmental Compensation in the case of illegal sand mining.*

5. It is submitted that, in compliance to the order dated 06.08.2024 the MoEF&CC vide its letter dated 28.08.2024 has requested the Central Pollution Control Board (CPCB) to provide the information with respect to the Rules/Rates with regard to computation of Environmental Compensation in the case of illegal sand mining.

6. That, CPCB vide its email dated 25.09.2024 has informed the MoEF&CC as follows;

> *"1...That the section 15 of the NGT Act 2010 empowers the Hon'ble Tribunal to provide(a) relief and compensation to the victims of pollution and other environmental damage arising under the enactments specified in the Schedule I, (b) for restoration of property damaged, and (c) for restitution of the environment for such area or areas.*
>
> *2. That in the matter of OA No. 360/2015 National Green Tribunal Bar Association vs. Virendra Singh (State of Gujarat), before the Hon'ble NGT (PB) New Delhi, a report was prepared by an expert committee formed by order of Hon'ble NGT (PB) comprising of*

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representatives of Ministry of Environment, Forest and Climate Change, Central Pollution Control Board, Indian Institute of Forest Management-Bhopal, Institute of Economic Growth-New Delhi and Madras School of Economics, Chennai to recommend a scale of compensation to NGT (PB) to deal with cases of illegal sand mining in whole of country and the report was submitted to NGT on 30.01.2020.

A copy of the report dated 30.01.2020 is marked and annexed herein as **Annexure R3/1**.

3. That the Hon'ble NGT vide order dated 26.02.2021 accepted the recommendations of the expert committee and directed that the scale of operation of compensation as per report dated 30.01.2020 (Approach II) to be adopted by all States/UTs and Environment Secretary to evolve an appropriate mechanism for assessment of compensation in all Districts of the State and for utilisation of recovered compensation for restoration of environment by preparing appropriate action plan.

4. That as directed by NGT by order dated 26.02.2021, CPCB vide letter dated 11.06.2021 also issued directions to Environment Secretaries of States/UTs to evolve an appropriate mechanism for assessment of compensation in all Districts of the State and for utilisation of recovered compensation for restoration of environment by preparing appropriate action plan as per order dated-26.02.2024..."

A copy of the letter dated 26.02.2021 issued to all the Environment Secretaries of the States/Uts is marked and annexed herein as **Annexure R3/2**.

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RANCHI
Reg. No -445/11
Government of Jharkhand (India)

7. That, the report prepared by the Central Pollution Control Board provides a comprehensive framework for assessing environmental damages arising from illegal mining activities. The report also includes various methodologies for calculating compensation, such as violation with respect to depth and area, quantity/production, etc. It is pertinent to mention herein that various examples are also provided in the report to illustrate the application of these methodologies in different scenarios. Additionally, an initial note on estimating ecological damage specifically from illegal sand mining is included in the annexures, outlining essential steps and considerations for an accurate and thorough assessment.

8. It is humbly submitted that, further, Annexure 3 of the report provides detailed information on existing legal provisions related to illegal mining, offering a clear overview of the regulatory framework governing these activities. To facilitate a systematic and standardized approach, the report also includes a Standard Operating Procedure (SOP) for damage assessment in cases of illegal sand mining.

9. That, in view of the aforementioned facts and circumstances, the Hon'ble Tribunal may kindly be pleased to pass appropriate order(s)/directions as the Hon'ble Tribunal may deem fit and proper in the interest of justice.

06 NOV 2024

DEPONENT

डा० पसुपाला रवि / Dr. Pasupala Ravi
वैज्ञानिक 'डी' / Scientist 'D'
भारत सरकार / Govt. of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Min Environment, Forest & Climate Change
क्षेत्रीय कार्यालय, रांची
Regional Office, Ranchi

Attested on identified by the Lawyer

ASHWINI KUMAR TIWARI
NOTARY PUBLIC
RANCHI
Reg. No -445/11
Government of Jharkhand (India)

VERIFICATION

Verified at on this 06 NOV 2024 day of _____, 2024 that the contents of this affidavit based on official record(s) maintained and information available in the office are true and correct, no part of it is false and nothing has been concealed there from.

DEPONENT

डा० पशुपाला रवि / Dr. Pasupala Ravi
वैज्ञानिक 'घ' / Scientist 'D'
भारत सरकार / Govt. of India
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06/11/2024
NOTARY PUBLIC
RANCHI

S. B. Chakdhar
ADL
ENR No 2793/04

Attested on identified by the Lawyer

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 360/2015

IN THE MATTER OF:-

NATIONAL GREEN TRIBUNAL BAR ASSOCIATION **APPLICANT(S)**

VERSUS

VIRENDRA SINGH (STATE OF GUJARAT) **RESPONDENT(S)**

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2.	**ANNEXURE- A** EXAMPLES.	
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NAZIMUDDIN
SCIENTIST 'E'
CENTRAL POLLUTION CONTROL BOARD
PARIVESH BHAWAN, EAST ARJUN NAGAR,
DELHI- 110032

PLACE: - DELHI
DATED: - 30.01.2020

Recommendations on Scale of Compensation to deal with the cases of illegal sand mining

Submitted to

Hon'ble National Green Tribunal,

Principal Bench, New Delhi

(Submitted by the Committee constituted in the matter of Hon'ble NGT OA No. 360 of 2015 order dated-05.04.2019)

29th January 2020

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1. Introduction

The mining operation has its consequence on the environment. The sand mining operation has traditionally been carried out manually in river both in-stream and in flood plain, coastal and paleo channels, but with advent of time the method of mining has changed to semi-mechanised and mechanised. The use of machinery in riverbed mining may impact the river environment to great extent depending on the scale of operation.

It is estimated that more than 35 million people are employed in sand business, and economic valuation is well over $126 billion per annum (Ref: NGT order dated 05.04.2019 in O.A. 360/2015). The illegal sand mining has been rampant in different states of the country and the protection of environment from the impacts of unregulated sand mining has been a challenge to regulatory bodies.

The Hon'ble NGT (Principal Bench), New Delhi by order dated-05.04.2019 in O.A. No. 360/2015 (13 clubbed cases) related to illegal sand mining from riverbeds in different states, constituted a Committee comprising of representatives of Ministry of Environment, Forest and Climate Change, Government of India (MoEF&CC), Central Pollution Control Board (CPCB), Indian Institute of Forest Management – Bhopal (IIFM), Institute of Economic Growth - New Delhi (IEG) and Madras School of Economics (MSE) *"to prepare a scale of compensation, after including the components mentioned in the order, which can then be adopted in whole of country. The nodal agency for compliance and coordination is CPCB. The committee may also take professional service of an expert / institution in the matter if it so desires."*

In view of Hon'ble NGT (PB) order dated 05.04.2019 in O.A. No. 360/2015 (13 clubbed cases), this report has been prepared to suggest a scale of compensation to deal with cases of illegal sand mining in whole of country.

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2. Constitution of Committee

In compliance of the above order, the Nodal Agency (CPCB) issued office order dated 22.05.2019 regarding constitution of the committee of the members based on the nominations received from the concerned organisations as follows:

1. Dr Purnamita Dasgupta, Professor, IEG, Delhi
2. Dr K.S. Kavi kumar, Professor, MSE, Chennai
3. Dr. Yogesh Dubey, Associate Professor, IIFM, Bhopal
4. Shri Sundeep, Director, MoEF&CC, Delhi
5. Shri A. Sudhakar, Additional Director, CPCB, Delhi

Meetings of the committee were convened on 31.05.2019, 20.06.2019, 24.07.2019, 16.09.2019 and 11.12.2019 to arrive at a scale of compensation based on inputs of subject experts and available resource to deal with the matter of illegal mining. The minutes of the meetings are annexed at **Annexure I**. Inputs received from experts are annexed at **Annexure II to IV.**

3. Impacts due to Illegal Sand Mining

3.1 Framework for a Compensation Scale

A framework for assessing the value of ecological damage due to illegal sand mining is developed taking into consideration the following dimensions:

- Extent of Illegal Mining: It must be recognised that in any given geographic area the ecological impacts will be felt from all mining that takes place in the relevant region (or that within which the water body concerned is located). Hence, ideally, a landscape has to be considered for estimating the ecological damages in their entirety. However, this may practically pose several data and information challenges. Sometimes the ecological processes are also uncertain. Therefore, the objective in the current context would be to establish a practical approach of estimating the extent of 'illegal' mining, assuming that the legally permitted mining takes into account the sustainable ecological limits within which such mining should be restricted. For present purposes, to fix individual liability, this may be done by making an assessment of the total extraction through sand mining being carried out and netting out the amount for which environmental clearance has been given.
- Restoration of ecology: It is acknowledged at the outset that in practise, full restoration of nature in its pristine form is next to impossible. However, the reality of ongoing economic activities causing ecological damages implies that the adoption of the polluter pays principle can be a way ahead for raising the resources for undertaking restoration activity to the maximum extent possible. At the same time, some of the foregone ecosystem services (and hence values associated with these) will improve gradually over the years as the riverine ecosystem gets restored.
- Ecological damages associated with mining -Ideally, each river or water body which is affected by such mining should have an independent assessment of the extent of ecological damages which would be specific to its context.

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- Interim approach - In the absence of such information, or in the interim till such studies are carried out, two alternative ways of operationalizing a compensation scale to cover the ecological costs associated with illegal sand mining are developed. One approach uses a deterrence factor as a proxy for capturing non-linearities associated with ecological damages, the other uses a simplified Net Present Value approach. A comparison of the two is provided with an illustration.
- Rationale for scale of compensation: In both approaches, the damage assessment is based on the material cost of the illegal sand, interacting it with the ecological risks associated with it. The underlying assumption is that the feasible limits within which sand mining can be allowed without de-stabilising the ecological conditions have been taken into account while setting the legally permitted quantity for extraction. Mining beyond this is illegal and causes trade-offs between this particular provisioning service of the river (sand flow) and its supporting and regulating (and other provisioning) services which thereby get affected, constituting ecological damages. The compensation would comprise of the material cost of the illegally mined sand and foregone ecological values, while keeping in mind the objective of restoration.
- Finally, it is noted that the concerned authority shall take appropriate action under the provision of applicable Acts/ Rules, whenever any illegal or non-complying mining activities is observed. The proposed environmental compensation suggested in this recommendation will be in addition to the requirement of any such action.

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3.2 Determination of Net Present Value (NPV)

Computation of the NPV requires both scientific and socio-economic data and application of state-of-the-art methodology. The most appropriate valuation will be context specific for both scientific and socio-economic considerations. Some of the physical and environmental factors include the following: (morphological changes, changes in settlement and habitation patterns, river bank slope, tidal activity, etc.). Hence, the actual compensation will vary across riverine systems. Therefore, each state and river and related development authority should make efforts to estimate the NPV applicable over the next 5 years.

Various definitions of NPV have been used in the context of the environment (United Nations, 2000, Chopra et al 2006, US EPA 2014, etc.). As per the Chopra Committee in the context of forests, the NPV refers to "the discounted sum of rupee values of eco-system goods and services that would flow from a forest over a period of time net of costs incurred." It is thus not meant to capture the value of the forest wealth as such, but only the flow of goods and services from it. In the context of the diversion of forest land to non forestry use, NPV is interpreted by the committee as the loss of value of the forest resources to the stakeholders as at the time of the diversion for non-forest use. It excludes any values that may accrue or get created by the user agency who uses it for non-forest purposes (See, Page 9 of Chopra, Kadekodi, & Eswaran, 2006). The range of services considered in such a case can include timber, carbon storage value, fuel wood and fodder, non-timber forest products, watershed services, and so on. Actual estimates of such NPV have also been worked out for specific forest circles and levied by state departments*

The benefits from avoiding the ecological damages to riverine ecosystems could range from recreation activities, aesthetics, wildlife viewing, fishing, boating, swimming, supporting and regulating services such as climate moderation, flood moderation, groundwater recharge, sediment trapping, soil retention, nutrient cycling, biodiversity, genetic library, water filtration, soil fertilization, species preservation, and many other non-use and intangible values. However, it is difficult to conceptualize current or future benefits to the ecology from mining activity since

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the pristine condition of the river basin (or affected ecosystem) would be considered to be the most desirable condition from the assessment's point of view. However, estimating the true value of all these benefit components which may be harmed by mining activity is not possible at this stage due to a variety of reasons, such as lack of data or information on such aspects, the non-market functions and complexities of the science involved. In particular, these values are extremely contextual in nature and therefore, we assume that the current condition has been reflected accurately in the legally permitted level of mining. Using this as a basic premise, a compensation formula is proposed as described in Section 4, to capture the NPV.

In the context of the assessment of ecological damages arising from sand mining, the NPV is thus considered to be the present value of the current and future stream of net costs of such activity. The rationale lies in recognizing that there may be negative externalities or ecological damages that result from excessive mining which manifests itself in a loss of the ecosystem services of rivers, and creates a loss of well being for both current and future generations. The extent of damage and the scope for restoration will vary from site to site, and will depend on a variety of biophysical and man-made characteristics.

Till such time as site specific assessments of the river systems are carried out, a compensation scale maybe proposed as suggested in Section 4 below.

*References:

Verma, M., Negandhi, D., Wahal, A., Kumar, R., Kinhal, G., & Kumar, A. (2014). Revision of rates of NPV applicable for different class/category of forests. Bhopal: Indian Institute of Forest Management. Retrieved from http://iifm.ac.in/wp-content/uploads/2016/06/IIFM_NPV_07NOV.pdf

Chopra, K., Kadekodi, G., &Eswaran, V. (2006). Report of the Expert Committee on Net Present Value .submitted to the Honourable Supreme Court of India.Retrieved from http://www.fedmin.com/fedmin/npvk.pdf

Chopra, K., &Dasgupta, P. (2008). Assessing the economic and ecosystem services contribution of

forests: issues in modelling, and an illustration. The International Forestry Review, 10(2), 376-386. Retrieved from https://www.jstor.org/stable/43740351

CEC (Central Empowered Committee). (2007). Supplementary report in IA No.826 in IA No.566 regarding calculation of Net Present Value(NPV) payable on use of forest land of different types for non-forest purposes. Retrieved from https://www.prsindia.org/sites/default/files/bill_files/bill185_20080723185_Central_Empowered_Committee_Guidelines.pdf

4. Recommendations on Scale of Compensation

As discussed earlier, the full economic value for compensation should be as per the Net Present Value. As legal and illegal mining proceeds usually either in conjunction or in sequential manner, the ecological impacts of mining will take place irrespective of whether it is legal or illegal. The attribution to illegal mining, of a specific impact at the landscape level, will require careful evaluation. Till such information becomes available, two alternative approaches for compensation are proposed keeping in mind the various dimensions of the TOR for this committee.

4.1 Approach 1: Direct Compensation based on the market value of extraction, adjusted for ecological damages

A scale for calculation of the compensation to be charged has been worked out as provided in the Table No. 01. The compensation to be charged is based on three distinct criteria:

Exceedance Factor (EF): This criteria captures the extent of illegal mining that has taken place. It is introduced in order to bring in a notion of balance that the amount of penalty that is charged to any party is in proportion to the extent of illegal extraction of material at the first stage.

Risk Factor (RF): This criteria reflects the severity of the ecological damages at the field site in question. It is an attempt to capture the fact that there is likely to be substantial variation in the ecological conditions and resultant damages across sites where illegal mining takes place. It is reasonable therefore to introduce a risk factor that accounts for the extent of severity of damages using a four-point scale of mild, moderate, significant and severe risk. Till the time that detailed basin level studies are carried out, this risk factor can be judged on the basis of the state department's assessment of the ecological fragility of the river basin concerned based on a priori knowledge of the circumstances.

Deterrence Factor (DF): This criteria is an attempt to capture the fact that ecological damages tend to display non-linearities and can increase in unexpected ways. Thus, the greater the extent of extraction (as reflected in the relative magnitude of the illegally extracted amount), the greater is the likelihood that this may have cumulative impact over time, which may not be observable at the time of assessment (as reflected in the RF). Given that the scale should also have a deterrence effect, this criteria is introduced to proxy for these non-linear aspects till such time that more site specific data becomes available to carry out a comprehensive NPV.

Table No. 01: Approach 1				
Permitted Quantity (in MT or m^3)	**Total Extraction (in MT or m^3)**	**Excess Extraction (in MT or m^3)**	**Exceedance in Extraction:**	**Compensation Charge (in Rs.)**
X	Y	Z = Y-X	Z/X	D * (1+RF + DF) Where D = Z x Market Value-of-the-material-per-MT-or-m^3
				DF = 0.3 if Z/X = 0.11 to 0.40 DF = 0.6 if Z/X = 0.41 to 0.70 DF = 1 if Z/X >= 0.71
				RF = 0.25, 0.50. 0.75, 1.00 (as per table 2)

Note:

a) The inspecting team will consider the error in measurement of quantity of material (maximum 10% for up to 5 Ha. sites but should be less for large sites) and accordingly decide/recommend whether any particular case is fit for imposing compensation for damages or not.

b) Market Value of the material per (MT or m^3) will be based on applicable market price of the mined material.

c) **Risk Factor (RF)** to take value as per the Risk Level of the illegal mining case, as below:

Table No. 02				
Risk Level	1	2	3	4
Risk Factor	0.25	0.50	0.75	1

d) **Risk Level** to take value as per the severity of the impacts of illegal mining case, as below:

Table No. 03				
Severity of Impact	Mild	Moderate	Significant	Severe
Risk Level	1	2	3	4

e) **Severity of impact** of illegal mining case to be categorised as Mild or Moderate or Significant or Severe for various components of the river and highest value to be used:

Table No. 04				
S. No.	River Component	Impacts	Impacts (Sub -category)	Severity of impact/ Risk Factor
1.	Morphology	Instability of Channel geometry	Bed degradation	
			Channel adjustment	
			Bank Erosion	
2.	Hydrology	Ground Water level	Change of ground water table in adjacent areas	
		Change in river flow	Variation in flow energy	
3.	Ecology	Loss of local Ecological community	Disturbance to flora	
			Disturbance to fauna	
4.	River Structures	Instability to Hydraulic Structure	Damage to Hydraulic Structure and its surrounding	
5.	Any Other			

Deriving the Risk Factor (RF): Some criteria can be considered by states for judging the risk factor applicable at various sites. Accordingly, States may develop a subjective scale for severity of impact (Risk Factor–RF) for purposes of implementing the interim compensation scale based on any 3 of the 4 heads listed in TableNo.04 through expert consultation over the period of next 3 months. Till such criterion/guidelines is prepared by states the inspections team may decide RF based on its own assessment.

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4.2 Approach 2: Computing a Simplified NPV for ecological damages

Till such time as data and information for a comprehensive NPV is worked out in a site specific manner to account for all (or atleast the major) ecological damages, a simplified NPV, proxied on the market value of the illegally extracted amount maybe computed. In this case the NPV approach would imply that **the total benefits from the activity of sand mining (as represented by the market value of the extracted amount) be deducted from the total ecological costs** imposed by the activity. In the absence of data on benefits and costs separately, we recommend a modification of the formula as shown below.

Total Benefits (B) = Market Value of illegal extraction : D (refer Table 1)

Total Ecological Costs (C) = Market Value adjusted for risk factor: D * RF (refer Table 1).

For present purposes, it is assumed that the Benefits would accrue only in the first year (in which the extraction of the illegally mined material takes place), while the ecological costs would continue to be felt over a period of time. NPV is to be calculated for a period of 5 years on the net value, **$\sum$(C-B)**, at a discount rate ranging from **8%-5%**, varying in inverse with the risk factor. Thus, where the highest risk factor (say 1) is applicable, the discount rate applicable would be the lowest (say 5% in this case).

Thus, it is recommended that the annual net present value (NPV) of the amount arrived at after taking the difference between the costs and the benefits through the use of the above approach, maybe calculated for a period of 5 years at a discount rate of 5% for mining which is in a severe ecological damage risk zone. The rationale for levying this NPV is based on expert opinion that reversal and/or restoration of the ecological damages is usually not possible within a short period of time and rarely is it feasible to achieve 100% restoration, even if the sand deposition in the river basin is restored through flooding in subsequent years. The negative externalities of the mining activity are therefore to be accounted for in this manner. Ideally, the worth of all such damages, including costs of those which can be restored should be charged. However, till data on site-specific assessments becomes available, this approach maybe adopted in the interim. In situations where the risk categorisation

charged. However, till data on site-specific assessments becomes available, this approach maybe adopted in the interim. In situations where the risk categorisation is unavailable or pending calculation, the following Discount Rates may be considered:

Severity	Mild	Moderate	Significant	Severe
Risk Level	1	2	3	4
Risk Factor	0.25	0.50	0.75	1.0
Discount Rate	8%	7%	6%	5%

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Basis of recommending 5 % Discount Rate

It is to be noted that the choice of a discount rate varies widely across countries and further, by the type of project or purpose. The rate used in developing countries in general is usually found to be higher, with social discount rates varying from 8 to 15% (Jhuang et al 2007, Murty et al 2018). The Government of India has issued guidelines for parameters (discount rates) and processes for project appraisal periodically. The national parameters for project appraisal in operation since 1994, for instance stipulated that projects had to yield a minimum of 12% financial and economic internal rate of return for the purpose of investment approval. Recently these were re-examined in a study, and in keeping with the growth of income in the economy an estimate of 8 per cent for the rate of discount for investment project appraisal in India was suggested (Murty et al 2018). In India, The Kanchan Chopra committee report on NPV recommends a 5% discount rate. The specific sentence from this report is that - "Considering the fact that forest resources provide long term goods and services and ecosystem benefits and, interest rates in India are going down, the Committee recommends a 5% social discount rate for forest resources." Several other studies in India and abroad for projects with implications for forests, water utilities, health and sanitation, and other such social, environmental or public sector projects, have used similar rates of discount ranging from 5 to 8% (Puroshothaman et al 2000, Dasgupta et al 2019, Chopra and Dasgupta 2008, Simpson 2008). Further, it is recommended that rates of interest should ideally decline and be lower, where there are uncertainties about the future, and/or in case of climate mitigation and environmental management projects where the benefits are likely to accrue over a longer time period (Weitzman 2001, Gollier 2012). For India, the suggested rate was between 8%-5% for such environment related projects. Thus, the suggested rate of discount in this report draws upon these studies. Lower "discount rate" means that compensation amount will be more.

References:

1. Chopra K, Kadekodi G, Eswaran V (2006) Report of the Expert Committee on Net Present Value submitted to the Honourable Supreme Court of India. Retrieved from http://www.fedmin.com/fedmin/npvk.pdf

2. Purushothaman S, Viswanath S, Kunhikannan C (2000) Economic valuation of extractive conservation in a tropical deciduous forest in Madhya Pradesh, India. Tropical ecology 41(1): 61-72.Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.538.7962&rep=rep1&type=pdf

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Annexure – A

Examples

For ease of understanding the calculation of compensation, possible scenario of illegal mining are given below.

Example 01: Violation with respect to Area

A case of non-compliance in terms of excess area was reported. The inspection team carried out an assessment of mining site and observed severity of impacts on river components as *Severe*, then the computation of Compensation Charge will be as follow:

Compensation Charged (Scenario I – no explicit accounting of NPV)

Violation reported as follow:

Total Permitted Quantity in Environmental Clearance (X)	=30000 m^3
Total Area of mined out mineral	=15000 m^2
Total Permitted Area in Environmental Clearance	=10000 m^2
Excess Mined out area	=5000 m^2
Total Depth permitted as in Environmental Clearance	=3 m
Excess extraction (Z)	=5000 x 3 = 15000 m^3
Exceedance Factor (Z/X)	=15000/30000=0.5

Methodology:

Market Value of Illegally Mined Material (D) (assuming Market Value of the material as Rs. 400/- per m^3)	D = 15000 x 400 = 6000000/-
Risk Factor (RF)	Severity *Severe* Risk Level 4 Risk Factor (RF) 1
Deterrence Factor (DF)	DF = 0.6 (for Z/X in 0.41 to 0.70 range)
Compensation	=D x (1+RF+DF)
Total (in Rs.)	=6000000/- x (1+1+0.6) =Rs.1,56,00,000/-

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Compensation Charge (Scenario II – explicit accounting of NPV)

Market Value of Illegally Mined Material (D) 5000*400 = 6000000/-

Annual Value of Foregone Ecological Values D*RF = 6000000/-

- **Present Value of Foregone Ecological Values (@ 5% discount rate and over 5 years)**

$$PV = \sum_{t=1}^{5} \frac{(D*RF)}{(1+r)^t}$$

$$= \sum \frac{(6000000)}{(1+0.05)^1} + \frac{(6000000)}{(1+0.05)^2} + \frac{(6000000)}{(1+0.05)^3} + \frac{(6000000)}{(1+0.05)^4} + \frac{(6000000)}{(1+0.05)^5}$$

= Rs. 2,59,76,860/-

- Net Present Value (after netting out market value of illegally mined material) – i.e., Total Compensation to be levied

= NPV = PV - D

= Rs. 1,99,76,860/-

Compensation Charge in above case:

Approach 1 (no explicit accounting of NPV)	**Approach 2 (explicit accounting of NPV)**
D*(1+RF+DF)	**@ 5% discount rate and over 5 years**
Rs. 1,56,00,000/-	Rs. 1,99,76,860/-

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Example 02: Violation with respect to Depth

A case of non-compliance in terms of excess depth was reported. The inspection team carried out an assessment of mining site and observed severity of impacts on river components as *Severe*, then the computation of Compensation Charge will be as follow:

Compensation Charge (Scenario I – no explicit accounting of NPV)

Violation reported as follow:

Total Permitted Quantity in Environmental Clearance (X)	=30000 m^3
Total Permitted Area in Environmental Clearance	=10000 m^2
Total Depth of mined out material	=4 m
Total Permitted Depth in Environmental Clearance	=3 m
Total Violation in Depth	=1 m
Excess Extraction (Z)	=10000x 1 =10000 m^3
Exceedance Factor (Z/X)	=10000/30000=0.33

Methodology:

Market Value of Illegally Mined Material (D) (assuming Market Value of the material as Rs. 400/- per m^3)	D = 10000 x 400 = 4000000/-
Risk Factor (RF)	Severity *Severe* Risk Level 4 Risk Factor (RF) 1
Deterrence Factor (DF)	DF = 0.3 (for Z/X in 0.11 to 0.40 range)
Compensation	=D x (1+RF+DF)
Total (in Rs.)	=4000000/- x (1+1+0.3) =Rs 92,00,000/-

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Compensation Charge (Scenario II – explicit accounting of NPV)

Market Value of Illegally Mined Material (D) 10000*400 = 4000000/-

Annual Value of Foregone Ecological Values D*RF = 4000000/-

- **Present Value of Foregone Ecological Values (@ 5% discount rate and over 5 years)**

$$PV = \sum_{t=1}^{5} \frac{(D*RF)}{(1+r)^t}$$

$$= \sum \frac{(4000000)}{(1+0.05)^1} + \frac{(4000000)}{(1+0.05)^2} + \frac{(4000000)}{(1+0.05)^3} + \frac{(4000000)}{(1+0.05)^4} + \frac{(4000000)}{(1+0.05)^5}$$

= Rs. 1,73,17,907/-

- Net Present Value (after netting out market value of illegally mined material) – i.e., Total Compensation to be levied

= NPV = PV - D

= Rs. 1,33,17,907/-

Compensation Charge in above case:

Approach 1 (no explicit accounting of NPV)	**Approach 2 (explicit accounting of NPV)**
D*(1+RF+DF)	**@ 5% discount rate and over 5 years**
Rs. 92,00,000/-	Rs. 1,33,17,907/-

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Example 03: Violation with respect to Depth and Area

A case of non-compliance in terms of excess depth and area was reported. The inspection team carried out an assessment of mining site and observed severity of impacts on river components as *Severe*, then the computation of Compensation Charge will be as follow:

Compensation Charge (Scenario I – no explicit accounting of NPV)

Violation reported as follow:

Total Permitted Quantity in Environmental Clearance (X)	=30000 m^3
Total Permitted Area in Environmental Clearance	=10000 m^2
Total Permitted Depth in Environmental Clearance	=3 m
Total Area of mined out material	=12000 m^2
Total Depth of mined out material	=4 m
Total Volume of mined out material	=12000 m^2 x 4 m =48000 m^3

(The example can be applied to a case of totally illegal mining without EC also where illegal mining of 18000 m^3has been done)

Excess Extraction (Z)	=18000 m^3
Exceedance Factor (Z/X)	=18000/30000=0.6

Methodology:

Market Value of Illegally Mined Material (D) (assuming Market Value of the material as Rs. 400/- per m^3)	D = 18000 x 400 = 7200000/-
Risk Factor (RF)	Severity *Severe* Risk Level 4 Risk Factor (RF) 1
Deterrence Factor (DF)	DF = 0.6 (for Z/X in 0.41 to 0.70 range)
Compensation	=D x (1+RF+DF)
Total (in Rs.)	=7200000/- x (1+1+0.6) =Rs 1,87,20,000/-

Compensation Charge (Scenario II – explicit accounting of NPV)

Market Value of Illegally Mined Material (D) 18000*400 = 7200000/-

Annual Value of Foregone Ecological Values D*RF = 7200000/-

- **Present Value of Foregone Ecological Values (@ 5% discount rate and over 5 years)**

$$PV = \sum_{t=1}^{5} \frac{(D*RF)}{(1+r)^t}$$

$$= \sum \frac{(7200000)}{(1+0.05)^1} + \frac{(7200000)}{(1+0.05)^2} + \frac{(7200000)}{(1+0.05)^3} + \frac{(7200000)}{(1+0.05)^4} + \frac{(7200000)}{(1+0.05)^5}$$

= Rs. 3,11,72,232/-

- Net Present Value (after netting out market value of illegally mined material) – i.e., Total Compensation to be levied

= NPV = PV - D

= Rs. 2,39,72,232/-

Compensation Charge in above case:

Approach 1 (no explicit accounting of NPV)	**Approach 2 (explicit accounting of NPV)**
D*(1+RF+DF)	**@ 5% discount rate and over 5 years**
Rs. 1,87,20,000/-	Rs. 2,39,72,232/-

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Example 04: Violation with respect to Quantity / Production

A case of non-compliance in terms of excess quantity/production was reported. The inspection team carried out an assessment of mining site and observed severity of impacts on river components as *Severe*, then the computation of Compensation Charge will be as follow:

Compensation Charge (Scenario I – no explicit accounting of NPV)

Violation reported as follow:

Total Volume of mined out material	=35000 m^3
Total Permitted Quantity in Environmental Clearance (X)	=30000 m^3
Excess Extraction (Z)	=5000 m^3
Exceedance Factor (Z/X)	=5000/30000 = 0.16

Methodology:

Market Value of Illegally Mined Material(D) (assuming Market Value of the material as Rs. 400/- per m^3)	D = 5000 x 400 = 20,00,000/-
Risk Factor (RF)	Severity *Severe* Risk Level 4 Risk Factor (RF) 1
Deterrence Factor (DF)	DF = 0.3 (for Z/X in 0.11 to 0.40 range)
Compensation	=D x (1+RF+DF)
Total (in Rs.)	=2000000/- x (1+1+0.3) =Rs. 46,00,000/-

Compensation Charge (Scenario II – explicit accounting of NPV)

Market Value of Illegally Mined Material (D) 5000*400 = 2000000/-

Annual Value of Foregone Ecological Values D*RF = 2000000/-

- **Present Value of Foregone Ecological Values (@ 5% discount rate and over 5 years)**

$$PV = \sum_{t=1}^{5} \frac{(D*RF)}{(1+r)^t}$$

$$= \sum \frac{(2000000)}{(1+0.05)^1} + \frac{(2000000)}{(1+0.05)^2} + \frac{(2000000)}{(1+0.05)^3} + \frac{(2000000)}{(1+0.05)^4} + \frac{(2000000)}{(1+0.05)^5}$$

= Rs. 86,58,953/-

- Net Present Value (after netting out market value of illegally mined material) – i.e., Total Compensation to be levied

= NPV = PV - D

= Rs. 66,58,953/-

Compensation Charge in above case:

Approach 1 (no explicit accounting of NPV)	**Approach 2 (explicit accounting of NPV)**
D*(1+RF+DF)	**@ 5% discount rate and over 5 years**
Rs. 46,00,000/-	Rs. 66,58,953/-

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Annexure I

Deliberations in the Meetings of the Committee

First meeting of the committee

The first meeting of the member of the committee constituted by the Hon'ble NGT in O.A. No. 360/2015 order dated 05.04.2019 was convened on 31.05.2019 at CPCB, Delhi. The committee meeting was attended by the following members:

1. Shri Sundeep, Director, MoEF&CC, Delhi
2. Shri A. Sudhakar, Additional Director, CPCB, Delhi
3. Dr. Yogesh Dubey, Associate Professor, IIFM, Bhopal
4. Dr Purnamita Dasgupta, Professor, IEG, Delhi

The member, Dr. K.S. Kavi Kumar, Professor, MSE, Chennai was not able to attend the meeting due to unavoidable circumstances.

The members of the committee expressed the opinion that assessment of the damage and net present value of eco-system services forgone forever and the cost of mitigation and restoration are the most important elements to arrive at a scale of Environmental Compensation and it is necessary to hear views of experts on these subjects in a workshop.

Second Meeting of the Committee

As desired by the committee in the first meeting, the following institutes / experts were requested for participation in a one-day workshop and to provide their views/opinion:

Expert Institutes:

- Forest Research Institute, Dehradun
- Indian Institute of Soil and Water Conservation, Dehradun
- National Institute of Hydrology, Roorkee
- Indian Institute of Technology Delhi
- Indian Institute of Technology, Roorkee
- Wildlife Institute of India, Dehradun
- Zoological Survey of India, Kolkata

Individual Experts:

- Dr. C.R. Babu, Professor Emeritus, University of Delhi
- Dr. Jagdish Krishnaswamy, Senior Fellow, Suri Sehgal Centre for Biodiversity and Conservation, Bangalore

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The second meeting cum workshop was convened on 20.06.2019 at CPCB, Delhi to hear the views of the subject experts. The meeting cum workshop was attended by following member of committee and subject experts:

Committee Members:

1. Shri Sundeep , Director, MoEF&CC, Delhi
2. Shri A. Sudhakar, Additional Director, CPCB, Delhi
3. Dr Purnamita Dasgupta, Professor, IEG, Delhi

Dr. K.S. Kavi Kumar, Professor, MSE, Chennai and Dr. Yogesh Dubey, Associate Professor, IIFM, Bhopal were unable to attend the meeting cum one-day workshop due to other works.

Subject Experts

Dr. C. R. Babu, Professor Emeritus, University of Delhi
Dr. Zulfiqar Ahmad, Professor, IIT Roorkee
Dr. C. Raghunathan, Scientist E, Zoological Survey of India, Kolkata
Dr. Sumant Kumar, Scientist C, National Institute of Hydrology, Roorkee

Views of Subject Experts:

Professor Zulfiqar Ahmad, IIT Roorkee expressed his view on assessment of physical damage caused in the river due to mining and shared the case studies on morphological changes in the river and its likely impacts. The study comprised of identification of critical reach of river, measures suggested to protect the critical reach, and the cost required for restoration of the physical damages occurred. Other aspects for assessment included the change in the stability of slope and structure in the river stretch. He expressed that assessment of physical damages needs to be done through comprehensive case specific study. He highlighted that mining activities done even at long distance from a civil structure may result in ultimate lowering of the bed by head cutting in upstream due to movement of nick point as well as cutting/degradation in downstream from the mining site. (*Power Point Presentation enclosed*)

Dr C.R. Babu, Professor Emeritus, University of Delhi provide a detailed note on the matter describing types of sand mining and adverse impacts of sand mining which was circulated to committee members and other experts (**copy enclosed**). He said that mining activity lead to channel incision, erosion of riverbed and vertical instability, results in shallowing and widening of channel and multiple channel of river from one channel. The shallowing of channel causes increase in temperature, affecting local fish population, fish diversity and vegetation in riparian zone. The deepening of riverbed due to depletion of material impacts on existing dug well / tube well and underground water, changes the water quality and reduces the

sediment deposits which serves as substratum for vegetation and habitats for riparian and terrestrial species. He agreed to attend any future committee meeting as a special invitee and provide his expert views.

Dr. Sumant Kumar, Scientist C, NIH, Roorkee expressed his views that severity of change in course of river flow depends on bank stability and energy of river and needs to be taken into consideration. He also expressed that the mining activity in the river may increase silt content, which may affect the cost of purification of the river water in downstream treatment plants, and damages assessment should include this aspect. He agreed to provide a note on the matter.

Dr C. Raghunathan, Scientist E, ZSI, Kolkata also expressed that silt / suspended solids content increases in river due to mining activity and result in increase in turbidity in the river, which affects the penetration of sunlight and impact primary production activity which influences the entire food chain. The assessment of damages must be done in consideration of the impacts caused to river flora and fauna. The silt formation in the river affects the fish population directly also as it gets deposited in the scales of fishes and reduce their production. He agreed to provide a note on the matter.

Third Meeting of the committee

The third meeting of the members of the committee constituted in compliance of NGT order dated-05.04.2019 in OA No. 360/2015 was convened on 24.07.2019 at CPCB, Delhi. The committee meeting was attended by Shri Sundeep, Director, MoEF&CC, Delhi (Member) and Dr. C.R. Babu, Professor Emeritus, University of Delhi (Special Invitee)

Dr. Purnamita Dasgupta, Professor, IEG, Delhi (Member) and Dr. K.S. Kavi Kumar, Professor, MSE, Chennai (Member) had confirmed participation but could not participate due to some unavoidable circumstances at the last moment. Shri A. Sudhakar, Additional Director, CPCB, Delhi (Member) could not participate as he was abroad and Dr. Yogesh Dubey, Associate Professor, IIFM, Bhopal could not participate due to important works in his institute.

It was expressed by Committee member and special invitee that considering the nature of work at least 06 month time may be required to prepare the report. The framework of the report may be prepared in one month and an interim report may be prepared in three months. CPCB may submit a progress report of committee meetings convened and request NGT for extension of time on behalf of committee.

Fourth Meeting of the committee

Based on the progress report and time extension request filed by CPCB on behalf of the committee constituted, NGT by its order dated-26.07.2019 in OA No. 360/2015 granted 03month time for submission of report to committee. CPCB convened fourth meeting of committee members on 16.09.2019 at CPCB HO Delhi. The committee meeting was attended by the following members:

1. Shri Sundeep, Director, MoEF&CC, Delhi
2. Shri A. Sudhakar, Additional Director, CPCB, Delhi
3. Dr. Purnamita Dasgupta, Professor, IEG, Delhi
4. Dr. K.S. Kavi Kumar, Professor, MSE, Chennai

(The member, Dr. Yogesh Dubey, IIFM, Bhopal was not able to attend the meeting.)

Discussion were held on the draft report prepared by CPCB based on inputs and suggestions of committee members, the scale/formula to compute the environmental compensation. It was agreed by committee members to categorise severity of impacts of illegal mining and extent of violations based on field inspections and accordingly, Risk factor and Deterrence factor to be considered for computation of environmental compensation whereby the risk factor to be categorised into four level and Deterrence factor for higher extent of violations, based on quantifiable exceedance evaluated.

The meeting concluded with committee members agreeing on basic formula/scale of compensation and further agreed to provide correction in the draft report.

Fifth Meeting of the committee

In consideration of time bound finalization of report, the fifth meeting of the members of the committee constituted in compliance of NGT order dated-05.04.2019 in OA No. 360/2015 was convened on 11.12.2019 at MoEF&CC, Delhi. The committee meeting was attended by Shri Sundeep, Director, MoEF&CC, Delhi (Member), Dr. Purnamita Dasgupta, Professor, IEG, Delhi (Member) and representatives of CPCB Delhi. Discussion were held on final draft of the report and inclusion of inputs provided by the committee members in the final draft. The committee members agreed to time bound finalization of the report and given concurrence to CPCB and submission of report to Hon'ble NGT on finalization.

Annexure II

1. Write up provided by Prof. C.R. Babu, Professor Emeritus, University of Delhi

Adverse Impacts of sand mining and creation of guide bunds and marginal bunds on Rivers and their Tributaries

(Source: Impacts of sand mining on Ecosystem structures, process Biodiversity in Rivers by Lois Koehnkem)

Sand Mining

Three types of sand mining are common in river systems. In stream mining (mining in channel), river-bed mining (mining near the channel) and mining from flood plains. All three types of mining are rampant across the country, as sand is an important natural resource and used widely in the construction activity.

Sand mining encompass excavation of aggregates consisting of sand, gravel, pebbles or cobbles; but in this note sand mining refers to mining of sand which include fine grained sediments which are rich in nutrients and sediment of intermediate size consisting of fine to coarse sand and very coarse sediment consisting of very coarse sand only. Very coarse sediment, as a rule, contains very coarse sand besides larger material such as pebbles, cobbles and boulders which are usually absent in river channels that develop within the sediment deposits of alluvial river system. All three kinds of sediments in have specific roles in the riparian ecology. For example, the fine grained sediments transported in suspension form and are deposit in deep channels and flood plains where low energy environment prevails. The fine grained sediment is rich in nutrients and affects water quality and control light penetration in the channel. The intermediate size grained sediment is transported in suspension during high flows or as bed load during low energy, and it is stored in the bed, banks, flood plains and bars (sand bars) of river system.

The continuous deposition of sand is essential for the maintenance of delta and shore line stability which form the first line protection against storm surge and other extreme events. The very coarse sediment is transported during very high flows and moves as bed load – rolling or bouncing along the bed of the river. The transport and deposition of sediment (sand) in the river system generate a mosaic in stream /in channel habitats that form the basis of ecological functioning of rivers/streams. In other words, sediments (sand) movements and deposition are integral part of the river system and are critical in sustaining its ecological functions.

All the three types of sand mining is common all along Yamuna, particularly in both upstream and downstream of Delhi. In plains sand mining includes fine grained

sediment, intermediate sized sediment and very coarse sediment; but in the hilly areas not only mining of aggregates but also pebble mining is common.

Adverse impact of sand mining

The extraction of sand (sand mining) from the river system has several adverse impacts on the riparian ecosystems. Some of the major adverse impacts are mentioned below.

Sand mining results in removal of sediments, and stones, and alteration in the transport of sediment, both of which bring physical and ecological changes in river channels. Since the river channels itself develops within the sediment deposits of alluvial river system, sand mining leads to erosion of channel banks, bars and flood plains. Sediment transportation also affects bedrock controlled reaches where localised sediment deposits serve as substratum for vegetation and habitats for riparian and terrestrial species.

The sediment load and river morphology are controlled/ maintained by balance between sediment bed, sediment grain-size, water flow and slope of the river. Sand mining alters all the four variables, For example, reduction in sediment load and reduction in medium sized sediment and local increase in slope of the river due to sand mining cause bed erosion that can propagate both upstream and downstream. Sand mining brings in changes in all the four variables and these changes resulted in three kinds of impacts: (i) Physical, ecological and social impacts.

A. Physical Impacts:

Changes in the channel morphology, alteration in the flow regime, and changes in the composition and movement of sediments impact on quality of water and ground water. A total of 107 different physical impacts were recorded in the scientific literature.

(I) Both channel widening and narrowing across the river is due to sand mining has been reported. The channel incision is the major physical impact of sand mining in the rivers. The channel incision takes place from the lowering of the bed of river due to erosion of riverbed which results from the creation of a nick point by mining in the river bed. The impacts of incision are listed below:

(a) The turbulence, as water flows over the nick point, causes erosion of the river bed with the nick point retreating in an upstream direction and this upstream movement of the nick increases the slope of the river resulting in increase in water velocity during high flow events leading to increased erosion in downstream.

(b) The deeper and steeper river bed will cause an increase in river energy and erosion which result in continual of incision leading to narrower channel.

(c) Channel incision also results in vertical instability in the channel that make it narrower, but lateral instability in the form of stream bank erosion result in widening of channel which in turn results in shallowing the bed. Both shallowing and widening of channel increase stream temperature extremes; Shallowing of river beds also results in flash floods; and channel instability also increases transport of sediments to downstream.

(d) Rivers narrowed through incision are disconnected with flood plains, the maintenance of which requires episodic inundation. These flood plains serve as wide range of ecological services due to exchange of water, sediment and organisms during inundation resulting in enhanced instream and flood plain productivity, while allowing recharging ground water; the flood plains allow the river to spread out during periods of high water and slows down and absorb high flows, and thereby reduce flood intensity and magnitude, and hence limit their impacts on downstream avian habitats and infrastructure. Sediment deposited provides influx of nutrients which enhances the productivity. Sand mining impacts all these services due to incision that leads to narrowing of channel.

(e) The incision can one channel of rivers from multiple channels as these channels ones, are separated by mobile islands. Yamuna river is the best example where multichannel river has become single channel river not only due to sand mining but also to filling up and encroachments of flood plains.

(f) By deepening of the base of river, the incision leads to decrease in ground water level, as the banks and surrounding permeable areas drain to the new lowered level.

(g) Mining from sand bars (bar skinning) can lead to bar erosion, and local channel and downstream widening. Additional channel widening occurs if mining causes river bank instability and collapse. This leads to decrease in local water velocity due to increased capacity of the channel, local increase in sediment load and increased downstream erosion due to reduction in sediment transport.

(II) Mining from flood plains (dry mining) alters the course of river. A series of pits near river course soon form a new channel by inundation and linking of pits. These inundated pits soon become lakes and contribute to increase in bank erosion. Flood plain mining also alters ground water levels. Ground water recharging is drastically reduced and the channel flow will be altered.

(III) Sand mining also creates sediment laden plumes in downstream and deposit in undesirable locations and coats substrates and make them unsuitable habitats. These plumes also reduce the depth to which light penetration occurs effecting growth of algae and aquatic vegetation.

(IV) On a large scale, reduction in the volume of sediment in the river results in decrease or absence of (sediment deposition) in deltas and coastal zone. This in turn results in erosion and subsidence of deltas and the degradation of deltas enhances the vulnerability to flooding leading to adverse impacts on human communities.

(V) In-stream sand mining changes water quality. For example, increase in turbidity at the site due to re-suspension of sediment and sedimentation from stock piling and dumping of excess mining material and pollution due to oil spills from machinery are common adverse impacts of mining at the site

(VI) Channel widening due to sand mining contributes to increase in temperature which in turn reduces dissolved oxygen and increase in toxicity due to heavy metals, pesticides and natural toxicants.

(VII) There will be increase in suspended solids at the mining site and downstream due to increase in riverbed and bank erosion from mining. This will increase the cost of water treatment in the downstream. This has been happening in Yamuna where upstream sand mining is contributing to high suspended solids in waters. Water quality changes due to mining may also result in the alteration in the distribution and availability of habitats which in turn affect aquatic flora and fauna.

B. Ecological Impacts

(I) Sand mining destroys spawning grounds of local fish populations leading to reduction in fish catch, replaces lentic species by lotic species and displaces native habitat specific species by generalists and invasive species, reduction in abundance of many game fishing species, extinction of local fish populations due to channel alteration by flood plains mining. Mining also decreases fish diversity.

(II) Sand mining has negative impacts on invertebrates, which play significant role in self-purification system of rivers. For example, enhanced turbidity will impact the macroinvertebrates. Low water levels due to incision have adverse impacts in mussels.

(III) Sand mining has also negative impacts on vegetation in riparian zones.

C. Social Impacts

Sand mining has adverse social impacts, besides physical and ecological impacts.

(I) Groundwater depletion, loss of land, depletion of fisheries, reduction in ground water quality and damage to infrastructure such as bridges, all of which have indirect impacts on the communities.

(II) Incision due to instream mining is a threat to support structures such as bridges and weirs. Upstream sand mining led to the replacement of bridges involving loss of several million dollars in California. In fact service lines like under cables and gas pipe lines have been exposed, and with decrease in river levels, the irrigational channel and pump sets rendered useless. All these impacts results in loss of several millions of rupees.

(III) An increase in distribution of flood waters with reduced sediment load and channel incision due to sand mining and land subsidence associated with the extraction of ground water contribute to reduction in the base level of the river which in turn also resulting in lowering of the surrounding water table leading to threatening water availability for local people and agriculture.

(IV) Sand mining also impacts land use and loss of land. Sand extraction leads to deep pools in flood plains leading to reduction in land availability for agriculture.

(V) Sand mining increased intrusion of salt water, which led to decrease in drinking water quality and salinization of agricultural lands. Vectors that carry infectious pathogens may become abundant in stagnant water filled pits due to sand mining.

Conclusions

To sum up, indiscriminate and rampant sand mining in rivers lead to reduction in water availability, change in the water quality, loss of self-purification system through loss of biodiversity, permanent changes in physical features of river morphology, hydraulics that lead to ecological disasters during extreme events, degradation of deltas and intrusion of salt water. We need to regulate and even prevent sand mining to save our river systems.

- ----------End of Write up ----------

2. Note Received from Dr. Sumant Kumar, Scientist C, NIH, Roorkee

Impact of Sand Mining on River Hydrology including SW and GW interaction

Rivers played a major role in development of human civilization. Many rivers of the world are being drastically altered beyond their self-resilience capacity due to accelerated developmental activities. Sand mining is one of the human intervention, which threatens the riverine ecosystem. The degree of sand mining impact (on-site and off-site) depends on geologic and geomorphic features. Continued and indiscriminate mining may cause changes in the physical characteristic of river in addition to disturbances to flora and fauna of riverine ecosystem. Keeping in view of the above facts, my views as discussed in the meeting also are listed below:

- Primary and secondary data (quantity of sand, lowering of river bed, shifting of river bank etc.) may be generated or collected.
- Impact on hydraulic structures such as dams, weirs and other important structures such as Intake well for drinking water supply should be studied.
- Assessment of saturated water present in mined sand should be quantified.
- Depth of mining may be regulated region-wise based on geological, geo-morphological, groundwater level and physical characteristics of river.
- Assessment of groundwater flow to/from river will depends to aquifer and river characteristic and hence it varies site to site.
- Water quality (suspended particles, turbidity, oil and grease etc.) of SW and GW in sand mined area may be assessed.
- Control measures such as bank stabilization should be evaluated.
- Remote sensing data may be used for morphological and other analysis of rivers.
- An integrated environmental assessment, management and monitoring program should be part of sand extraction processes.

3. Initial note on estimating ecological damage from illegal sand mining

(Prof. K. S. Kavikumar)

A draft framework for assessing the value of ecological damage due to illegal sand mining:

- First, in any given geographic area the extent of 'illegal' mining needs to be established. This can be done by making rapid assessment of extent of sand mining being carried out and netting out the area for which environmental clearance has been given (even in the mines that received environmental clearance, there could be violations and the same should be included in the 'illegal' mining area)

- For simplicity three main components can be considered for ecological damage assessment – material cost component, eco-restoration cost component, and NPV of foregone ecosystem services.
- The following time line could serve as basis for assessing these costs:

T1: Time when 'illegal' sand mining is recognized (ignoring the unauthorized sand mining being carried out prior to T1)
T2: Completion of restoration work; between the period T1 and T2 ecological restoration work is undertaken in and around the riverbed as suggested by the subject experts.
T3: The restoration work 'yields' ecosystem services (i.e., restoration of ecosystem services following the restoration work undertaken). In other words, beyond T3 the ecosystem provides all the services that it used to provide before the unauthorized sand mining has affected such services.
While it would be easy to establish T1 and T2, it is not easy to arrive at T3 in an objective manner and needs to be fixed based on inputs from the subject experts.

- Material Costs: The material costs could include the auction value of the seized mined material and any fines imposed on the 'illegal' mining activities. This cost will be in T1 year prices estimated at time T1.
In practice, the market values of the mined material can be taken for the cost estimation.

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- Eco-restoration costs: This consists of the costs of suggested restoration activities in and around the mining area. It is expected that the restoration work would stretch over the period T1 and T2. The eco-restoration costs would be the present value (at T1) of the expected restoration expenses over the years T1 to T2.
  Standard restoration activities could be identified (including say, construction of retaining wall, plantation along river bank etc.) and cost estimations can be made based on normative values.

- Present Value of Foregone Ecosystem Services: This component is perhaps the most difficult one as it requires assessment of value of ecosystem services that would have been obtained in the absence of 'illegal' mining. One may have to source such information from the literature and after required value addition, use the per hectare value in a manner similar to what has been done in case of forest land. Once annual per hectare value is identified, the foregone value per year can be estimated by multiplying it with the extent of 'illegal' mining area. The present value calculation can then be carried out over the period T1 and T3.

- For the purpose of present value calculations (in case of the cost components involving eco-restoration and foregone ecosystem services), choice must be made for the relevant discount rate.

Annexure - III

Inputs about existing legal provisions regarding illegal mining

(MoEF&CC & CPCB)

Compensation as per Statutory Provisions

Hon'ble Supreme Court in its Judgement dated-02.08.2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause Vs. Union of India with Writ Petition (Civil) No. 194 of 2014, mentioned the provisions regarding mining activity under Mines and Minerals (Development and Regulation) Act, 1957 (or the MMDR Act), the Mineral Concession Rules, 1960 (or the MCR) and the Mineral Conservation and Development Rules, 1988 (or the MCDR).

Para 125-129 of the said Judgement defined the expression **Illegal Mining** as mining operations undertaken by any person in any area without holding a mining lease and any other mining operation conducted in violations of terms of the mining scheme, the mining plan and the mining lease as well as the statutes such as the Environment (Protection)Act, 1986, the Forest (Conservation) Act, 1980, the Water (Prevention and Control of Pollution) Act,1974 and the Air (Prevention and Control of Pollution) Act, 1981 and Wildlife Protection Act, 1972.

Para 150 of the said Judgement is related to applicability of Section 21(5) of MMDR Act when any person raises, without any lawful authority, any mineral from any land and, authority of the State Government to recover the price thereof as compensation. Accordingly, the extraction of mineral from permitted mining lease area over and above what is permissible under the mining plan or the environmental clearance is to be taken as extraction without lawful authority and attracts the provisions of Section 21(1) and Section 21(5) of MMDR Act.

In view of provisions under Section 21(1) and Section 21(5) of MMDR Act, the computation of cost of material illegal extracted will be as per applicable methodology and rules in MMDR Act.

Therefore, compensation can be classified in following two categories

I. Compensation for Illegal Mining shall be subjected to provision of section 21(1) and section 21(5) of MMDR Act, 1957, as amended from time to time, and cost associated for restoration of damages incurred due to such mining to any physical structures, flood plains and cost assessed for the services lost for the period to restore the damages.

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II. Compensation for Non-Complying Mining shall be subjected to the recovery of revenue loss due to excess production over and above permitted capacity or area or depth under any applicable statutory provisions and cost associated for restoration of any damages incurred due to such mining to any physical structures, flood plains and cost assessed for the services lost for the period to restore the damages.

Illegal and Non-complying Mining

1. Illegal Mining means extraction of minerals or associated mining activities carried out, without any lawful authority, from land or river bed or both, or from prohibited area. Lawful authority includes mining permission from competent authority including permission or clearance under applicable statutory laws/rules (i.e. MMDR Act, Water (P&CP) Act, Air(P&CP) Act, E(P)Act, FC Act, WLPA etc.

2. **Non-complying** mining means extraction of minerals or associated mining activities carried out, with due permission of lawful authority, from land or river bed or both, or from prohibited or regulated area, but in contravention of stipulated conditions for undertaking such activities.

Sustainable Sand Mining Management Guidelines 2016

To deal with issues of legal sand mining, Ministry of Environment, Forest and Climate Change, Government of India have issued Sustainable Sand Mining Management Guidelines 2016. These guidelines were prepared after consultation with States and other stakeholders with an objective to ensure sustainable sand mining and environment friendly management practices in order to restore and maintain ecology of river and other sand sources. Emphasis has been given on use of information technology and services for scientific monitoring and transportation of mined out material.

Relief and Compensation under NGT Act 2010

The National Green Tribunal Act 2010 provides for filing of Application by a victim of pollution for grant of relief or compensation and other environmental damage before the Tribunal, or for restitution of the property damaged, or for restitution of the environment of the area, and empowers the Tribunal to pass order - to provide such relief or compensation, or for restitution of the property damaged, or for restitution of environment of the area.

Annexure - IV

Inputs/suggestions for detailed assessment of damages

(MoEF&CC)

There is no comprehensive or guiding rationale available for assessing environmental damage or for evaluation in quantifiable terms. Considering the diversified geographical, morphological, temporal and spatial variation in flow-regime of riverine system across Indian sub-continent, it is difficult to work out any one reasonable rationale for calculating NPV. It is essential to create such database by undertaking detail studies by experts on major riverine system across its stretch with significant variation.

A committee may be deputed consisting of domain experts viz. river morphology, biodiversity, agriculture, pollution control, irrigation / public works department, mining and local administration along with the Mine lease holders to assess the damage and quantifying the requisite variables for assessing the NPV values.

A baseline data assessment of the indicative attributes of the ecology which are having significant impacts and can be considered as an indicator, shall be collected as part of Environmental Impact Assessment study and submitted to the regulatory authority while seeking grant of environmental clearances. This will create database for assessing the damages as well as the loss in services. Such information will also facilitate the Regulatory authority to assess and impose appropriate conditions highlighting the risk associated to damages incurred due to non-compliance of the imposed conditions. This will extend the monitoring agencies to directly impose the environmental compensation in case the non-compliance is observed.

For area, where baseline data is not available including "illegal" mining, it is proposed that the values of the nearest legal mines or its baseline data shall be considered for defining the unavailable data and all calculation shall be based on the scientific primary data of the nearest assessed values.

Damages may be assessed as and when specific information on the ecological variables becomes available to the state. Each specific river basin will have its own set of most relevant variables and methodology to be considered for calculation of the NPV for ecological damages.

Table No. 05: Indicative Damages	
S.No.	**Damage type**
1	Ingress in Flood Plain (non-mining zone)
2	Flood Plain damage
3	Diversion of River flow or change in river morphology
4	Damages to agriculture land
5	Damages to public property (Roads/Bridges/embankment/ghats/etc.) or water intake point
6	Ingress in habitat of species of significant importance or damage to river vegetation

Pre-requisite for damage assessment

To evaluate the damage assessment caused due to mining in river, it is desirable to have pre-requisite information. A checklist needs to be prepared on important points in light of the comments provided by subject experts which are provided as annexures to this report for availability and facilitation of information to person involved for damage assessment in case of illegal mining in river. The checklist for requisite information should be prepared at every district level in respective state where riverbed mining is permitted. The checklist have to be prepared within one year of time period for existing mines and to be considered mandatory before auction of new mining leases.

In addition to checklist, the following information is necessary:

- District Survey Report and Audit Report
- Provision of Public Liability Insurance in Mine Lease Agreement
- Scheduled Market Rate of sand / gravel
- Flora and Fauna Inventory (Yearly basis)
- Inventory on River structures and their locations

Report of the damage assessment team shall be, but not limited to, the format suggested. Additional information which is observed as relevant by the domain expert members of the assessment team shall be appropriately reported and acted upon in due consideration of the basic objective of deriving a scientific rational for assessment of ecological of infrastructural damage arising due to the mining activity. Standard operating practice correct assessment of damage by the expert committee constituted by concerned authority, for the purpose is delivered below, which cane be modified based of site specific condition, and any deviation shall be recorded in the report.

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Standard Operating Procedure

This Standard Operating Procedure (SOP) is applicable for damage assessment due to illegal mining and have to be undertaken in addition to related provisions in MMDR Act.

Step 1:	The assessment team should collect the information and documents prescribed in Pre-Requisite section.
Step 2:	The assessment team should verify the applicability / validity of statutes under EPA-1986, Air and Water Act, MMDR 1957, State Mines and Mineral Rules, etc.
Step 3:	Field visit should be conducted for identification of mining lease area (in hectare) and boundary pillar constructed to indicate the same.
Step 4:	With the help of GPS instrument, the team should assess the area where any extraction or mining have been carried out on day of visit and calculate the mined out area in hectare.
Step 5:	If available, the team may avail the use of latest satellite images for calculating the total mined out area.
Step 6:	The team should verify the Ground / Surface Level (in meter above MSL) of atleast 04 highest points in or around the area where mining has been done. The Ground / surface level will then be computed based on averaging of 04 highest points verified by the team.
Step 7:	With the help of Depth Measurement kit or any depth measuring instruments, the depth should be measured for atleast 04 points in mined out area. For computing the depth, averaging of value obtained at 04 points should be done.
Step 8:	Verification of compliance conditions of Environmental Clearance and Consent to operate, mining methodology under Mining Plan
Step 9:	Identification of vulnerable impacts observed on the field and non-compliance of conditions of Environmental Clearance and Consent to Operate.
Step 10:	Field Survey for identification, monitoring and verification of ecological species based on the information available and documents mentioned in Pre-requisite section.
Step 11:	Preparation of inventory of machinery used / observed on the field as per format in Checklist.
Step 12:	Preparation of inventory of hydraulic structures observed on the field as per format in Checklist.
Step 13:	Water sampling for assessment of water quality including physical and biological parameters.
Step 14:	Computation of amount of cost of damage in term of mined out mineral as per format.
Step 15:	Identification of restoration plan and computation of cost of restoration plan.

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Damage Assessment Report Format			
Mining Lease	Individual / Cluster		
Total Mine Lease Area			
Area permitted for Mining (excluding safety bench marks)			
Permitted depth	------- meter		
Mining Area Description -	Riverbed / Floodplain / Combine Area		
Applicable Mining Method	Mechanised / Semi-mechanised / Manual		
Quantity available for mining			
Mineral available for mining			
Bulk Density of Mineral			
Replenishment Rate (Yearly basis)			
Ground Level	Point 01 -	Point 02 -	
	Point 03 -	Point 04 -	
	Average = ---------- meter above MSL		
Ground water Level	Point 01 -	Point 02 -	
	Point 03 -	Point 04 -	
	Average = ---------- meter above MSL		
Riverbed Depth	Point 01 -	Point 02 -	
	Point 03 -	Point 04 -	
	Average = ---------- meter above MSL		
River channel Width	-------meter		
River water Temperature (Avg.)	------- ° C		
River Flow Velocity	Jan. -	Feb. -	Mar. -
	Apr. -	May. -	Jun. -
	Jul. -	Aug. -	Sept. -
	Oct. -	Nov. -	Dec. -
Machinery Observed	Machinery	Capacity	Total Number
	JCB		
	Tractor-Trolley		
	Truck		
	Dumper		
	Any Other		
Hydraulic Structures	Type	Distance from mined out area	Total Number
	Remarks		

Item Nos.01 to 04, 06 to 15 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 360/2015
WITH
Original Application No. 366/2015
(M.A.No. 02/2019)
WITH
Original Application No. 368/2015
(M.A.No. 16/2019)
WITH
Original Application No. 173/2018
(Earlier O.A. No. 89/2017 (EZ)
(I.A. No. 76/2019)
WITH
Original Application No. 874/2018
WITH
Original Application No. 44/2016
WITH
Original Application No. 517/2015
WITH
Original Application No. 550/2015
WITH
Original Application No. 530/2016
WITH
Original Application No. 272/2016
WITH
Original Application No. 481/2016
WITH
Original Application No. 540/2015
WITH
Original Application No. 90/2016
WITH
Execution Application No. 40/2017
IN
O.A. No. 517/2015

National Green Tribunal Bar Association — Applicant(s)
Versus
Virender Singh (State of Gujarat) — Respondent(s)
WITH
National Green Tribunal Bar Association — Applicant(s)
Versus
Dr.SarvabhoumBagali (State of Karnataka) — Respondent(s)
WITH
National Green Tribunal Bar Association — Applicant(s)

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Versus

Dr.Sarvabhoum Bagali (State of Maharashtra) Respondent(s)

WITH

Sudarsan Das Applicant(s)

Versus

State of West Bengal &Ors.
(State of West Bengal and Odisha) Respondent(s)

WITH

News item published in "The Tribune " Authored by Arun Sharma Titled "Mounds of sand on Sutlej banks, mining mafia digs in"

WITH

Mushtakeem Applicant(s)

Versus

MoEF& CC &Ors. Respondent(s)

WITH

Sandeep Kumar Applicant(s)

Versus

Ministry of Environment, Forests and
Climate Change &Ors. Respondent(s)

WITH

Virender Kumar Applicant(s)

Versus

Ministry of Environment, Forests and
Climate Change &Ors. Respondent(s)

WITH

Sandeep Kumar Applicant(s)

Versus

Ministry of Environment, Forests and
Climate Change &Ors. Respondent(s)

WITH

M/s Ganga Yamuna Mining Co. Applicant(s)

Versus

State of Haryana&Ors. Respondent(s)

WITH

Joginder Singh Applicant(s)

Versus

Ministry of Environment, Forests &Ors. Respondent(s)

WITH

Ved Pal Singh Applicant(s)

Versus

Ministry of Environment, Forests &Ors. Respondent(s)

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WITH

Chander Mohan Uppal — Applicant(s)

Versus

State of U.P. &Ors. — Respondent(s)

WITH

Sandeep Kumar — Applicant(s)

Versus

Ministry of Environment, Forests and Climate Change &Ors. — Respondent(s)

Date of hearing: 05.04.2019

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

For Applicant(s): Mr. Raj Panjwani, Sr. Advocate, Mr. Aagney Sai, Advocate
Mr. Sravan Kumar, Advocate
Mr. Rahul Choudhary, Ms. Meera Gopal, Mr. Sharan Balakrishna, Advocates.

For Respondent (s): Ms. Puja Singh, Advocate for the State of Gujarat
Mr. Devraj Ashok, Advocate for State of Karnataka
Mr. Soumyajit Pani, Advocate for State of Odisha
Mr. Raja Chatterjee, Advocate for State of West Bengal
Mr. Ankit Verma, Advocate for State of U.P
Mr. Divya Prakash Pande, Advocate
Mr. Shlok Chandra, Mr. Ritesh Kumar Sharma, Advocates
Mr. Sany Antony, Advocate
Mr. Ankur Mittal, Mr. Abhay Gupta, Advocate
Mr. Rahul Khurana, Advocate, Mrs. Madhri Gupta, Mr. Sanjay Sabbarwa, Mining Officer

ORDER

1. The common question for consideration in this group of matters is the steps required to be taken for environment protection from unregulated sand mining in the States of Gujarat, Karnataka, Maharashtra, West Bengal, Odisha, Punjab, Haryana and Uttar Pradesh. The issue is common even with regard to States who are not party to these proceedings.

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Background

2. The Hon'ble Supreme Court, vide judgment in *Deepak Kumar Vs State of Haryana &Ors. (2012) 4 SCC 629*, directed that leases of minor minerals, including their renewal, even for an area of less than 5 hectares (ha) be granted only after environmental clearance from the Ministry of Environment and Forest and Climate Change (MoEF & CC). This direction was held to be necessary in view of degradation of environment on account of illegal and unrestricted upstream, in stream and flood plain sand mining activities. Under the existing guidelines, no environmental clearance was required for minor leases of less than 5 hectare area. The result was that there was no regulation of such mining which resulted in environmental degradation. Even bigger cluster was split up in less than 5 ha units to avoid law.

3. The Hon'ble Supreme Court observed that absence of regulation of such mining was not justified as it was threat to bio-diversity, could destroy riverine vegetation, cause erosion, pollute water sources, badly affecting riparian ecology, damaging ecosystem of rivers, safety of bridges, weakening of riverbeds, destruction of natural habitats of organisms living on the riverbeds, affects fish breeding and migration, spell disaster for the conservation bird species, increase saline water in the rivers.

4. The Hon'ble Supreme Court observed that such mining has direct impact on the physical habitat characteristics of the rivers such as bed elevation, substrate composition and stability, in-stream

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roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Increase in demand of sand has placed immense pressure in the supply of sand resource and mining activities were going on illegally as well as legally without requisite restrictions. Lack of proper planning and sand management disturbs marine ecosystem and upset the ability of natural marine processes to replenish the sand.

5. The Hon'ble Supreme Court noted that core group was constituted by the MoEF&CC to examine the impact of minor minerals on riverbeds and ground waters. A draft report was prepared recommending mandatory preparation of mining plan on the pattern of mining plans for major minerals. Further recommendations are reclamation and rehabilitation of abandoned mines, proportion of hydro geo-logical balance for minerals below ground water table limiting depth of mining to 3 meter and identification on locations where mining should be permitted was required. There is need for identifying safety zones in the proximity of intendments. Thus, strict regulatory parameters were required for regulating mining of minor minerals. It was noted that in-stream mining lowers the stream bottom of rivers which may lead to bank erosion. Depletion of sand in the stream bed causes deepening of rivers which may result in destruction of aquatic and riparian habitats. It has impact on stream's physical habitat characteristics.

6. The grievance before the Tribunal is that the river bed mining was taking place at several locations in violation of judgment of the Hon'ble Supreme Court either without any valid lease or under leases

given without following the strict regulatory regime in terms of judgment of the Hon'ble Supreme Court or in violation of lease conditions.

Proceedings before NGT

7. This Tribunal passed several orders in the present matter since 05.08.2013[1] to check illegal sand mining from the riverbeds without environmental clearance or in violation of terms of environmental clearance. The State of Uttar Pradesh was directed to frame a policy to check illegal sand mining. MoEF&CC was also directed to prepare comprehensive guideline on the subject. The Tribunal considered regulatory regime applicable in some of the States in the light of the judgment of the Hon'ble Supreme Court in *Deepak Kumar* (supra), including in the States of Uttar Pradesh, Haryana, Madhya Pradesh, Maharashtra, Karnataka, Gujarat, West Bengal and Odisha. The MoEF&CC issued Sustainable Sand Mining Guidelines 2016, vide notification dated 15.01.2016. Thereafter, further directions were issued by the Tribunal in the light of report of the High-powered Committee[2].

8. Despite this, the menace of illegal sand mining in India continues unabated. As per reports, the sand business in India employs over 35 million people and is valued at well over $126 billion per annum. In the year 2015-2016, there were over 19,000 cases of illegal minor minerals including sand in the country.[3] In Uttarakhand, a 115 years old bridge collapsed due to overloaded sand trucks. In Maharashtra,

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[1] In O.A. No 38/2015
[2] Order dated 08.08.2018 in Gurpreet Singh Bagga Vs. Ministry of Environment, Forest and Climate Change, E.A. No. 17/2016
[3] http://www.legalserviceindia.com/legal/article-73-why-is-illegal-sand-mining-harmful-.html

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26,628 cases of illegal sand mining were recorded in the year 2017. The State of Maharashtra has the highest number of cases of non-compliance of Sustainable Sand Mining Management Guidelines, 2016. The State of Kerala suffered hugely in 2004 Tsunami and 2018 floods which several report explain were aggravated by illegal sand extraction.[4] The issue of illegal sand mining is also rampant in the states of Goa[5], Bihar[6], Tamil Nadu[7], Uttarakhand[8], Telangana[9], Jammu and Kashmir[10] amidst others.

9. Natural resources are 'public goods' and the Doctrine of Equality must guide the State in determining the actual mechanism for distribution of natural resources. It takes into account the rights and obligations of the State vis-a-vis its people and the demands that the people be granted equitable access to natural resources and they are adequately compensated for the transfer of these resources for public domain and regulation of rights and obligations of the State vis-à-vis private parties seeking to acquire the resources which demands that the procedure adopted and distribution is just and transparent.

10. Public Trust Doctrine primarily rests on the principle that certain resources like air, sea, water and forest have great importance to public as a whole and it is wholly unjustified to make them a subject of private ownership. The public trust doctrine enjoins upon the Governments to protect the resources for enjoyment of general public

[4] https://sandrp.in/2019/03/01/sand-mining-2018-is-it-a-national-menace/
[5] https://timesofindia.indiatimes.com/city/goa/govt-is-ignoring-illegal-sand-mining/articleshow/67908428.cms
[6] https://www.firstpost.com/india/illegal-sand-mining-part-3-bihar-govts-attempted-crackdown-has-sent-prices-soaring-officials-face-axe-as-rivers-in-ruin-6008351.html
[7] https://en.wikipedia.org/wiki/Sand_mining_in_Tamil_Nadu
[8] https://sandrp.in/tag/uttarakhand-sand-mining/
[9] https://sandrp.in/2019/02/26/sand-mining-2018-telangana-and-andhra-pradesh/
[10] https://greaterkashmir.com/article/news.aspx?story_id=309365&catid=2&mid=53&AspxAutoDetectCookieSupport=1

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rather than to permit the use for private ownership of commercial purposes.[11]

11. When the State holds a resource that is freely available for the use of public, it provides for a high degree of judicial scrutiny on any action of the State in dealing with the subject in a prudent manner. It is the duty of the State to provide complete protection to the natural resources as a trustee of the public at large. Moreover, a policy to give free sand must be justified as a welfare measure but even this consideration cannot justify unregulated and unscientific mining unmindful of impact on environment. If in the course of mining, damage is caused, cost of the same must be recovered from such violators. In any case, the authorities cannot avoid their duty under the environmental law to prevent and restore the damage which is an inalienable duty of the State.

Sudarsan Das v. State of West Bengal

Vide order dated 04.09.2018 in *O.A No. 173/2018, Sudarsan Das v. State of West Bengal & Ors,* the Tribunal considered the issue of unchecked mechanised sand mining on the banks of river Subarnarekha by use of suction pumps, earth movers and netting in an area falling under Jaleshwar Tehsil, Balasore District, Odisha on the Odisha – West Bengal Boarder area and neighbouring district of West Medinapur in the State of West Bengal. The mining was being done by a method whereby ground water is allowed to seep into excavation of 40 to 50 feet beneath the river and collected in sumps and pumped away for disposal. No environmental clearance had been

[11]Natural Resources Allocation in RE: Special Reference No. 1/2012, (2012)10 SCC1, para 77-78,89-92

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taken nor consent taken from the Pollution Control Board. This was impacting the ecology of the river including its channel geometry, bed elevation, substratum composition and stability, instream roughness of the bed, flow velocity, discharge capacity, sediment transpiration capacity, turbidity, temperature, etc. Such indiscriminate mining was the cause of the river Subarnarekha changing its course every year and made susceptible to flooding during every monsoon, threatening the safety of the villages situated along the river bank due to the banks being severely eroded in villages Rajnagar, Mankia, Kanrpur, Totapada, Beherasahi and Praharajpur. The authorities confirmed that illegal mining was taking place at large scale without any Environmental Clearance under the Environment (Protection) Act, 1986 or Consent under the Water (Prevention and Control of Pollution) Act, 1974 or the Air (Prevention and Control of Pollution) Act, 1981. Sustainable Sand Mining and Management Guidelines, 2016 were also not being followed. There was adverse impact on the ecology. No Management Plan was prepared for replenishment of preventive steps. Safeguards suggested in the report of High-powered Committee in September, 2016[12] were also not been adopted.

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[12] The report suggest follows:

"i) Project Proponent must ensure that the security features of Transport Permission viz. (a) Printed on Indian Bank Association (IBA) approved Magnetic Ink Character Recognition Code (MICR) paper; (c) Unique Barcode; (d) Unique Quick Response Code (QR); (e) Fugitive Ink Background; (f) Invisible Ink Mark; (g) Void Pantograph; (h) Watermark.

ii) Project Proponent must ensure that the CCTV camera, Personal Computer (PC), Internet Connection, Power Back up, access control of mine lease site; and arrangement for weight or approximation of weight of mined out mineral on basis of volume of the trailer of vehicle used at mine lease site are available.

iii) Project Proponent must ensure the Scanning of Transport Permit or Receipt and uploading on Server.

iv) The State Mines and Geology Department should print the Transport Permits/Receipt with security features enumerated at Paragraph (i) above and issue them to the mine lease holder through the District Collector. Once these Transport Permits or Receipts are issued, they would be uploaded on the server against that mine lease area. Each receipt should be preferably with pre-fixed quantity, so the total quantity gets determined for the receipts issued. When the Transport Permit or Receipt barcode gets scanned and invoice is generated,

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the particular barcode gets used and its validity time is recorded on the server. So all the details of transporting of mined out material can be captured on the server and the Transport Permit or Receipt cannot be reused.

v) The staff deployed for the purpose of checking of vehicles carrying mined mineral should be in a position to check the validity of Transport Permit or Receipt by scanning them using website, Android Application and SMS.

vi) In case the Vehicle breakdown, the validity of Transport Permit or Receipt shall be extended by sending SMS by driver in specific format to report breakdown of vehicle. The server will register this information and register the breakdown. The State can also establish a call centre, which can register breakdowns of such vehicles and extend the validity period. The subsequent restart of the vehicle also should be similarly reported to the server/call centre.

vii) The route of vehicle from source to destination should be tracked through the system using check points, Radio-frequency identification (RFID) Tags, and Global Positioning System (GPS) tracking.

viii) The system shall enable the Authorities to develop periodic report on different parameters like daily lifting report, vehicle log/history, lifting against allocation, and total lifting. The system can be used to generate auto mails/SMS. This will enable the District Collector/Magistrate to get all the relevant details and will enable the authority to block the scanning facility of any site found to be indulged in irregularity. Whenever any authority intercepts any vehicle transporting illegal sand, it shall get registered on the server and shall be mandatory for the officer to fill in the report on action taken. Every intercepted vehicle should be tracked."

Considerations required to be kept in mind for sustainable sand mining are:

a. Parts of the river reach that experience deposition or aggradation shall be identified first. The Lease holder/ Environmental Clearance holder may be allowed to extract the sand and gravel deposit in these locations to manage aggradation problem.

b. The distance between sites for sand and gravel mining shall depend on the replenishment rate of the river. Sediment rating curve for the potential sites shall be developed and checked against the extracted volumes of sand and gravel.

c. Sand and gravel may be extracted across the entire active channel during the dry season.

d. Abandoned stream channels on terrace and inactive floodplains be preferred rather than active channels and their deltas and flood plains. Stream should not be diverted to form inactive channel.

e. Layers of sand and gravel which could be removed from the riverbed shall depend on the width of the river and replenishment rate of the river.

f. Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.

g. Segments of braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment.

h. Sand and gravel shall not be extracted within 200 to 500 meter from any crucial hydraulic structure such as pumping station, water intakes, and bridges. The exact distance should be ascertained by the local authorities based on local situation. The cross-section survey should cover a minimum distance of 1.0 km upstream and 1.0 km downstream of the potential reach for extraction. The sediment sampling should include the bed material and bed material load before, during and after extraction period. Develop a sediment rating curve at the upstream end of the potential reach using the surveyed cross- section. Using the historical or gauged flow rating curve, determine the suitable period of high flow that can replenish the extracted volume. Calculate the extraction volume based on the sediment rating curve and high flow period after determining the allowable mining depth.

i. Sand and gravel could be extracted from the downstream of the sand bar at river bends. Retaining the upstream one to two thirds of the bar and riparian vegetation is accepted as a method to promote channel stability.

j. Flood discharge capacity of the river could be maintained in areas where there are significant flood hazard to existing structures or infrastructure. Sand and gravel mining may be allowed to maintain the natural flow capacity based on surveyed cross- section history.

k. Alternatively, off-channel or floodplain extraction is recommended to allow rivers to replenish the quantity taken out during mining.

l. The Piedmont Zone (Bhabhar area) particularly in the Himalayan foothills, where riverbed material is mined, this sandy-gravelly track constitutes excellent conduits and holds the greater potential for ground water recharge. Mining in such areas should be preferred in locations selected away from the channel bank stretches.

m. Mining depth should be restricted to 3 meter and distance from the bank should be 3 meter or 10 percent of the river width whichever less.

n. The borrow area should preferably be located on the river side of the proposed embankment, because they get silted up in course of time. For low embankment less than 6 m in height, borrow area should not be selected within 25 m from the toe/heel of the embankment. In case of higher embankment the distance should not be less than 50 m. In order to obviate development of flow parallel to embankment, cross bars of width eight times the depth of borrow pits spaced 50 to 60 meters centre-to-centre should be left in the borrow pits.

o. Demarcation of mining area with pillars and geo-referencing should be done prior to start of mining."

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12. The Management Plan as per the guidelines is to require system of replenishment as well as preventive steps during the sand mining. Replenishment and reclamation of riverine sand are the integral part. Guidelines also deal with the issue of depth of mining and strict regulatory regime. The management of mining clusters should have a separate approach. Management of sand deposited after the floods should be treated as separate for mining. Monitoring system proposed includes safeguards during transport as well as checking of condition of mining.

13. The Tribunal noted that Ministry of Mines and Indian Bureau of Mines (IBM) had developed Mines Surveillance System (MSS), with assistance from Bhaskaracharya Institute for space applications and Geoinformatics (BISAG), Gandhinagar and Ministry of Electronics and Information Technology (MEITY). The Mining Surveillance System (MSS) is a satellite-based monitoring system which aims to establish a regime of responsive mineral administration by curbing instances of illegal mining activity through automatic remote sensing detection technology.

14. In view of above, the Tribunal directed[13] the MoEF&CC to revise its guidelines as in-spite of the guidelines already issued, the monitoring mechanism was not working effectively. The directions of this Tribunal are:

> "*i. Mining Surveillance System discussed in para 23 above be finalized in consultation with ISRO Hyderabad.*

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13 Vide order dated 04.09.2018 inOriginal Application No. 173 of 2018 (Earlier O.A. No. 89/2017) (EZ) in the matter of Sudarsan Das Vs. State of West Bengal &Ors.

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ii *Safeguards suggested in Sustainable Sand Mining Guidelines published by the MoEF&CC in the year 2016.*

iii *Suggestions in the High-Powered Committee Report.*

iv *Requirement of demarcation of boundaries being published in respect of different leases in public domain.*

v. *Need to issue SOP laying down mechanism to evaluate loss to the ecology and to recover the cost of restoration of such damage from the legal or illegal miners. Such evaluation must include cost of mining material as well as cost of ecological restoration and net present value of future eco system services forgone.*

vi. *Need to set up a dedicated institutional mechanism for effective monitoring of sand and gravel mining which may also take care of mining done without any Environmental Clearance as well as mining done in violation of Environmental Clearance conditions.*

vii. *The Mining Department may make a provision for keeping apart atleast 25% of the value of mined material for restoration of the area affected by the mining and also for compensating the inhabitants affected by the mining.*

viii. *One of the conditions of every lease of mine or minerals would be that there will be independent environmental audit atleast once in a year by reputed third party entity and report of such audit be placed in public domain.*

ix *In the course of such environmental audit, a three member committee of the local inhabitants will also be associated. Composition of three members committee may preferably include ex-servicemen, former teacher and former civil servant. The Committee will be nominated by the District Magistrate."*

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15. Such steps were to be worked out within two months and circulated to all States. The mechanism is to provide for a report of implementation from the concerned States every quarter. The matter needs to be reviewed after every six months by the MoEF & CC. The direction with regard to setting up of 'dedicated institutional mechanism' for monitoring of conditions of Environmental Clearance as granted under EIA Notification, 2006 in respect of sand and gravel mining as directed in para (vi) is for an All-Encompassing Body to monitor the conditions of Environmental Clearance with respect to all development projects. Report of the steps taken by MOEF&CC was to be furnished to this Tribunal by email at filing.ngt@gmail.com on or before 31.12.2018.

16. The Tribunal also issued directions to the State of West Bengal and Odisha to take steps as follows:

"

i. *The State of West Bengal and Odisha may demarcate the boundaries for regulating grant of sand mining lease within three months from today. No mining lease of minor minerals may be given in the area in question till demarcation is complete. All existing mining operations in those areas shall remain suspended till demarcation work is completed and attains finality. To carry out the demarcation, the Chief Secretaries of the two States may constitute a team of three suitable officers each within two weeks. The said teams may hold their first meeting within one month.*

ii. *The States of West Bengal and Odisha must ensure that mining in all sand mining blocks is undertaken strictly in accordance with the provisions of EIA Notification, 2006, MoEF*

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Notification dated 15th January, 2016 and the Sustainable Sand Mining Management Guidelines, 2016. They must also ensure that no sand mining is permitted without due compliance of Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 as well as regulations governing clearances by the Central Ground Water Authority. The District Administration must be held accountable for any failure.

iii. *District Magistrates and Superintendents of Police, Balasore district in Odisha and Paschim Medinapur, West Bengal, respectively, shall seize all sump pumps, other machinery, tools, vehicles, etc. used for carrying out illegal sand mining.*

iv. *Apart from instituting appropriate criminal proceedings against those carrying out illegal mining, exemplary penalty shall be imposed against them by the concerned District Magistrates within three months from today to cover the cost of restoration of environment and to compensate the victims.*

v. *The Chief Secretaries of the two States shall also get prepared jointly a detailed restoration plan for river Subarnarekha and its riverbeds for which a Committee of experts shall be constituted from independent institutions, i.e., the CPCB, Indian School of Mines, Dhanbad and the respective State Pollution Control Boards as members. Such constitution may take place within one month.*

vi. *The Expert Committee shall carry out detailed study and submit the restoration plan, as far as may be practicable, within three months after its constitution.*

vii. *The Committee shall also get the assessment done through Indian Council of Forestry Research and Education, Dehradun of the ecological damage on account of illegal mining by incorporating the following components: a) Cost of riverbed material. b) Cost of ecological restoration. c) Net present value of the future ecosystem services foregone.*

viii. *The above steps may be facilitated by the Regional Office of the CPCB as nodal officer, by coordinating with the Chief Secretaries of the two States.*

ix. *The damage suffered by the inhabitants caused by the illegal mining may also be assessed by the above Committee, which shall form a separate component of the Restoration Plan for river Subarnarekha as per direction No. (v) above. Cost of restoration plan shall be recovered as environmental compensation from the illegal miners, to be identified by the District Magistrate. The component of the compensation in respect of damages suffered by the inhabitants may be credited with District Legal Services Authority. The District Legal Services Authority may disburse the same to the victims of illegal mining, after proper identification."*

17. An oversight Committee was formed headed by Justice R.K. Merathia, former Judge of Jharkhand High Court to oversee the execution of above directions which was to function for six months.

Consideration in Today's Proceedings

Sand Minning in the State of West Bengal and Odisha

18. The matter has been listed today to consider the report from the MoEF & CC which was to be furnished by 31.12.2018 in terms of

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para 28 in *Sudarshan Das* (supra) and report of the oversight Committee which was to be furnished within three months in respect of steps taken by the State of West Bengal and Odisha in terms of direction of this Tribunal.

19. We may note that vide order dated 16.01.2019 in *O.A. No. 606/2018*, titled *Compliance of Municipal Solid Waste Management Rules, 2016*, the Tribunal flagged the issue of sand mining as one of the issues required to be monitored by the Chief Secretaries of the concerned States and to be reported to the Tribunal on personal appearance of Chief Secretaries before the Tribunal.

20. In pursuance of the said direction, Chief Secretaries of Odisha and West Bengal furnished their respective reports on 26.03.2019 and 02.04.2019. Learned counsels for the State of West Bengal and Odisha have relied upon the said reports during the hearing of present cases. The reports were not found to be satisfactory as per orders of the Tribunal dated 26.03.2019 and 02.04.2019 respectively and further directions were issued.

21. Question for consideration is further directions in the matter. We will consider this aspect after noticing developments in connected cases.

Sand Mining in the State of Gujarat

22. Following the above order in Sudarsan Das (*supra*), the issue of illegal sand mining in the State of Gujarat was dealt with in *O.A. No. 360/2015, National Green Tribunal Bar Association v. Virender Singh (State of Gujarat)*. The Tribunal passed several orders from time to time since 28.11.2016 and finally considered the report of the State

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of Gujarat vide order dated 13.07.2018 to the effect that persons engaged in illegal mining were identified and proceeded against. The Tribunal directed the State of Gujarat to take further preventive and remedial steps and observed that compounding fee to be recovered should be fixed having regard not only to the cost of mined material but also the cost of restoration of the environment and cost of ecological services lost forever and should be separately accounted for, for restoration of the environment. Again, vide order dated 17.09.2018, the Tribunal considered the policy of the State of Gujarat but found that preventive and remedial steps proposed were not sufficient. Damage caused to the environment was not fully taken into account. It was required to include Net Present Value (NPV) of future ecosystem services foregone forever. It was also observed that the preventive steps should also include demarcation and publication of boundaries in different leases and the same may be placed in the public domain. The Tribunal also referred to other orders on the subject being orders dated 05.09.2018, 10.09.2018 and 13.09.2018 in *Original Application No. 44/2016- Mushtakeem Vs. MoEF & CC & Ors., Original Application No. 304/2015- Jai singh & Anr. Vs. Union of India & Ors.* and *Original Application No. 186/2016 - Satendra Pandey Vs. Ministry of Environment, Forest & Climate Change & Anr.* The application was disposed of but the action taken report was required to be furnished. Accordingly, the matters have been put up today for consideration of the action taken report.

23. We may also note that vide order dated 04.01.2019 in *Original ApplicationNo.110(THC)/2012, Threat to life arising out of coal mining in south Garo Hills district v. State of Meghalaya & and Ors.*, the

issue of compensation and seizure of vehicles in the context of illegal rat hole mining in the State of Meghalaya was considered. On the subject of compensation to be recovered for damage to the environment, it was observed:

> *"31. Paying capacity and the amount which may act as deterrent to prevent further damage is also well recognised. Net Present Value of the ecological services foregone and cost of damage to environment and pristine ecology,the cost of illegal mined material, and the cost of mitigation and restoration are also relevant factors. The Committee may go into these aspects to determine the final figure.*
>
> *32. We are satisfied that having regard to the totality of factual situation emerging from the record, damages required to be recovered are not, prima facie, less than Rs. 100 Crores. Accordingly, by way of an interim measure, we require the State of Meghalaya to deposit Rs. 100 crores within two months with the CPCB in this regard."*

On the subject of vehicles, it was observed:

> *" 36. The Committee may also consider the following:-*
>
> > *Any cranes and trucks found to be involved in illegal mining or transportation which have not yet been seized may also be seized. The seized vehicles or equipments be released by the concerned District Magistrates only after recovering damages to the extent of 50% of the showroom price of the vehicles or equipments. The said amount may also be credited to the restoration fund."*

24. We have perused the report filed by the State of Gujarat vide email dated 17.12.2018 to the effect that environment compensation scale has been enhanced which now can be between 21% to 41% value of the illegally mined material and if such value is found to be less than the cost of the damage to the environment, the matter is to be referred to the State Pollution Control Board. The above

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compensation is in addition to the penalties under the Rules. However, the scale of penalty has not been specified.

25. Accordingly, further directions are required which may apply not only to the State of Gujarat but also other States. We may consider this aspect after taking note of developments in other States.

Sand Mining in the State of Karnataka

26. *O.A. No. 366/2015 (M.A. No. 02/2019), National Green Tribunal Bar Association v. Dr. Sarvabhoum Bagali (State of Karnataka) and O.A. No. 368/2015 (M.A. No. 16/2019), National Green Tribunal Bar Association v. Dr. Sarvabhoum Bagali (State of Maharashtra)* relate to the issue of sand mining in the State of Karnataka and Maharashtra. Vide order dated 25.09.2018, the matter was considered in the light of observations in *O.A No. 173/2018 (Earlier O.A. No. 89/2017 (EZ) (I.A. No. 76/2019), Sudarsan Das Vs. State of West Bengal &Ors and Original Application No. 186/2016, Satendra Pandey v. Ministry of Environment, Forest & Climate Change &Anr.* The States of Karnataka and Maharashtra were required to take steps as per the directions in the above matters, to the extent applicable and file an affidavit.

27. Accordingly, an affidavit has been filed on 06.03.2019 by the state of Karnataka stating that there was no sand *mafia* in the State of Karnataka and only there are exceptional instances. It is further submitted:

> *"I submit that all necessary steps are taken by Government of Karnataka and compliance report is submitted in this case, separately. If this Hon'ble Tribunal opines to establish any "Monitoring*

Mechanism", we welcome it. However, any suggestions or directions may kindly be issued to Government of Karnataka to (1) evaluate loss to the ecology (2) to recover cost of restoration from illegal miners (3) to monitor mining (4) to make provision for restoration (5) for compensation to the inhabitants and (6) for audit etc., the Government of Karnataka will obey the directions of this Hon'ble Court."

28. Our attention has been drawn to a news article published in Bangalore Mirror dated 24.12.2018 appearing under the title "Karnataka: Sand mafia under scanner after lorry runs over official"[14] and an article published in Decan Herald dated 17.09.2018 under the title "Karnataka is a leading State that witnesses the devastating effects of sand mining"[15] to the effect that fourteen million metric tonnes of sand unaccounted for the State of Karnataka is as follows:

> *"The state government is receiving approximately Rs 150 crore as royalty from legitimate sand mining blocks every year. As per estimates, the state government is losing around Rs 200 crore per year due to illegal sand mining. Here is a ballpark estimation to find out the consumption of sand in the state. According to cement manufacturing companies' data, around 18 million metric tonnes of cement is sold in the state every year. The cement-sand mix ratio is either 1:4 or 1:6 (four or six bags of sand per cement bag). Even if 1:4 ratio is taken, a whopping 70 million metric tonnes of sand is approximately used in the state every year. The official data from the Department*

[14] https://bangaloremirror.indiatimes.com/bangalore/others/karnataka-sand-mafia-under-scanner-after-lorry-runs-over-official/articleshow/67221261.cms
[15] https://www.deccanherald.com/exclusives/illegal-sand-mining-wrecking.html

of Mines and Geology shows that from the blocks permitted by it, a total quantity of 30 million metric tonnes of sand (from all types of blocks - river sand, patta land, blocks allocated to government departments, and manufactured sand) is produced in the state. As per this, there is a difference of around 40 million metric tonnes of sand in comparison to the cement sold in the state."

29. We may consider further directions after noting facts of other states.

Sand Mining in the State of Maharashtra

30. In the case of Maharashtra, an affidavit has been filed by the State of Maharashtra on 20.2.2019 to the effect that the State Government is in the process of framing Sand Mining Policy for which a Committee has been constituted.

31. Our attention has also been drawn to an article published in The Hindustan Times dated 27.01.2019 under the title "Maharashtra registers most cases of illegal mining between 2013-17"[16] inter alia stating as follows:

"Maharashtra recorded 1,39,706 illegal mining cases between 2013 and 2017, the highest number in the country, revealed data submitted by the Union environment ministry before the Rajya Sabha on January 3.

However, the state had one of the lowest number of prosecutions in such cases. The state filed 712 first information reports (FIR) and one court case, while seizing around 1,39,000 vehicles used in illegal

[16] https://www.hindustantimes.com/india-news/maharashtra-registers-most-cases-of-illegal-mining-between-2013-17/story-2j69aqmsygzCcTBBB8emtN.html

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mining operations and collecting Rs 267 crores as fines from offender.

India recorded 4,16,410 cases during the same time, which means Maharashtra accounts for 33.5% of all cases in the country. Uttar Pradesh recorded 36,054 illegal mining cases, Madhya Pradesh 46,193, Karnataka 33,390, and Goa had 3 cases. The information was submitted in response to a query on the environmental impact of illegal mining."

32. In view of above, further directions are required to be considered for the State of Maharashtra.

Sand Mining in the State of Punjab

33. Vide order dated 13.11.2018 in *O.A. No. 874/2018 News item published in "The Tribune " Authored by Arun Sharma Titled "Mounds of sand on Sutlej banks, mining mafia digs in"*, a report was sought on the allegation of large scale illegal mining on the bank of River Satluj in District Ropar in the light of directions vide order dated 04.09.2018 in Sudershan Das (supra) and other orders. Accordingly, a report has been received vide email dated 25.02.2019 confirming that illegal mining had taken place. The observations in the inspection report are as follows:

"1. No mining operation was observed during visit of the Committee at the mining sites located in the riverbed.

2. The mining of minor minerals in the riverbed has taken place more than permitted depth of 3 meters, as specified in point no. 4(i) of Form – L appended to the Punjab Minor Mineral Rules, 2013, which is a violation of sustainable mining practice.

3. *The specified boundaries or demarcation of mine lease area was not demarcated as required for checking illegal mining, substantiates the fact of illegal or unauthorized excavation of minerals.*
4. *From the existing natural level adjoining to the mining site, it we noticed that mining has been carried out in an unscientifically manner as:*
    a) *The mining of minor mineral has been done beyond the permitted depth.*
    b) *No strip of 7.5 m width of the lease boundary as seen left as per provisions of the Metalliferous Mines Regulations, 1961 in compliance to condition imposed in the Mining Plan approved by the State Geologist, Punjab, a serious violation for safety of banks.*
    c) *The contractor has not maintained slope height not exceeding 45 degree from the horizontal width along the boundaries of mining site in compliance to condition no. 12 of the letter vide which mining plan was approved, negligence towards slope stability.*
    d) *The contractor was not providing bench along the boundary of the mining site having height not exceeding 1.5 m and is width should not be less than the height as per condition no. 13 of the letter vide which mining plan was approve.*

1. *From the conditions of the area along the riverbed in revenue estate of village Baihara and Swarha, it seems that the mining has been carried out at the different locations in an unscientific way.*
2. *During the inspection, the impressions of heavy vehicles movement were observed. Also, it was found that road for movement of vehicle were in very bad shape as these roads have not been*

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stabilized or metalled with any of construction material and no plantation was observed along the roads.

3. *The development of water sumps as well as erosion of banks due to unscientific mining within the riverbed are threat to river ecological system and make it prone to flooding conditions during full flow. Also, it may cause the course of river to change rapidly and meandering to a great extent.*
4. *No check post was observed during the visit along the routes leading to mining lease area.*
5. *As per stipulation of environmental clearance, the contractor is required to maintain safety and stability of river banks i.e. 3 m or 10% of the width of the river, whichever is more will be left intact as no mining zone. Since no embankment of the riverbed was noticed and there was no demarcation of the mining site, as such, compliance of the above stipulation of the Environmental Clearance could not be verified.*
6. *The contractor has neither done any plantation along with the lease boundary of mining site in compliance to the condition imposed in the approval letter of the Mining plan.*
7. *The stone crusher units nearby the riverbed were observed by the committee. The stone crusher units were observed to be non-operational during visit of the committee, but stock piling of crushed material is indicative of their operation. The heavy machineries like JCB, pokland machines, dumper etc. were observed around the river, which may have been use for illegal mining in the area. Hence, the possession of these types of machines and working of stone crusher units need to be regulated. This issue needs to be monitored by the State."*

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34. The Committee further observed.

"The suggestions of the joint committee visit on 20.12.2018 in the report filed in OA no. 767 of 2018 titled as Dinesh Kumar Chadha versus State of Punjab & Others were as follows :

- *The mining activity within the riverbed should not be permitted without the preparation of Comprehensive Mining plan/ District Survey report as required in Sustainable Sand Mining Management Guidelines, 2016 issued by the MoEF by the State of Punjab with replenishment/ scientific study by an institute of national importance and prior recommendations of MoEF & CC.*

- *The State of Punjab may be asked to develop mechanism to stop the illegal extraction and transportation of riverbed material. The mechanism must include the environmental compensation for violators and vehicles used for the purpose to be seized along with prosecution of owners of such vehicles. Including cancellation of registration certificate of such vehicles.*

- *The District Administration may consider establishing the check post barrier at suitable site to check vehicles carrying the riverbed material and to maintain strict vigil over overloading vehicles involved.*

- *The Detailed Survey of river eco system comprising of identification of river stretches affected by unscientific mining should be carried out for preservation and exclusion of stretches from any type of extraction process or mining activity. In addition the auction of identified stretches may not*

be considered without approved annual replenishment report.

- *The restoration plan of river ecosystem in mine lease area should be enforced for minimizing the impacts of unscientific mining and to improve the riparian habitat. The State of Punjab can be asked to execute the restoration plan within time bound manner.*

- *The demarcation of auctioned mine lease area should be done urgently with pillars/fencing along with geo-referencing to protect the river ecosystem and to avoid bed degradation.*

- *The raw material to be imported, processed, dispatched and balance stock shall be regulated strictly as per the policy guidelines for registration and working of stone crushers in the State of Punjab issued by the Department of Industries and Commerce vide notification dated 19.03.2015.*

- *As regards to initiating action against the erring officials, the Heads of the concerned Departments should identify the erring officials who allowed to take place illegal mining and initiate action against these officials, after conducting detailed investigations.*

The same physical conditions have been noticed during the recent visit on 20.2.2019 at the mining sites located in the revenue estate of village Baihara and Swarha, as such, the suggestions may be considered by the court alongwith the followings:

- *The District Survey Report for the mining site in the area in order to identify depositions / aggradations stretches of the riverbed material should be prepared.*
- *Declaration of safety zones around infrastructures like National Highway, Bridge, Railway line etc. must be ensured for protection as per provisions of the Punjab Minor Minerals Rules, 2013.*
- *Replenishment report including time of replenishment for the mining area to be undertaken by the concerned Authorities for permitting mining.*
- *Strict vigilance to be implemented to ensure no illegal mining / transportation in the bed of river.*

As regards to facts noted regarding mining beneath the bridge on Sri Anandpur Sahib-Garshankar road, besides above, it is suggested as under:

(i) The Deptt. of Mining is required to ensure the compliance of stipulations of para 4 of Form 'L' appended to the Punjab Mining Minerals Rules, 2013 as regards to no mining area within a distance of 500m upstream /downstream of any high level bridge and 250m upstream / downstream of other bridges.

(ii) The Mining department jointly with Deptt. of Irrigation is required to rejuvenate the area near and beneath the above mentioned bridge so as to ensure safety of the same and these departments are required to take necessary safeguards for further safety of the said bridge."

35. In view of above, directions are called for to the State of Punjab to deal with the issue of sand mining.

Sand mining in the State of Uttar Pradesh and Haryana

36. O.A. No. 44/2016, Mushtakeem v. MoEF&CC & Ors., involved illegal mining in Uttar Pradesh and Haryana on riverbeds of Yamuna. The matter was disposed of vide order dated 05.09.2018, following directions dated 04.09.2018 in Sudershan Das (supra). In terms of order dated 05.09.2018, no report has been received from the State of Uttar Pradesh. Thus further directions are necessary. A report has been received from Additional Chief Secretary, Haryana vide email dated 05.04.2019 to the effect that the State of Haryana was following the guidelines and will implement revised Sustainable Sand Mining Guidelines issued by the Ministry of Environment, Forest and Climate Change (MoEF&CC) in terms of the order dated 04.09.2018, in *O.A No. 173/2018 (Earlier O.A. No. 89/2017 (EZ) (I.A. No. 76/2019), Sudarsan Das Vs. State of West Bengal & Ors.*

37. In view of the above, further directions are called for to the State of Uttar Pradesh and Haryana to deal with the issue of sand mining.

Sand Mining in the State of Madhya Pradesh

38. Though no case of the State of Madhya Pradesh is listed today, we have taken note of the problem sand mining in the State in O.A. No. 456/2018 Nityanand Mishra v. State of M.P. & Ors., which is pending before this Tribunal and sought report from Committee vide order dated 31.07.2018. Accordingly, a report is submitted & the same is on record of the said case. Extract from the report is as follows:

"Sand mining is directly affecting basking and nesting

habitats of species in SGS. Mining of sand from the riverbed and river banks will negatively alter the river morphology, will increase sedimentation and turbidity and also disrupt the lateral connectivity within the river. Studies have already shown condition of Son River to be at a critical level with severely compromised river flows. Sand mining will only result in compounding what is an already sub-optimal riverine habitat. Any further degradation of this habitat will potentially make Son River uninhabitable for some of the most threatened fauna in the country. The data from offence registers of SGS as depicted in table 1 does indicate that there has been an increase in the number of cases with respect to the illegal sand mining in the sanctuary area. The information is about cases that were caught and processed by the Forest Department. ***There are many cases that go unnoticed due to inadequate patrolling as everyone informs that one truck generates illegal revenue of Rs. 12,000 and per night 1000 trucks generate illegal revenue of Rs. 1,20,00,000."***

39. In view of above, further directions are necessary for the State of Madhya Pradesh to deal with the issue of sand mining.

Sand Mining in the State of Andhra Pradesh

40. We may also note that in the case of *Anumolu Gandhi V. State of Andhra Pradesh in Original Application No. 935/2018,* illegal sand mining causing damage to Krishna river in Vijayawada, Godavari river and their tributaries in the State of Andhra Pradesh and absence of remedial steps was considered. The Tribunal vide order dated 04.04.2019 directed the Chief Secretary of the State of Andhra Pradesh to forthwith prohibit all unregulated sand mining without following the procedure prescribed under the law in the judgment of the Hon'ble Supreme Court in Deepak Kumar v. State of Haryana. The Tribunal further directed Chief Secretary of the State to evolve a mechanism to assess and recover the cost of sand mining already incurred in the last three years and initiate

steps to recover compensation to meet the cost of restoration of environment. The Tribunal constituted a Committee comprising CPCB, MoEF&CC, National Institute of Mines, Dhanbad, IIT Roorkee and Madras School of Economics to undertake environment damage assessment within three months and furnish a report to this Tribunal by e-mail at ngt.filing@gmail.com.

41. In this light, further directions are called for to the State of Rajasthan and Andhra Pradesh to deal with the issue of sand mining.

Sand Mining in the State of Rajasthan and Himachal Pradesh

42. The problem of illegal sand mining contrary to the directions of the Hon'ble Supreme Court in Deepak Kumar vs. State of Haryana (supra) in the States of Rajasthan, Himachal Pradesh, Karnataka, Madhya Pradesh and Punjab was also considered by this Tribunal in Himmat Singh Shekhawat vs. State of Rajasthan & Ors. (O.A. No. 797/2018) vide order dated 15.03.2019. the Tribunal founds the reports submitted by the States to be unsatisfactory and accordingly directed furnishing of fresh action taken reports. The matter was directed to be listed on 11.07.2019. The said matter may now be listed on 23.07.2019 along with the present batch of matters.

Sand Mining in Bihar

43. This Tribunal vide its order dated 24.08.2018 in Amarshakti v. State of Bihar & Ors. O.A. No. 596/2018 dealt with the issue of illegal sand mining during monsoon in the rivers Son and Ganga at Koelbar and Patna in Bihar. The Tribunal directed the

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Secretary, mines and minerals, Bihar to constitute a team comprising of officers of Mines and Minerals Department and District Magistrate and S.P. Patna to look into the allegations and report compliance to the Tribunal. Report dated 12.10.2018 was received from the Government of Bihar stated that 122 prosecutions were initiated and 297 persons arrested. 32 boats and 287 trucks were seized in District Saran. Action was also taken in District Bhojpur at Ara and District Vaishali at Hajipur. The Tribunal directed the Secretary, Government of Bihar to monitor the matter from time to time and continue to enforce the law.

Sand Mining in Uttarakhand

44. The issue of illegal sand mining in the State of Uttarakhand was also considered by this Tribunal vide its order dated 27.11.2018 in Anand Gopal Singh Bist v. State of Uttarakhand O.A. No. 751/2018 wherein, this Tribunal directed the District Magistrate Nanital and Principal Chief Conservator of Forest, Dehradun to jointly look into the matter. The Tribunal vide its order dated 14.02.2019 directed that the monitoring may continue and the Collector may ensure that Revenue Department performs its duty in accordance with law.

Sand Mining in other States

45. Illegal sand mining in violation of Sustainable Sand Mining Guidelines, 2016 has also been reported widely in the States of

Jammu and Kashmir[17], Goa[18], Kerala[19], Telangana[20] and Tamil and Nadu[21].

46. General directions may be necessary even for Bihar, Uttarakhand, Jammu and Kashmir, Goa, Kerala, Telangana and Tamil Nadu which may also apply to any other States facing the issue of illegal sand mining.

Issues

47. Main issues are:

(a) Revision of Sustainable Sand Mining Guidelines, 2016 by the MoEF&CC in the light of directions of this Tribunal vide order dated 04.09.2018 in Sudarsan Das (supra).

(b) Compliance of Sustainable Sand Mining Guidelines, 2016 as may be revised by MoEF&CC as above.

(c) Effective monitoring mechanism for preventive and remedial measures as directed in orders of this Tribunal, including surveillance system and recovery of compensation.

(d) Directions in individual cases listed today.

(e) Scale of compensation

48. We may now deal with the issues involved and directions required.

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[17] https://greaterkashmir.com/article/news.aspx?story_id=309365&catid=2&mid=53&AspxAutoDetectCookieSupport=1

18 https://timesofindia.indiatimes.com/city/goa/govt-is-ignoring-illegal-sand-mining/articleshow/67908428.cms

[19] Order dated 29.03.2019 in News Item Published In "Indian Express" Authored by Vishnu Verma in O.A. No. 76/2019

[20] https://sandrp.in/2019/02/26/sand-mining-2018-telangana-and-andhra-pradesh/

[21] https://en.wikipedia.org/wiki/Sand_mining_in_Tamil_Nadu

Re (i): Revision of Sustainable Sand Mining Guidelines, 2016 by the MoEF&CC in the light of directions of this Tribunal vide order dated 04.09.2018 in Sudarsan Das (supra).

49. As noted in para 12 to 15 above, need for revision of Sustainable Sand Mining Guidelines, 2016 has been discussed by the Tribunal in order dated 04.09.2018. Further discussion is unnecessary. The 2016 Guidelines need revision in the light of report of High Powered Committee in September 2016, failure of Monitoring mechanism followed by State Boards, SEIIAs, DEIAAs and MSS system developed by Ministry of Mines & IBN with the assistance of BISAG and MAITY and other observations quoted in paras 12 to 15 above. Since no report has been received from MoEF&CC as per report dated 04.09.2018, the MoEF&CC may now take necessary steps in the matter in terms of order dated 04.09.2018 in *Sudersan Das* (supra) latest by June 30, 2019 and file compliance report by 15.07.2019.

Re (ii): Compliance of Sustainable Sand Mining Guidelines, 2016 as may be revised by MoEF&CC as above.

50. As noted earlier in paras 17, 23, 27, 31 and 35, States of West Bengal, Odisha, Gujarat, Karnataka, Maharashtra, Punjab, Haryana and Uttar Pradesh are required to follow SSMG, 2016 as may be revised by MoEF&CC and even other States where illegal sand mining is taking place. All such States may take steps in terms of orders dated 04.09.2018 in *Sudarsan Das v. State of West Bengal & ors*, 05.09.2018 in *Mushtakeem v. MoEF&CC & Ors.*, 13.09.2018 in *Satendra Pandey v. MoEF&CC* & Ors. and 16.01.2019 titled Compliance of Municipal Solid Waste

Management Rules, 2016. The Chief Secretaries may monitor and furnish reports as earlier directed on the subject of sand mining.

Re (iii): Effective monitoring mechanism for preventive and remedial measures as directed in orders of this Tribunal, including surveillance system and recovery of compensation.

51. We have found in the discussion above, particularly in paras 8 to 11, 20, 21, 23, 29, 32, 33, 36, 39, 41 and 43 with regard to factual position in various States that monitoring mechanism-preventive and remedial measures is not effective and illegal sand mining is continuing. The same needs to be reviewed in the light of above discussion. The States may review monitoring mechanism in terms of several directions of the Tribunal and guidelines of MoEF&CC. As regards monetory compensation, the same has to be not only equal to cost of mined material and penalty to evade royalty but also to meet cost of restoration and NPV of eco services fore gone forever. Seizure of vehicles or other equipment may be dealt with as per rules and directions in *Threat to life arising out of coal mining in South Garo Hills district* (supra).

Re (iv): Directions in Individual Cases Listed Today. For the discussion and observation hereinabove, case is made out for issuing directions following discussion on the subject.

52. In *Sudarsan Das (supra)* one of the directions was that the Chief Secretaries of West Bengal and Odisha will prepare a restoration plan in consultation with the Central Pollution Control Board (CPCB), Indian School of Mines, Dhanbad and the Respective State Pollution Control Boards (SPCBs). We are informed that Indian School of Mines, Dhanbad declined to comply with the

order. This may call for remedial action against defiance by the said institution. Order of this Tribunal is a decree of the Court and can be executed in the manner provided under Section 51 CPC by ordering civil imprisonment or adopting other norms. Violation of order of this Tribunal is also a criminal offence punishable by imprisonment and fine. The Head of the Department concerned is liable to be proceeded against. Thus, the Director Indian School of Mines, Dhanbad will have to be required to appear in person to explain why action be not taken for violation of order of this Tribunal. The State of West Bengal, Orissa, Punjab and Gujarat need to send further action taken reports by 30.06.2019.

53. The State of Uttar Pradesh has not complied with the order dated 05.09.2018. This must not be done by way of last opportunity till 30.06.2019, failing which coercive measures will be adopted. Responsibility for compliance will be of the Chief Secretary.

54. In O.A. No. 173/2018, in view of the fact that term of the oversight Committee headed by Justice Ramesh Kumar Merathia, former Judge, High Court of Jharkhand was six months which period is over, the said Committee may now conclude its proceedings and furnish its final report with findings and recommendations on or before April 30, 2019. Further directions in the matter may be considered on the next date.

Re (v): Scale of Compensation

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55. We have held that the scale of compensation proposed by the State of Gujarat does not fully comply with the 'Polluter Pays' principle which envisages that polluter is required to pay for complete restoration of the environment. This principle has been articulated further by the Hon'ble Supreme Court of India in *T.N. Godavarman Thirumulpad vs Union Of India & Ors, (2006) 1 SCC 1* in the context of forests. In this matter, the Hon'ble Supreme Court appointed a committee of experts and following directions were given:

i. To identify and define parameters (scientific, biometric and social) on the basis of which each of the categories of values of forest land should be estimated.

ii. To formulate a practical methodology applicable to different biogeographical zones of India for estimation of the values in monetary terms in respect of each of the above categories of forest values.

iii. To illustratively apply this methodology to obtain actual numerical values for different forest types for each biogeographical zone in the country.

iv. To determine on the basis of established principles of public finance, who should pay the costs of restoration and /or compensation with respect to each category of values of forests.

v. Which projects deserve to be exempted from payment of NPV.

56. Similar criteria may have to be taken into account for arriving at an approximate scale of compensation. The compensation is to

58. We sum up our directions as follows:

a) MoEF&CC may now take necessary steps in the matter in terms of order dated 04.09.2018 in *Sudersan Das* (supra) latest by June 30, 2019 and file compliance report by 15.07.2019, as already directed.

b) The States of West Bengal, Gujarat, Karnataka, Maharashtra, Punjab, Uttar Pradesh, Haryana, Madhya Pradesh, Andhra Pradesh, Bihar, Uttarakhand, Jammu and Kashmir, Goa, Kerala, Telangana and Tamil Nadu and Himachal Pradesh may take steps in terms of orders dated 04.09.2018 in *Sudarsan Das v. State of West Bengal & ors,* 05.09.2018 in, 13.9.2018 in *Mushtakeem v. MoEF&CC & Ors.* and 16.01.2019 in Compliance of Municipal Solid Waste Management Rules, 2016. The Chief Secretaries may monitor and furnish reports as earlier directed.

(c) The States of West Bengal, Gujarat, Karnataka, Maharashtra, Punjab, Uttar Pradesh, Haryana, Madhya Pradesh, Andhra Pradesh, Bihar, Uttarakhand, Jammu and Kashmir, Goa, Kerala, Telangana and Tamil Nadu and Himachal Pradesh may review monitoring mechanism in terms of directions of the Tribunal and guidelines of MoEF&CC.

(d) The Director Indian School of Mines, Dhanbad may appear in person on 26.07.2019 to explain why action be not taken for violation of order of this Tribunal.

(e) The State of West Bengal, Gujarat, Karnataka, Maharashtra, Punjab, Uttar Pradesh, Haryana, Madhya Pradesh, Andhra Pradesh, Bihar, Uttarakhand, Jammu and Kashmir, Goa,

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include not only the full value of the illegally mined material but also cost of restoration of environment as well as cost of ecological services foregone forever. It should be deterrent so as not to render such illegal activity profitable. In *Sudarsan Das Vs. State of West Bengal & Ors.* (Supra), it was held that full value of the material, the cost of restoration and the NPV should form part of the compensation to be recovered. There has also to be action against the polluters and the erring officers. The vehicles or any other equipment used for illegal mining are required to be confiscated and to be released only on payment of atleast 50% of the showroom value as laid down in *Original Application No.110(THC)/2012, Threat to life arising out of coal mining in South Garo Hills District v. State of Meghalaya& Ors.* This scale can then apply for all States, as far as possible.

57. We consider it necessary to constitute a Committee comprising representatives of the MoEF&CC, Central Pollution Control Board (CPCB), Indian Institute of Forest Management, Bhopal, Institute of Economic Growth Delhi and Madras School of Economics to prepare a scale of compensation, after including the above components which can then be adopted in whole of the country. The report may be furnished within three months to the Tribunal by email at ngt.filing@gmail.com. The nodal agency for compliance and coordination will be CPCB. The Committee may also take professional service of an expert/ institution in the matter if it so desires.

Conclusions

Kerala, Telangana and Tamil Nadu and Himachal Pradesh may send further action taken reports by 30.06.2019.

(f) The Committee in terms of para 59 above may furnish its report within three months to the Tribunal by email at ngt.filing@gmail.com

59. A copy of this order be sent to MoEF&CC, Central Pollution Control Board (CPCB), Indian Institute of Forest Management, Bhopal, Institute of Economic Growth, Delhi and Madras School of Economics, Chennai by email.

List the matter for further consideration on 26.07.2019.

Adarsh Kumar Goel, CP

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

April 05, 2019
Original Application No. 360/2015
With other connected matters
AS

Item Nos. 01 to 15 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 360/2015
With
Original Application No. 366/2015
(M.A. No. 02/2019 & M.A. No. 251/2019)
With
Original Application No. 368/2015
(M.A. No. 16/2019 & M.A. No. 170/2019 M.A. No. 213/2019)
With
Original Application No. 173/2018
(Earlier O.A. No. 89/2017 (EZ)
(I.A. No. 76/2019 & I.A. No. [illegible]/2019)
With
Original Application No. 874/2018
With
Original Application No. 44/2016
With
Original Application No. 517/2015
With
Original Application No. 550/2015
With
Original Application No. 530/2016
With
Original Application No. 272/2016
With
Original Application No. 481/2016
With
Original Application No. 540/2015
With
Original Application No. 90/2016
With
Execution Application No. [illegible]/2017
IN
O.A. No. 517/2015
With
Original Application No. 671/2017

National Green Tribunal Bar Association — Applicant(s)

Versus

Virender Singh (State of Gujarat) — Respondent(s)

WITH

National Green Tribunal Bar Association — Applicant(s)

Versus

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Dr.Sarvabhoum Bagali
(State of Karnataka) Respondent(s)

WITH

Sudarsan Das Applicant(s)

Versus

State of West Bengal & Ors. Respondent(s)

With

News item published in "The Tribune " Authored by Arun Sharma
Titled "Mounds of sand on Sutlej banks, mining mafia digs in"

With

Mushtakeem Applicant(s)

Versus

MoEF & CC & Ors. Respondent(s)

With

Sandeep Kumar Applicant(s)

Versus

Ministry of Environment, Forests and
Climate Change & Ors. Respondent(s)

With

Virender Kumar Applicant(s)

Versus

Ministry of Environment, Forests and
Climate Change & Ors. Respondent(s)

With

Sandeep Kumar Applicant(s)

Versus

Ministry of Environment, Forests and
Climate Change & Ors. Respondent(s)

With
M/s Ganga Yamuna Mining Co. Applicant(s)

Versus

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State of Haryana & Ors. Respondent(s)

With

Joginder Singh Applicant(s)

Versus

Ministry of Environment & Forest & Ors. Respondent(s)

With

Ved Pal Singh Applicant(s)

Versus

Ministry of Environment & Forest & Ors. Respondent(s)

With

Surender Mohan Uppal Applicant(s)

Versus

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

With

Sandeep Kumar Applicant(s)

Versus

Ministry of Environment, Forest and Climate Change & Ors. Respondent(s)

With

Himmat Singh Shekhawat Applicant(s)

Versus

State of Rajasthan & Ors. Respondent(s)

Date of hearing: 08.01.2020

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

For Applicant(s): Mr. Raj Panjwani, Senior Advocate and Mr. Rahul Choudhary, Advocate
Mr. Aageny Sail, Advocate

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For Respondent(s): Mr. Vikas Mahajan, Additional Advocate General For State of HP
Mr. Attin Shankar Rastogi, Advocate, Mr. Ravi Prasad, Additional Secretary and Mr. Sundeep Kumar, for MoEF&CC
Ms. Vipra Bhardwaj, Advocate for CPCB
Ms. Rukmani Bobde, Advocate for State of MP
Ms. Madhumita Bhattacharjee, Advocate for State of West Bengal
Mr. Darpan KM, Advocate for State of Karnataka
Mr. Ankit Verma, Advocate for State of UP
Mr. Rahul Khurana, Advocate for State of Haryana
Mr. Rakesh Kumar, Additional Director Mines, Govt. of Rajasthan
Mr. Shlok Chandra, Advocate for MoEF&CC

ORDER

1. Common question for consideration in this group of matters is the steps required to be taken for environment protection from unregulated sand mining in the States of Gujarat, Karnataka, Maharashtra, West Bengal, Odisha, Punjab, Haryana and Uttar Pradesh. The issue is common even with regard to States who are not party to these proceedings.

2. Vide order dated 04.09.2018 in *O.A. No. 173/2018*, the issue of illegal sand mining on the banks of river Swaran Rekha on Orissa – West Bengal Border was considered in the light of material on record and it was found that illegal sand mining was going on without requisite safeguards and in violation of Sustainable Sand Mining and Management Guidelines, 2016. Further, High Powered Committee constituted under the orders of this Tribunal headed by Secretary, MoEF&CC gave a report in September 2016 suggesting further safeguards. The said report was accepted by this Tribunal and it was directed that the said suggestions were required to be incorporated in the Notification dated 15.01.2016 by which Sustainable Sand Mining and Management Guidelines, 2016 were notified.

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Monitoring mechanism was also required to be straightened. Final directions to the MoEF&CC in the said order are quoted below for ready reference:

> *"25. In view of above discussion, we are of the view that since the subject of mining is also required to be regulated for protection of environment and it is to take care of this requirement, MoEF&CC has issued directions from time to time under Section 3 and 5 of the Environment (Protection) Act, 1986. The MoEF&CC needs to revise its directions keeping in mind the following:*
>
> *i. Mining Surveillance System discussed in para 23 above be finalized in consultation with ISRO Hyderabad.*
> *ii. Safeguards suggested in Sustainable Sand Mining Guidelines published by the MoEF&CC in the year 2016.*
> *iii. Suggestions in the High Power Committee Report.*
> *iv. Requirement of demarcation of boundaries being published in respect of different leases in public domain.*
> *v. Need to issue SOP laying down mechanism to evaluate loss to the ecology and to recover the cost of restoration of such damage from the legal or illegal miners. Such evaluation must include cost of mining material as well as cost of ecological restoration and net present value of future eco system services forgone.*
> *vi. Need to set up a dedicated institutional mechanism for effective monitoring of sand and gravel mining which may also take care of mining done without any Environmental Clearance as well as mining done in violation of Environmental Clearance conditions.*
> *vii. The Mining Department may make a provision for keeping apart atleast 25% of the value of mined material for restoration of the area affected by the mining and also for compensating the inhabitants affected by the mining.*
> *viii. One of the conditions of every lease of mine or minerals would be that there will be independent environmental audit atleast once in a year by reputed third party entity and report of such audit be placed in public domain.*
> *ix. In the course of such environmental audit, a three member committee of the local inhabitants will also be associated. Composition of three members committee may preferably include ex-servicemen, former teacher and former civil servant. The Committee will be nominated by the District Magistrate.*
>
> *26. Such steps may be worked out within two months and circulated to all States. The Mechanism may provide for a report of implementation from the concerned States every*

quarter. The matter may be reviewed after every six months by the MoEF&CC.

27. The direction with regard to setting up of dedicated institutional mechanism for monitoring of conditions of Environmental Clearance as granted under EIA Notification, 2006 in respect of sand and gravel mining as directed in para (vi) may be an Over-Encompassing Body to monitor the conditions of Environmental Clearance with respect to all development projects.

28. A copy of this order be sent to MoEF&CC by e-mail. Report of the steps taken by MOEF&CC may be furnished to this Tribunal by email at filing.ngt@gmail.com on or before 31.12.2018."

3. Vide order dated 13.09.2018 in *O.A. No. 186/2016, Satyender Pandey Vs. MoEF*, the Tribunal found that Notifications dated 15.01.2016, 20.01.2016 and 01.07.2016 to the extent procedure of environment impact assessment was diluted in violation of judgment of the Hon'ble Supreme Court in *Deepak Kumar Vs. State of Haryana & Ors.: (2012) 4 SCC 629* and also of this Tribunal in O.A. No. 123/2014 dated 13.01.2015 to be unsustainable. This same were also violative of Sustainable Sand Mining and Management Guidelines, 2016 to the extent of dispensing with the public hearing and the same was required to be revised. The direction of this of this Tribunal is quoted below for ready reference:

"25. The MoEF&CC shall, therefore, take appropriate steps to revise the procedure laid down in the impugned Notification dated 15th January, 2016 in terms of the above directions and observations so that it is conformity with the letter and spirit of the directions passed by the Hon'ble Supreme Court in Deepak Kumar (supra)."

The above directions remains to be implemented and on 16.12.2019 in E.A. No. 55/2018, further direction has been issued to ensure compliance failing which coercive measures may be initiated. Matter is listed on 31.01.2020.

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4. The matter was comprehensively considered again on 05.04.2019 with reference to the following specific issues and directions were issued:-

> *"(a) Revision of Sustainable Sand Mining Guidelines, 2016 by the MoEF&CC in the light of directions of this Tribunal vide order dated 04.09.2018 in Sudarsan Das (supra).*
> *(b) Compliance of Sustainable Sand Mining Guidelines, 2016 as may be revised by MoEF&CC as above.*
> *(c) Effective monitoring mechanism for preventive and remedial measures as directed in orders of this Tribunal, including surveillance system and recovery of compensation.*
> *(d) Directions in individual cases listed today.*
> *(e) Scale of compensation."*

5. The matter was thereafter considered on 26.03.2019. With regard to non-compliance of order dated 04.09.2018 in *O.A. No. 173/2018*, it was observed:-

> *"None appeared for the MoEF&CC during hearing but while dictating the order, learned counsel for MoEF&CC suddenly appeared and only casual explanation furnished is that MoEF&CC has approached the Hon'ble Supreme Court. While seeking of reasonable time for compliance on the ground that the matter was pending in higher Court may stand on different footing, there is no justification for unreasonable delay for more than 9 months on the part of the MoEF&CC. Learned counsel for the applicant submitted that in absence of any stay, order of this Tribunal may be enforced by coercive measures. We find merit in the submission but before doing so, we give an opportunity for compliance of the directions and direct Additional Secretary concerned of MoEF&CC to remain present in person with the compliance report and an explanation as to why action be not taken against the person responsible for the default."*

6. The Additional Secretary, MoEF&CC is present in person and his only explanation is that the work involved is intricate and time consuming. We find absolutely no merit in the explanation. It is difficult to understand as to why a competent

team of officers in the Government cannot complete the exercise directed by the Tribunal to safeguard the interest of environment based mainly on High Powered Committee of the Ministry itself, if there is a will to work. The order of this Tribunal, in substance, merely requires incorporation of further safeguards based on High Powered Committee report and observations of this Tribunal into the Sustainable Sand Mining and Management Guidelines, 2016 The attempt appears to be to avoid carrying out the order of this Tribunal for reasons difficult to fathom. Such attitude does not augur well for effective rule of law.

7. As already noted, order dated 13.09.2018 in *O.A. No. 186/2016, Satyendra Pandey, supra* remains uncomplied by the MoEF&CC even though a period of more than one year has passed causing serious prejudice to the environment in continued violation of directions of the Hon'ble Supreme Court and this Tribunal. This is resulted in uncalled for confusion in the mind of statutory authorities dealing with the subject on the ground resulting in illegal mining and avoidable damage to the environment which needs to be urgently safeguarded. MoEF&CC as a responsible body should have taken necessary steps which are not at all difficult to restore effective impact assessment and safeguards in terms of observations of this Tribunal. This does not involve any long or complicated procedure. We do not see any difficulty in officers of MoEF&CC in understanding the issue or executing the orders of this Tribunal, if there is will to do so. We hope that the said order will now be positively complied before the next date, failing

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which this Tribunal will have no other option except for taking coercive action against the erring officers of the MoEF&CC. As already noted sufficient opportunity has already been given in the last more than one year and there has been total failure so far.

8. Every order of this Tribunal, subject to further order of a Constitutional Court, is a binding decree. Rule of law requires its strict compliance. Any violation thereof is a criminal offence under the National Green Tribunal Act, 2010. In the present case, either there is no intention to comply or no competence which is wholly undesirable situation. Only course left with this Tribunal in the circumstances is coercive measures as per law. We do hope that the same will now be positively complied with before the next dated. The Additional Secretary may remain present on the next date.

9. Other issue is the report of CPCB on the subject of fixing the amount of environmental compensation. Though a report has been furnished but it has deficiencies which have been pointed out during the hearing. The same may be rectified positively before the next date. The reports of the States about compliance will be considered on the next date.

List again on 31.01.2020.

Adarsh Kumar Goel, CP

S.P Wangdi, JM

Dr. Nagin Nanda, EM

Siddhanta Das, EM

January 08, 2020
O.A. No. 360/2015 and other connected matters
A

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No. CPCB/IPC-II/NGT-OA(360/2015)/2021/2027-2061 11 June, 2021

To,

The Environment Secretary,
(As per list)

Sub.: Direction under Section 5 of The Environment (Protection) Act, 1986 regarding development of mechanism for assessment and recovery of compensation as per Hon'ble NGT order dated-26.02.2021 in O.A. No. 360/2015-reg.

WHEREAS, Hon'ble National Green Tribunal (NGT) by order dated-26.02.2021 (Para 10 to 12 & 25) in O.A. No. 360 of 2015 (and other clubbed applications) has accepted the report of an Expert Committee constituted by NGT order regarding Scale of Environmental Compensation to deal with the cases of illegal sand mining, that was submitted by CPCB to NGT on 30.01.2020, and which was re-iterated in the report submitted by CPCB to NGT on dated-12.10.2020 (available at NGT website at the link*https://greentribunal.gov.in/news-update?title=360+of+2015*);

WHEREAS, Hon'ble NGT by the above mentioned order dated-26.02.2021 (Para 25) has directed that the scale of compensation calculated with reference to Approach II of the Expert Committee report dated-30.01.2020 be adopted by all the States/UTs and that the recovered compensation may be kept in a separate account and utilized for restoration of environment by preparing an appropriate action plan under the directions of the Environment Secretary with the assistance of such individual/ institutions as may be considered necessary;

WHEREAS, by the above mentioned order dated-26.02.2021 (Para 25), Hon'ble NGT has further directed CPCB to issue an appropriate statutory direction to Environment Secretaries of all the States / UTs for the facility of monitoring and compliance of above NGT direction;

AND WHEREAS, Central Government has delegated the power to issue directions under Section 5 of the Environment (Protection) Act, 1986 to CPCB also,

NOW THEREFORE, in compliance of above mentioned direction of NGT and in exercise of powers under Section 5 of the Environment (Protection) Act, 1986, you are hereby directed to evolve an appropriate mechanism for assessment and recovery of compensation in all Districts of the State and for utilization of the recovered compensation for restoration of environment by preparing an appropriate action plan, as per order dated-26.02.2021 of Hon'ble National Green Tribunal (Principal Bench) in OA No. 360/2015.

The action taken report in above reference may be provided to CPCB within one month.

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत...NSian/...
दिनांक 14/06/2021

(Naresh Pal Gangwar)
Chairman
O/C

Copy for information to:

1. **The Joint Secretary,** : for information, please
   IA-II Division,
   Ministry of Environment, Forest & Climate Change,
   Indira Paryavaran Bhawan,
   Jor Bagh Road, New Delhi – 110003

2. **The Member Secretary,** : for information, please
   SPCBs/PCCs
   (As per list)

(Prashant Gargava)
Member Secretary

S.No.	States/UTs	Address	
		Environment Secretary - Office	Member Secretary - Office
1.	Andaman & Nicobar Islands	The Environment Secretary, Department of Environment & Forest, O/o Secretary (G/A), Andaman & Nicobar Administration, Secretariat, Port Blair, ANDAMAN & NICOBAR	The Member Secretary, Andaman & Nicobar Islands Pollution Control Committee, Department of Science & Technology, Dollygunj Van Sadan, P.O. Haddo Port Blair – 744102 ANDAMAN & NICOBAR
2.	Andhra Pradesh	The Environment Secretary, Department of Environment, Forest, Science & technology, 4th Block, 1st Floor, Room No. 268, A.P. Secretariat Office, Velagapudi, ANDHRA PRADESH	The Member Secretary, Andhra Pradesh Pollution Control Board D. No. 33-26-14 D/2, Near Sunrise Hospital, Pushpa Hotel Centre, Chalamalavari Street, Kasturibaipet, Vijayawada – 520 010 ANDHRA PRADESH
3.	Arunachal Pradesh	The Environment Secretary, Department of Environment & Forest, Civil Secretariat, Itanagar – 791 111 ARUNACHAL PRADESH	The Member Secretary, Arunachal Pradesh State Pollution Control Board Govt. of Arunachal Pradesh, Department of Environment & Forests, Paryavaran Bhawan, Yupia Road, Papu Nalah, Naharlagun - 791 110 ARUNACHAL PRADESH
4.	Assam	The Environment Secretary, Department of Environment & Forest, Assam Secretariat, Block 'A', 2nd Floor Dispur, Guwahati – 781 006 ASSAM	The Member Secretary, Pollution Control Board- Assam, Bamunimaidam, Guwahati – 781 021 ASSAM
5.	Bihar	The Environment Secretary, Department of Environment, Forest & Climate Change, Van Vibhag Road, Nehru Nagar, Patliputra Colony, Patna - 800 013 BIHAR	The Member Secretary, Bihar State Pollution Control Board, Parivesh Bhawan, Plot No. NS-B/2, Paliputra Industrial Area, Patliputra, Patna – 800 023 BIHAR
6.	Chandigarh	The Environment Secretary, Department of Environment & Climate Change, MGSIPA Complex, Sector 26, CHANDIGARH – 160 019	The Member Secretary, Chandigarh Pollution Control Committee Paryavaran Bhawan, Ground Floor, Sector-19 B, Madhya Marg, CHANDIGARH – 160 019
7.	Chhattisgarh	The Environment Secretary, Department of Environment, Mahanadi Bhawan, Mantralaya, Mahanadi Bhawan, Atal Nagar, Nava Raipur- 492 001 CHHATTISGARH	The Member Secretary, Chhattisgarh State Environment Conservation Board, Paryavas Bhawan, North Block Sector-19, Atal Nagar, Raipur - 492 002, CHHATTISGARH

8.	Dadra & Nagar Haveli, Daman & Diu	The Environment Secretary, Department of Environment & Forest Secretariat, Daman, Fort Area, Post Office Moti Daman – 396 220 DAMAN & DIU	The Member Secretary, Pollution Control Committee, UTs of Daman, Diu and Dadra & Nagar Haveli Fort Area, Court Compound, Moti Daman - 396 220 DAMAN & DIU
09.	Delhi	The Environment Secretary, Department of Environment, 6th Level, Delhi Secretariat, IP Estate, DELHI – 110 002	The Member Secretary, Delhi Pollution Control Committee, Government of N.C.T. Delhi 4th Floor, ISBT Building, Kashmere Gate, DELHI-110 006
10.	Goa	The Environment Secretary, Department of Environment and Climate Change , 4th Floor Dempo Towers, Patto - Panaji - 403 511. GOA	The Member Secretary, Goa State Pollution Control Board Nr. Pilerne Industrial Estate, Opp. Saligao Seminary, Saligao - Bardez Goa – 403 511 GOA
11.	Gujarat	The Environment Secretary, Forests & Environment Department, Block 14, 8 th floor, Sachivalaya, Gandhinagar - 382 010 GUJARAT	The Member Secretary, Gujarat Pollution Control Board Paryavaran Bhavan, Sector 10-A, Gandhi Nagar 382 010, GUJARAT
12.	Haryana	The Environment Secretary, Department of Environment & Climate Change, Seventh Floor, Main Secretariat, Sector 16, CHANDIGARH – 160 017	The Member Secretary, Haryana State Pollution Control Board C-11, Sector-6, Panchkula- 134109, HARYANA
13.	Himachal Pradesh	The Environment Secretary, Department of Environment, Science & Technology, Paryavaran Bhawan, Near US Club, Shimla – 171 001 HIMACHAL PRADESH	The Member Secretary, Himachal Pradesh State Pollution Control Board Him Parivesh, Phase-III, New Shimla – 171 009 HIMACHAL PRADESH
14.	Jammu & Kashmir	The Environment Secretary, Department of Forest, Environment & Ecology, 4th Floor, Mini Block Secretariat, Jammu, JAMMU & KASHMIR	The Member Secretary, J&K Pollution Control Board, Parivesh Bhawan, Shiekh-ul- Campus, Behind Govt. Silk Factory, Raj Bagh, Srinagar – 190 008 JAMMU & KASHMIR
15.	Jharkhand	The Environment Secretary, Department of Environment, Forest & Climate Change, Nepal House, Doranda, Ranchi – 834 002 JHARKHAND	The Member Secretary, Jharkhand State Pollution Control Board T.A. Bldg., HEC, P. O. Dhurwa, Ranchi - 834 004 JHARKHAND
16.	Karnataka	The Environment Secretary, Forest, Ecology and Environment Department,	The Member Secretary, Karnataka State Pollution Control Board “Parisara Bhavan”, #49,4th & 5th Floor, Church Street, Bangalore 560 001

		Secretariat, 4th Floor, M. S. Building, Bangalore – 560 001 KARNATAKA	KARANATAKA
17.	Kerala	The Environment Secretary, Department of Environment and Climate Change, 4th Floor, K.S.R.T.C Bus Terminal Thampanoor, Thiruvananthapuram – 695 001 KERALA	The Member Secretary, Kerala State Pollution Control Board Head Office, Pattom. P. O Thiruvananthapuram - 695 004 KERALA
18.	Lakshadweep	The Environment Secretary, Department of Environment and Forest, 1st Floor, Paryavaran Bhavan, Kavaratti, LAKSHADWEEP	The Member Secretary, Lakshadweep Pollution Control Committee, Department of Science, Technology & Environment, Kavarati – 682 555, LAKSHADWEEP
19.	Madhya Pradesh	The Environment Secretary, Housing and Environment Department, Paryavaran Parisar, E- 5, Arera Colony, Bhopal – 462 016 MADHYA PRADESH	The Member Secretary, Madhya Pradesh Pollution Control Board Paryavaran Parisar, E-5, Arera Colony Bhopal - 462 016 MADHYA PRADESH
20.	Maharashtra	The Environment Secretary, Environment & Climate Change Department, New Administrative Building, Madam Kama Road, Hutatma Chowak, Mumbai – 400 032 MAHARASHTRA	The Member Secretary, Maharashtra Pollution Control Board, Kalpataru Points, 3rd & 4th Floor, Sion Matunga Scheme Road No.6 Opp. Cine Planet, Sion Circle, Sion (E), Mumbai-400 022 MAHARASHTRA
21.	Manipur	The Environment Secretary, Directorate of Environment and Climate Change, Mini Secretariat Rd, opposite Superitendant of Police, Porompat – 795 010 MANIPUR	The Member Secretary, Manipur Pollution Control Board Lamphalpat, Imphal – 795 004, MANIPUR
22.	Meghalaya	The Environment Secretary, Forest and Environment Department, Secretariat Building, North Range, Forest Colony, Khasi Hills, Shillong – 793 001 MEGHALAYA	The Member Secretary, Meghalaya State Pollution Control Board, “ARDEN”, Lumpyngngad, Shillong – 793 014, MEGHALAYA
23.	Mizoram	The Environment Secretary, Department of Environment, Forest & Climate Change, Tuikhuahtlang, Aizawl, MIZORAM	The Member Secretary, Mizoram Pollution Control Board New Secretariat Complex, Khatla, Aizawl – 796 001, MIZORAM
24.	Nagaland	The Environment Secretary, Department of Environment, Forest & Climate Change,	The Member Secretary, Nagaland Pollution Control Board Signal Point, Dimapur,

		New Secretariat, Kohima, NAGALAND	NAGALAND
25.	Odisha	The Environment Secretary, Forest & Environment Department, Kharavel Bhavan, Bhubaneswar, ODISHA	The Member Secretary, Odisha State Pollution Control Board Paribesh Bhawan, A-118, Nilakantha Nagar Unit VIII Bhubaneswar – 751 012, ODISHA
26.	Puducherry	The Environment Secretary, Department of Science, Technology and Environment, III Floor, PHB Building Anna Nagar, PUDUCHERRY - 605 005	The Member Secretary, Puducherry Pollution Control Committee 'B' Block, Ground Floor, Chief Secretariat, PUDUCHERRY-605 001
27.	Punjab	The Environment Secretary, Department of Science, Technology and Environment, 6th Floor, Punjab Civil Secretariat-2, Sector 9, CHANDIGARH – 160 009	The Member Secretary, Punjab Pollution Control Board Vatavaran Bhawan, Nabha Road Patiala 147 001 PUNJAB
28.	Rajasthan	The Environment Secretary, Department of Environment, 4, Jhalana Institutional Area, Jhalana Doongri, Jaipur – 302 004 RAJASTHAN	The Member Secretary, Rajasthan Pollution Control Board, A-4, Institutional Area, Jalana Dungri, Jaipur 302 004, RAJASTHAN
29.	Sikkim	The Environment Secretary, Forest and Environment Department, Government of Sikkim Forest Secretariat Deorali - 737102 Gangtok, East Sikkim, SIKKIM	The Member Secretary, Sikkim State Pollution Control Board State Land Use & Environment Cell Govt. of Sikkim, Deorali Gangtok – 737 102 SIKKIM
30.	Tamil Nadu	The Environment Secretary, Department of Environment, No. 1, Jeenis Road, Panagal Building, Ground Floor, Saidapet, Chennai – 600 015 TAMIL NADU	The Member Secretary, Tamil Nadu Pollution Control Board 76, Anna Salai, Guindy Industrial Estate, Race View Colony, Guindy, Chennai – 600 032 TAMIL NADU
31.	Telangana	The Environment Secretary, Department of Environment, Forests, Science and Technology, Telangana Secretariat 5th Floor, Burgula Rama Krishna Rao Bhavan, NH 44, Hill Fort, Adarsh Nagar, Hyderabad – 500 063 TELANGANA	The Member Secretary, Telangana State Pollution Control Board Paryavaran Bhawan, A-III, Industrial Estate, Sanathnagar, Hyderabad – 500 018 TELANGANA
32.	Tripura	The Environment Secretary, Department of Science, Technology & Environment,	The Member Secretary, Tripura State Pollution Control Board Parivesh Bhawan, Pandit Nehru Complex

		Vigyan Prajukti O Paribesh Bhawan, P.N. Complex, Gorkhabasti, Agartala – 799 006, West Tripura TRIPURA	P.O. Kunjaban, Gorkhabasti, Agartala – 799 006 TRIPURA
33.	Uttar Pradesh	The Environment Secretary, Environment, Forest and Climate Change Department, Bapu Bhawan Secretariat, Vidhan Sabha, Lucknow – 226 001 UTTAR PRADESH	The Member Secretary, Uttar Pradesh Pollution Control Board IIIrd Floor PICUP Bhavan Vibhuthi Khand, Gomti Nagar, Lucknow – 226 020 UTTAR PRADESH
34.	Uttarakhand	The Environment Secretary, Department of Environment & Forest, 4, Subhash Road, Secretariat, 4th floor, New Building, Dehradun – 248 001 UTTARAKHAND	The Member Secretary, Uttarakhand Environment Protection & Pollution Control Board 29/20, Nemi Road, Dalanwala, Dehradun – 268 001 UTTARAKHAND
35.	West Bengal	The Environment Secretary, Department of Environment, 5th Floor, Pranisampad Bhawan, Block LB-II, Salt Lake, Sector III, Bidhannagar, Kolkata – 700 106 WEST BENGAL	The Member Secretary, West Bengal Pollution Control Board Paribesh Bhavan, 10-A, Block LA, Sector III, Salt Lake City, Kolkata-700 091 WEST BENGAL