Item No. 02 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Hybrid Mode)

Original Application No. 51/2023

In re : News item published in The Tribune dated 16.01.2023 titled **"Joshimath disaster a warning for Mussoorie"**

Date of hearing: 31.01.2023

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE PROF. A. SENTHIL VEL, EXPERT MEMBER
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER

Respondent(s): Mr. K.K. Misra, ADM (Administration), Dehradun with Mr. Rahul Verma, AAG for the State of Uttarakhand
Mr. Mukesh Verma, Advocate for UKPCB

ORDER

1. Proceedings have been initiated in the present matter *suo motu* in view of captioned media report to the effect that recently Joshimath disaster has taken place which has led to displacement of number of inhabitants and damage to properties. There is reported sinking of earth surface due to displacement of sub surface material. This is on account of excessive unplanned constructions beyond carrying capacity. This is also warning for Mussoorie where unplanned constructions have taken place and are still taking place. Its carrying capacity was studied by the Lal Bahadur Shastri National Academy of Administration (LBSNAA) in 2001 which suggested that no further constructions are viable. Mussoorie Dehradun Development Authority (MDDA) has failed to go by the said study and take preventive and remedial measures. Proponents of

development such as Uttarakhand Hotels and Restaurant Association do not want any control on developmental activities. The area has enormous reservoirs of ice and snow. On account of unplanned human settlements, natural ecology and recharge of aquifers are affected. Over concretization leads to landslides. Proposed tunnel below Mussoorie is dangerous. So is proposed ropeway from Dehradun to Mussoorie. Ropeway and tunnel have damaged Joshimath. Traffic congestion adds to the burden on the mountain's road. Excessive building activities are beyond the capacity of Mussoorie.

2. Advance notice was issued by the Registry of this Tribunal on 17.01.2023 to State PCB, Secretaries, Environment and Urban Development, Uttarakhand and District Magistrate, Dehradun.

3. In response, Mr. Rahul Verma, AAG for the State of Uttarakhand and Mr. Mukesh Verma, Advocate for UKPCB have entered appearance along with Mr. K.K. Misra, ADM (Administration), Dehradun.

4. Shri Misra has submitted that an inspection has been undertaken on 12.01.2023 with regard to seepage and land subsidence of road adjoining buildings at Landour Bazar, Mussoorie. Some 4-5 storeyed buildings were directed to be vacated vide notice dated 21.03.2022 as they are in dilapidated condition. Sewage line is passing through the land which has subsided. There are no drains for drainage of the rain water in 50 mtr area of the buildings. Absence of proper drainage is the reason for subsidence of sewer line and road.

5. Statement of Shri Misra confirms to some extent that potential for disaster at Mussoorie is not ruled out unless safeguards are taken. Such potential exists in other hill cities of the country also, particularly in Himalayan region which has been noted in some orders of the Tribunal

earlier to which brief reference may be made. The Tribunal noted that hilly areas have their own eco-system with peculiar needs on account of fragility and their unique flora and fauna. Orders of the Tribunal cover inter alia Shimla, Kasauli, Manali, McLeod Ganj in Himachal Pradesh and Aravali hill in Rajasthan. Besides, there are orders covering generally all States in Himalayan region. In OA No. 121/2014, *Yogendra Mohan Sengupta v. UoI & Ors.*[1] the matter was dealt with in the context of Shimla. The Tribunal directed restriction on constructions having regard to locations, angle and extent in the light of expert studies. On same pattern, vide order dated 05.10.2018 in O.A No. 218/2017, *Society for Preservation of Kasauli and its Environs (SPOKE*), the Tribunal placed restrictions against further constructions in Kasauli Planning Area contrary to development plan and beyond two storeys plus attic (except government/public utility buildings). It was further directed that haphazard constructions be not regularized without adequate retro fittings. Construction should not be allowed beyond 45 degrees on hard subsurface and 35 degrees for soft rocky areas. BIS codes must be followed for earthquake safety and containing landslides. Ground coverage must be suitably limited. Adequate safeguards laid down and followed for cutting of hills. Density of construction be regulated. Proper management of rain water harvesting be ensured. Number of hotel rooms and vehicles be regulated. Vide order dated 09.03.2022 in O.A No. 178/2022, *In re: News item published in The Hindu dated 27.02.2022 titled "Tourism has brought economic prosperity to the Himalayan region, but the environmental cost has been catastrophic*", the issue of unregulated tourism at the cost of environment was taken up *suo motu* in the light of media report referring to Himalayan region covering Himachal Pradesh and Uttarakhand. The Tribunal constituted a joint Committee to undertake

[1] (2018) NGTR (1) PB 250

study which may be thereafter provided to the Chief Secretaries of twelve States in Himalayan region, apart from Secretaries, Environment and Tourism, GoI. Referring to earlier order dated 14.12.2020 in O.A No. 635/2017, *Ramesh Chand v. State of Himachal Pradesh & Ors.*, in the context of Kullu, Manali, Dharamshala and McLeod Ganj, whereby the Tribunal in the light of expert study directed prohibition and regulation of activities. Expert Committee constituted for the purpose gave its report dated 03.07.2019 on the issue of carrying capacity of the said areas to sustain constructions and other activities. Relevant extracts from the said order are reproduced below:-

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1. This matter has been taken up in light of the media report[2] to the effect that there is huge damage to the environment in eco sensitive Himalyan States of India on account of unregulated tourism activities, which needs to be regulated and checked to effectuate the Sustainable Development principle. ***While tourism generates huge income and also employment, it also results in generation of huge waste which is not scientifically handled, resulting in damage to the fragile ecosystem of Himalayas. Hillocks of garbage can be seen in the peripheries of the cities in the said region in absence of requisite facilities to remediate the waste in scientific manner.*** *This results in release of harmful toxic gases in the atmosphere, contamination of ground water due to formation of leachate and air pollution due to open burning of waste.*

2. The article is reproduced below:-

"Tourism in this region generates some eight million tonnes of waste every year.

To say Kangra is enchanting would be trite. The sunlit valley stretches beyond cumulus clouds, flanked by the jagged Dhauladhar range on one side and rolling green hills on the other. Birches, chir pines and deodars sway in the wind. As our small aircraft starts its descent, we get a glimpse of River Beas flowing below and the expansive Pong dam's reservoir. But all this beauty is deceptive — ***the Indian Himalayan Region is facing an as yet unrecognised existential crisis****: mountains of solid waste.*

Tourism in this region generates some eight million tonnes of waste every year. Added to this is the one million tonnes of annual waste generated by the urban population. By

[2] News Item dated 25.02.2022 published in The Hindu titled "Tourism has brought economic prosperity to the Himalayan region, but the environmental cost has been catastrophic": https://www.thehindu.com/sci-tech/energy-and-environment/tourism-has-brought-economic-prosperity-to-the-himalayan-region-but-the-environmental-cost-has-been-catastrophic/article65070497.ece

2025, it is projected that 240 million tourists will visit the hill States every year: it was 100 million in 2018. If the problem of solid waste disposal is not addressed scientifically, the fragile ecosystem of the Himalayas will pay a price the country can ill-afford. Given that all our major glacial rivers originate in these mountains, it's not difficult to envisage the catastrophic implications.

By the droves

The Himalayan region comprises 10 States, of which Uttarakhand and Himachal Pradesh bear the biggest brunt. Although the local population density is not very high, these States attract vast numbers of tourists — campers, trekkers, mountaineers, backpackers and pilgrims. And the waste they generate now impacts the ecology crucially. Unlike the plains, usable land is scarce in the Himalayan region, with habitations either on the ridges of mountains or in valleys such as Kangra and Kullu. While hillocks of garbage can rise in the peripheries of cities on the plains, hill towns have no such space. What is mindlessly thrown out remains on the slopes forever, turning into major polluters of land, water and air.

From Kangra airport, I drive up to the office of Waste Warriors, an NGO based in Dharamshala, which works in Uttarakhand and Himachal Pradesh to educate and train people in solid waste management. Etoshi Chattejee, 33, heads the team. She was a software professional before joining the NGO. Shashank Prabhu, 24, is an electrical engineer from Karnataka and Nidhi Sharma, 29, from Shimla, has a degree in social work. Together, they work with the municipal corporation, district authorities, colleges, schools and households. This committed team organises workshops to train and create awareness, and works in two of the 17 wards in Dharamshala town. It also collects non-biodegradable waste for segregation, processing and recycling.

Forever garbage

Documents they hand me have some astonishing information: ***cigarette butts take 12 years to decompose; plastic bottles 450 years; glass bottles thousands of years; cardboard two months; newspapers one month, juice cartons five years; cans 200-500 years; and polystyrene foam cups — never. My education begins.***

Later in the afternoon I head to Rakkar village on the outskirts of Dharamshala. Here, on leased land, is the NGO's dry waste segregation centre, where some 200 kilos of dry waste is segregated every day. Much of the material is shredded or made into pellets before it's taken for recycling elsewhere. I see paper, cardboard, cloth , glass, ceramic, metal and plastic. Together, they tell the story of modern living and patterns of consumption.

The municipality has recently allotted the NGO a new site, near a mountain stream, much nearer town, to set up a new material recovery facility for non-biodegradable and recyclable waste

processing. Construction is on to set up a large galvanised iron shed. Dharamshala generates 25 tonnes of waste every month. The main waste, the biodegradable kind, is handled by the municipality. Composting, by various means, is the ideal means of disposal. Once done, bio-degradable waste can be used as manure to fertilize the soil. But compost pits need land, and the magnitude of the problem dwarfs the efforts. So the bio-degradable waste is transported to a dumping ground in Sudher village.

The biggest brunt

This has, in turn, led to protests by Sudher villagers, who are facing the brunt of the pollution. ***Open dumping is unscientific, especially in the sub-zero Himalayan conditions. Cold prevents decomposition. Since such dumps are open to the elements, they could release harmful gases such as methane and carbon monoxide. When bio-degradable waste mixes with water, it forms leachate, a toxic liquid that permeates groundwater. Open waste also releases toxic chemicals into the soil. Rainfall then carries the leachate to rivers and streams nearby. This is the primary reason of river pollution in the hills rather than industrial activity.***

As for air pollution, ***open burning of waste is a major source besides particulate matter emissions. Pollutants such as dioxins, carbon monoxide, sulfur oxides, toluene and benzene are released into the atmosphere. Carbon and other light-absorbing impurities darken glacial snow and trigger melting. As for plastic, it needs segregation, processing and recycling, but in actual fact much of the plastic is burnt or dumped. Micro particles are carcinogenic and enter the food chain and cause enduring damage. Plastic also chokes rivulets and streams on the hill sides. The rivers of Himachal Pradesh — Ravi, Beas, Sutlej, Chenab, Yamuna, Ghaggar, Parvati, Devprayag, Baspa, Spiti and Tons — all copiously water the plains, but today, all of them are affected in various degrees.***

Prosperity and pollution

Tourism has surely brought economic prosperity to the hills, accounting for as much of 7% of Himachal Pradesh's GDP. This is a conservative estimate because there are many ancillary activities too. Besides, Dharamshala is now firmly on the cricket map of India. The new stadium is spectacular, with the Dhauladhar range as its backdrop and the cupolas of the pavilion silhouetted against its peaks. Some 25,000 spectators can be seated here, and people turn up from Delhi, Punjab and Himachal Pradesh for matches. Restaurants, hotels, resorts and homestays have come up.

But as the Council of Scientific and Industrial Research (CSIR) has pointed out, all this brings with it waste. A CSIR study finds that 55% of waste generated in the Himalayan region is biodegradable and comes largely from homes and

eateries; 21% is inert such as construction material; 9% is paper; 8% is plastic; 4% is glass and ceramic and 3% metal.

In 2016, the Centre issued very progressive new rules for handling solid waste. Single-use plastic is now banned and the 'polluters to pay' principle has has the potential to deter polluters. But the key lies in enforcement. As biodegradable waste constitutes the largest chunk, its disposal has to be scientific rather than resorting to open dumping or burning. Himachal Pradesh, according to the CSIR study, has 54 dumpsites but no operational landfill. Scarce land in the hills makes it difficult to create landfills.

A microcosm

I leave Kangra on a day when rain is lashing and fresh snow has fallen on the Dhauladhar. As I wait for the flight to be called, it occurs to me that Dharamshala town, with a population of about 60,000 and legions of visitors, is a microcosm of the problem of waste management in the country. Urban India produces approximately 52 million tonnes of waste each year. It is estimated that by 2047 we will be generating 260 million tonnes annually, requiring 1,400 sq.km. of landfill area.

Here, in the Himalayan region, at least there is the beginning of advocacy, awareness and action. But grave issues continue to loom in Kullu, Parvati, and Lahaul valleys, and in the Great Himalayan National Park, where tourist influx is very high. Even in the remote Kasol in Parvati valley, the ecosystem is under siege.

Himachal Pradesh has the advantage of literacy. People are change-embracing. Government agencies are willing to work with NGOs and experts to tackle waste management issues. Yet, as Etoshi, with her experience on the ground, tells me, entrenched social attitudes to waste and waste removal need to change fast. It is too big a problem to be tackled by waste collectors and street sweepers alone.
Gopinath is a photography and classical music enthusiast; Sharma works with the government in New Delhi.

- ***The Indian Himalayan Region is facing an as yet unrecognised existential crisis: mountains of solid waste.***
- ***While hillocks of garbage can rise in the peripheries of cities on the plains, hill towns have no such space. What is mindlessly thrown out remains on the slopes forever, turning into major polluters of land, water and air.***
- ***As biodegradable waste constitutes the largest chunk, its disposal has to be scientific rather than resorting to open dumping or burning."***

3. In view of unsatisfactory situation projected in the article, after verification of factual situation on the ground, remedial action needs to be taken.

4. ***Accordingly, we direct the G.B. Pant National Institute of Himalayan Environment, Almora, which is tasked with studies of Himalayan region in particular, which includes Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, West Bengal Hills, Meghalaya, Assam Hills, Tripura, Mizoram, Manipur, Nagaland and Arunachal Pradesh to undertake study and to update any study already conducted in light of the inputs available in the above media report. Such study/updation exercise may be completed within three months. A report in this regard be provided to the Chief Secretaries of 12 States in Himalayan region as well as to the Secretary, Environment and Secretary, Tourism, Government of India for further action****.*

*5. The Tribunal has considered the matters relating to environmental safeguards in some of the Eco-Sensitive Zones/area[3], including some of the areas in Himalayan region, and issued directions in the light of studies, for action plans to prohibit and regulate activities adversely affecting the environment. Prohibitions include constructions beyond capacity of such areas, waste treatment facilities, regulated and limiting traffic etc. as shown by the said orders. The said orders and study reports need to be considered in the course of this study.****"***

6. The Tribunal sought an action taken report from the authorities. The recommendations of the expert Committee and response of the authorities is reproduced below for ready reference:-

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Recommendations	***Response***
1. Enforce a complete ban on construction activities in Manali MC and McLeod Ganj except the construction of residential houses for their own uses/purpose and government buildings. The construction of other types should	***Manali MC****- The Divisional Town and Country Planning Office, Kullu vide office letter no. DTP (K)-T-57/OAno. 635/2017 dated 20.06.2020, copy of which is hereby annexed as Annexure R – I, after ground verification, has reported that the cases are permitted/ allowed strictly as per clarification given vide letter no. HIM/TP/ LAW-VI/ O.A. no. 635/ 2017-5870 dated 16.09.2019 and no new cases of commercial land use are being allowed/ permitted in MC Manali consequent upon the passing of the order*

[3] Order dated 14.12.2020 in O.A. No. 635/2017, Ramesh Chand Vs. State of Himachal Pradesh & Ors.

Order dated 22.12.2021 in O.A. No. 389/2018, Court on its own motion vs. State of Himachal Pradesh & Ors.

Order dated 17.03.2021 in O.A. No. 462/2018, D.V. Girish Vs. Union of India & Ors. and connected matters

Order dated 05.10.2018 in O.A. No. 218/2017, Society for Preservation of Kasauli and its Environs (SPOKE) vs. M/s Kasauli Glaxie Resorts and connected matters

Order dated 10.03.2021 in O.A. No. 312/2016, M/s Kasauli Glaxie Resorts vs. Ministry of Environment Forests & Climate Change & Anr. and connected matters

only be permitted unless and until adequate provisions for solid waste management and water supply are put in place	*dated 29.07.2019. The construction activities will not be permitted unless and until adequate provisions for solid waste management and water supply are put in place by the Applicant(s).* ***McLeod Ganj-*** *The Commissioner, Dharamshala Municipal Corporation vide office letter no. DMC/ Sant (F)-1-2/ 2019-790 dated 15.06.2020, after ground verification has reported that* ***MC, Dharamshala has enforced a complete ban on construction activities in McLeod Ganj. However, approval/ completion to 18 commercial units has been issued by the Dharamshala Municipal Corporation after order dated 29.07.2020 which includes online building plan approval for 2 commercial buildings and offline plan approval for 4 commercial buildings. Simultaneously, online completion for 3 commercial buildings and offline completion for 9 commercial buildings has also been issued to the Applicants after adherence to adequate provisions for solid waste management and water supply of such units.***
2. Environmental Sustainability	*The Himachal Pradesh State Pollution Control Board has not provided any fresh consent to establish/ NOC has been issued for the Hotels/ Guest Houses in McLeod Ganj and Manali after passing of the order dated 29.07.2019 by this Ld. Tribunal. The HP State Pollution Control Board shall not issue the consent to operate new construction activities in Manali MC and McLeod Ganj unless and until adequate provisions for solid waste management and water supply are put in place by the Applicants(s) in consonance with the order dated 29.07.2019 passed by this Hon'ble Tribunal.* *a. Manali* *1. The Regional Office of the Himachal Pradesh State Pollution Control Board, Kullu has submitted a report dated 11.06.2020 stating that after passing of the order dated 29.07.2020; no fresh consent to establish has been issued by the* ***State*** *Pollution Control Board for Hotels, Restaurant etc. in Manali MC area for which no planning permission has been granted by the TCP/ MC, Manali.* *2. The D.G. sets are allowed to be installed only with acoustic enclosure with exhausted mufflers and stack. It is also submitted that all D.G. sets are installed as standby purposes only.*

	3. *The vehicles monitoring is being conducted in collaboration with Indian Oil authorities/ Regional Transport Officer/ Police authorities and other concerned authorities and challan are issued by police authorities when any violation is observed.* 4. *The river monitoring around and within MC, Manali area is regularly conducted. As per the latest results of river monitoring for May' 2020, the result of the points in and around the MC, Manali are observed in Class-B. The copy of sample results is enclosed as* ***Annexure R-II*** *for kind perusal of this Hon'ble Tribunal.* 5. *The air monitoring of Manali Town is regularly conducted. The latest results of monitoring for the month of May, 2020 are observed meeting to the norms of S02, NOX, NH3, RSPM and PM2.5, the copy of which is hereby enclosed as* ***Annexure*** *R-III.* 6. *The noise monitoring of Manali Town is being conducted by the HPSPCB. The results of noise monitoring are being regularly sent to District administration and Police authorities for necessary action. The copy of latest sample results is hereby annexed as* ***Annexure*** 7. *The ULB's are being regularly monitored in compliance of SWM Rules, 2016. It is further submitted that the installation of Waste to Energy plant at Manali is under process and the same is complete and operational up to the generation of RDF (refused Derived Fuel).* 8. *There is one common Sewage treatment plant of I 86 PH for handling and dispose off sewage within MC Manali area, is also being monitored by the HPSPCB. The latest samples of STP as collected on 13.05.2020 were found to be within limits. The copy of sample results is enclosed as* ***Annexure R-V.*** 9. *The litter bins of adequate capacity have been installed in Manali MC and public area but the dumpers have been removed from the town.* 10. *The Department of Environment, Science and Technology, Himachal Pradesh had started a "**Horn Not Ok!**" awareness campaign to create awareness among common people about the ill effects of noise pollution. Awareness is being created for unnecessary use of horn amongst the public in Manali Town. The police department in collaboration with the Banks placed signage/ Hoardings on "Horn Not OK" in Police Check posts/ Police assistance room in Manali city. Signages on "No Honking" have been displayed in various locations of Manali town to educate people.* ***b. Dharamshala (McLeod Ganj area):***

1. *No consent to establish has been issued by the HPSPCB for the Hotel/ guest House in the McLeod Ganj area for which planning permission has been granted by the Municipal Corporation after passing of the order dated 29.07.2019.*

2. *100 percent door to door garbage collection is being done in Dharamshala Municipal Corporation (herein referred as DMC). By laws for door to door garbage collection and Disposal 2019 has also been framed by the MC, Dharamshala, which duly stands notified.*

3. *50% of waste generated in MC area is segregated at the source. Rest is being segregated at the waste processing facility.*

4. *Underground bins: - All over DMC area, bins have been provided in all 17 wards at 133 locations. Each location consists of 2 bins (1St bin has two compartments of 1.5 cum capacity each for non-biodegradable and other waste. 2nd bin of **2** cum capacity for degradable waste.) All these bins are underground and the waste collected in these bins is transferred into tipper-trucks with inbuilt crane mechanism. These tipper trucks carry the solid waste of the bins to the solid waste site for further processing.*

5. *Construction 86 Demolition (C 86 D) Management: - Control and regulation of Muck Dumping) Bye-Laws, 2019 has been framed by Dharamshala Municipal Corporation and have been duly notified vide notification dated 17.02.2020. DMC has identified and notified C & D waste disposal site at Charan Khad (W. no. 10) The compliance of Strategy in Manali 86 Dharamshala area are as below:*

Component of Strategy	***Status of compliance in Manali***	***Status of Compliance in Dharamshala***
Door-to-Door Garbage Collection	*100% door to door garbage collection in being done in Manali Municipal Council, Manali*	*100% door to door garbage collection is being done in Dharamshala Municipal Corporation area*
Source segregation of waste	*70% of waste generated in MC Manali is segregated at source. Rest*	*50% of waste generated in MC Dharamshala area is*

		is being segregated at the waste processing facility	*segregated at source. Rest is being segregated at the waste processing facility*
	Wet waste processing	*Waste to Energy plant established at Rangri, Manali where all the waste collected from town having two major section, 1st is Refuse Derived Fuel (RDF) making section which has been made functional in the month of Feb, 2020. All the waste received at site is being processed daily and converted into RDF which is further sent to Barmana for co-processing as Energy generation section of the plant is not yet functional. The 2nd section of the plant is energy generation which is presently under installation phase.*	*23 compositing pits have been constructed by the DMC at six locations within jurisdiction of MC, which includes Dharamkot Chowk (W no. 2) Lama Temple (W no. 3) near Gamru Ground (W no. 5) Dumping site (w no. 6) Sabji Mandi Charan road (W no. 10) and Norbulingka (w no. 17)*
	Dry waste processing	*Material recovery facility (MRF) established. Recyclable sent for recycling and non-recycle processed further for preparing*	*A material recovery facility (MRF) has also been established at Dharamshala processing site where all the non-biodegradable waste is*

		refuse derived fuel (RDF)	*further sorted into recyclables. The recyclables are channelized into recycling through rag pickers and scrap dealers and non-recyclable is packed and sent to cement plants for co-processing. A balling machine has been installed at MC Dharamshala which is used to make bales of segregated combustible fraction (SCF) of waste and sending it to Cement plant for co-processing.*

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7. Vide order dated 10.03.2021 in O.A No. 312/2016, *Dr. Arun Kumar Sharma v. Ministry of Environment Forests & Climate Change & Anr.*, the Tribunal considered challenge to the Zonal Master Plan, 2023 (ZMP 2030) for the Mount Abu Eco-sensitive Zone (ESZ). Grievance in the said case was excessive soil erosion, water and air pollution and volcanic activities endangering natural resources and affecting health and survival of human beings. The MoEF&CC issued ESZ Notification prohibiting and regulating activities for protection of the area and directed that Master Plan for development in the area should be consistent with the said Notification. It was stated that the Master Plan did not address the concerns in the Notification and did not discourage construction activities thereby endangering environment. The Tribunal constituted an expert Committee which gave its report dated 08.12.2020 making various recommendations

to restrict and regulate construction activities having regard to ecological sensitivity of the location. The Tribunal accepted the report which was found to be based on authentic data and scientific basis. The Tribunal directed that ZMP 2030 was required be modified in the light of the report.

8. Vide order dated 17.03.2021 in O.A No. 462/2018, *D.V Girish v. UoI & Ors.*, the issue of undertaking carrying capacity study of eco-sensitive areas to give effect to principle of 'Sustainable Development' was gone into and response was sought from MoEF&CC. The Tribunal issued directions for such study at least in one eco-sensitive area in every State/UT. Study undertaken for Sanjay Gandhi National Park, Mumbai by CSIR-NEERI was referred to and on the pattern of said study and other such studies referred to in this order, further directions were issued. Relevant extracts from the order are reproduced below:-

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5. Accordingly, report has been filed by CPCB on 12.03.2021 to the effect that a rapid study has been carried out of Sanjay Gandhi National Park, Mumbai through CSIR – NEERI. In the course of such study, the area was demarcated. Basic details such as arid extent, geographical features, flora and fauna, and the tourist activities were compiled. Thereafter, ***carrying capacity assessment was made in the light of air, water, habitat, biodiversity, land, noise, and tourism as the crucial elements affecting SGNP by using fuzzy comprehensive evaluation method based on secondary data available. The thematic areas covered are: Water Environment Carrying Capacity (WECC), Air Environment Carrying Capacity (AECC), Tourism Carbon Carrying Capacity (TCC), Noise Carrying Capacity (NCC), Normalized Difference Vegetation Index (NDVI), Land Surface Temperature (LST), Digital Elevation Model (DEM), Land Use Land Cover map (LULC), Normalized Difference Water Index (NDWI), Land Stress Index (LSI), Habitat Quality Index (HQI), Aerosol Optical Dispersion (AOD) & PM2.5, Selection of Ecological System, A Fuzzy Comprehensive Evaluation Method and AHP based Estimation. The assessment in the light of the above has been made in relation to Tourism Carbon Carrying Capacity (TCC), Water Environment Carrying Capacity (WECC), Noise Carrying Capacity (NCC), Air Environment Carrying Capacity (AECC) and Environmental Attributes for Ecological Carrying Capacity****. Relevant extracts from the report are as follows:-*

> *"Eco-Sensitive Zones (ESZs) or Ecologically Fragile Areas (EFAs) are areas in India notified by the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India*

around Protected Areas, National Parks and Wildlife Sanctuaries. The purpose of declaring ESZs is to create "shock absorbers" to the protected areas by regulating and managing the activities around such areas. These zones are indispensable for a nation as they preserve biologically and ecologically rich areas and potentially valuable and unique natural resources that would be difficult to replace once annihilated. The ecosystem is quite delicate around these areas and needs to be protected against human intervention. They are of immense importance to human society as they are ecologically and economically important, maintain ecological stability and preserve the rarity of the ecosystems they harbor.

xxx……xxx……xxx…….

Carrying capacity assessment is a tool to determine the growth limits that an area can accommodate without violating environmental capacity goals. CSIR-NEERI being an expert organization was engaged for a short term study to assess environmental carrying capacity (ECC) of Eco-sensitive zone – Sanjay Gandhi National Park, Mumbai using secondary data, remote sensing data, literature survey and selected ECC methodologies.

The findings reveal that environmental attributes such as available water resources, vegetation cover and land stress are within the permissible carrying capacity limits, however, other attributes such as mangrove cover, air quality (except SO_2) and surface temperature are deteriorating. The overall noise levels are within the limits except at the entrance gate. The utilization ratio of available water resources in SGNP is 59.87%, which is less than the reference value of 100%.

The total calculated footfall, in terms of tourists, shows that it is in a critical stage and has exceeded the maximum footfall possible and can affect the wildlife and it carrying capacity. The overall noise levels is within the acceptable limit except at SGNP entrance gate due to high traffic flows and other human activities, and it should be controlled through by suitable measures. The utilization ratio calculations for air pollutants except SO_2 are already beyond the safe limits and necessary air pollution control measures are required to be taken in and around the eco-sensitive zone of Sanjay Gandhi National Park.

The comparison of NDVI values indicates that the vegetation cover of SGNP has increased over the years, which is a good sign for the enhancement of its carrying capacity. The LULC classification area for SGNP from 1978-2020 shows a positive increase in forestland, is beneficial for wildlife and overall ecosystem. However, the Mangroves cover and water bodies areas, in the SGNP and buffer area (analyzed through remote sensing data) are decreasing year by year. Human settlements is continuously increasing including in buffer area threating environmental balance. LST maps of SGNP shows that the surface temperature has increased in

2020 (24-34°C) as compared to 2000 (17.93 °C). Preliminary analysis of SGNP indicates limited land stress which should be maintained for ecological balance. The values of AOD and indicate higher air pollution level due to anthropogenic activities, which is also confirmed by available ground data.

Based on the rapid assessment of CC done using the available data, it is recommended that:

1. *Anthropogenic activities including construction within the premises of the SGNP should be limited as it is affecting the fragile ecosystem of the area and is putting pressure on other environmental attributes such as water, air and noise.*
2. *Assessment of noise carrying capacity needs a detailed analysis with biodiversity centric focus, given the severe impact of noise on fauna present in the area. A long term study is needed in this regards.*
3. *Suitable measures to mitigate the impacts of air and noise pollution in the area should deployed and an environment management plan be prepared to preserve the floral and faunal biodiversity.*
4. *The slope factors of the area shows a reduced stress on land which should be maintained by avoiding construction activities in the area.*

xxx……xxx……xxx…….

"4.0 Way Forward

In order to understand the carrying capacity of the SGNP in depth, the critical environmental attributes are to be weighed scientifically. Methods, including but not limited to, modelling, fuzzy, hierarchical techniques will be applied in the next step to derive conclusive assessment on environmental carrying capacity of SGNP.

A detailed study using other modelling techniques shall be carried out during next phase of the study, the extent of utilization will be assessed using weightage of different factorial layers and sub- criteria. Assessment in reference to the impact to faunal diversity of the park will also be attempted during the detailed planned study.

There are certain aspects of the study which requires subsequent detailed analysis. It includes secondary data collection of remaining parameters, primary survey for certain parameters, assessment of habitat suitability, ECC with respect to Air, Water and Noise environment by keeping faunal biodiversity impacts at the center and select ground validation points for remotely sensed data. Overall analysis of ECC using AHP or Fuzzy method based on the above additional parameters, data and validation points will be done.

Paras 6 and 7…….

8. Thus, as earlier directed vide order dated 19.03.2020, ***there is need to undertake carrying capacity of eco sensitive areas in all the States/UTs.*** *Inspite of such need, such studies do not appear to have been undertaken. We reiterate our direction for this course of action being adopted in a time bound manner to enforce the 'Sustainable Development' and 'Precautionary' principles which the Tribunal is expected to apply in giving directions under Section 15 of the NGT Act, 2010.*

9. In the first instance, such study may be undertaken for atleast one eco-sensitive area in every State/UT. As per report of the CPCB, only one such study has been undertaken so far and that too, ***only rapid assessment, using available data****. Further detailed study to determine steps necessary for protection of the said ESZ is yet to be undertaken. During the hearing, learned Counsel for CPCB stated that while such studies for all eco sensitive areas are necessary, it may be difficult for CPCB alone to undertake such exercise. It is suggested that such studies be got conducted by the concerned States/UTs by associating concerned experts and handholding may be provided by the MoEF&CC.*

10. ***Accordingly, we direct that such exercise may be got conducted by concerned State/UT to be coordinated by a joint Committee comprising State PCB, Secretary/ Director Environment and Chief Wildlife Warden.*** *The nodal agency will be Secretary/Director, Environment for coordination and compliance. The said joint Committee may determine the mode of carrying out such study and the composition of the Committee for accomplishing the task. In doing so, it may be desirable to associate nominees of reputed Institutions, which have earlier been associated with such exercise, like G.B. Pant Institute of Himalayan Environment & Development, Almora, Forest Research Institute, Dehradun, ICFRE, Dehradun, Wadia Institute of Himalayan Geology, Dehradun and School of Planning and Architecture, New Delhi. The first phase may be completed within six months and next phase in further six months. The ESZ Expert Committee of the MoEF&CC may provide necessary guidance by holding periodical video conferences and issuing appropriate guidelines on the subject.* ***In the light of such carrying capacity studies, the respective Master Plans of the eco sensitive areas in question be modified on the pattern of our directions in O.A. No. 312/2016, Dr. Arun Kumar Sharma, supra."***

9. In above background, study of carrying capacity of eco-sensitive areas in Himalayan regions in holistic manner appears to be imperative for protection of environment. Without undermining need for study in all eco sensitive areas as already directed, we direct specific study for Mussoorie in the light of apprehensions expressed in above media report. Such study may cover as to how much constructions can be allowed and with what

safeguards, what safeguards be used for existing buildings and all other relevant and associated aspects including vehicular traffic, sanitation management, maintaining ecological integrity in terms of soil stability and flora/fauna. For this purpose, we constitute a nine member joint Committee to be headed by Chief Secretary, Uttarakhand. Other members will be Wadia Institute of Himalayan Geology Dehradun, Govind Ballabh Pant National Institute of Himalaya and Environment, National Institute of Hydrology (NIH), Roorkee, Prof. J.S Rawat, Kumaon University, Almora, Space Application Centre, Ahmadabad National Institute of Rock Mechanics, Bangalore, CPCB and ACS Environment, Uttarkhand who will act as nodal agency for coordination and compliance. ACS, Environment will provide for travel and logistics for members to the extent necessary. Meetings may be held online or offline as may be necessary except for visit to the site. The Committee may suggest remedial measures to prevent environmental damage in the light of carrying capacity, hydro-geology studies, geo-morphological studies and also covering other allied and incidental issues. The Committee will be at liberty to take assistance from any other expert/institution. The Committee may meet within two weeks and complete its studies within two months. It may furnish its report by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF on or before April 30, 2023. The Committee will be free to interact with the stakeholders including the inhabitants/members of civil societies. The Committee may also consider the concerns in the media report. It will be open to the Chief Secretary, Uttarakhand to take preventive and remedial measures found necessary in the light of the media report otherwise.

List for further consideration on 16.05.2023.

A copy of this order be forwarded to Chief Secretary, Uttarakhand, Wadia Institute of Himalayan Geology Dehradun, Govind Ballabh Pant National Institute of Himalaya and Environment, NIH, Roorkee, Prof. J.S Rawat, Kumaon University, Almora, Space Application Centre, Ahmadabad National Institute of Rock Mechanics, Bangalore, CPCB and ACS Environment by email for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Prof. A. Senthil Vel, EM

Dr. Afroz Ahmad, EM

January 31, 2023
Original Application No. 51/2023
AB