

MINUTES OF THE 21st EXPERT COMMITTEE FOR THE CONSIDERATION OF ZONAL MASTER PLAN OF BHAGIRATHI ECO-SENSITIVE ZONE (ESZ) ON 31st AUGUST, 2016 IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE NEW DELHI

The 21st Meeting of the Expert Committee on Eco-Sensitive Zones was held under the Chairmanship of Dr. Amita Prasad, Additional Secretary on 31st August, 2016 at IP Bhawan, New Delhi for the consideration of Zonal Master Plan of Bhagirathi Eco-sensitive Zone submitted by the Government of Uttarakhand. The list of participants is Annexed (**Annexure-A**). A copy of the Zonal Master Plan was forwarded to the Secretary, Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR,RD&GR) for their comments. Copies of the Zonal Master Plan had been circulated earlier to all the Members of Expert Committee on ESZ and to the Special Invitees to the meeting, namely (i) Dr. Sandeep Behera, Consultant Biodiversity, NMCG, MoWR, RD & GR (ii) Shri Sanjay K Jain, Scientist 'G', National Institute of Hydrology, Roorkee (iii) Shri R. Anbalagan, Fellow & Prof., IIT Roorkee, (iv) Dr.Maharaj Pandit, Professor & Head, Department of Environmental Studies, University of Delhi, (v) Shri Rajiv Sinha, Professor, Department of Earth Sciences, IIT, Kanpur, and (vi) Dr. S. Kerketta, Director, IA Division, MoEF&CC. The comments of the MoWR,RD&GR were forwarded to the Government of Uttarakhand for their comments, and the response of Govt of Uttarakhand was also circulated to the members of ESZ Committee and to the special invitees prior to the meeting.

2. Dr.Amita Prasad, Chairperson and Additional Secretary, MoEF&CC expressed appreciation on the preparation of the Zonal Master Plan (ZMP) and requested the representatives of Government of Uttarakhand to briefly present the same. The representatives of Govt of Uttarakhand explained the various schemes/plans and programmes initiated by the State Government on (i) Forest, Wildlife and Eco-tourism (ii) Road Sector (iii) Agriculture and Horticulture (iv) Power Sector (v) Watershed Projects (vi) Irrigation (vii) Sewage management (viii) Sanitation (ix) Tourism (x) Rural Development and (xi) Urban Development. It was also mentioned that the National Green Tribunal, Principal Bench, New Delhi has sought details of the status of Zonal Master Plan and the next date of hearing is 20th September 2016.

3. The presentation and discussions thereon highlighted the following:

- (i) The State of Uttarakhand has one of the highest levels of forest cover in the country. Forests and Protected Areas including National Park and Wild Life Sanctuary in Bhagirathi Eco-sensitive Zone constitute about 98% of the area and only 1.6% area of the land is having villages.
- (ii) There is no anthropogenic pressure in the Bhagirathi ESZ.
- The total population in the region is about 66,680 and the population density of the region is about 41 persons per sq. km which is very low in comparison to the national average (placed at 568th place amongst all districts in the country).
 - Some of these villages (about 14 of them) are having no population at all and are referred to as 'Bhutia Gaon' ('Ghost' villages) as most of the inhabitants have migrated elsewhere.
 - Due to low population growth there is hardly any anthropogenic pressure on the flora and fauna in the region.
 - There is a demography vacuum in the areas near international border, which is a matter of concern from security angle.
- (iii) Mining is not an activity in the region and is limited to River Bed Mining (RBM). This activity is a dynamic process and also helps in the free flow of river.
- (iv) The Government of Uttarakhand has requested for revisiting the provisions in the Bhagirathi ESZ Notification dated 18th December 2012 on some specific issues:
- a. **Extent of Area declared as 'Eco-Sensitive'**: The extent of area in the draft Notification dated 1st July 2011 circulated earlier by the Ministry was limited to 135kms stretch of the river Bhagirathi from Gaumukh to Uttarakashi and upto 100 meter from both the banks of the river as eco-sensitive zone; which was changed to 4179 sq km in the final Notification covering the entire watershed.
 - b. **Restriction on Change of Landuse**: In addition, the provision in para 12 of the Notification states that "No change of landuse from green uses

such as horticulture areas, agriculture, tea gardens, parks and other such places to non-green areas shall be permitted in the Zonal master Plan”. This greatly limits all forms of development in the region.

The Notification further states that “However, to meet the residential needs of the local residents due to natural growth of existing population, strictly limited conversion of agricultural lands shall be permitted, with the prior approval of the Central Government on the recommendation of the State Government.” This has resulted in requiring Central Government approval for even small changes in land use within the ESZ.

(c) **HEP Projects Approved prior to the Notification:**

- The State Government is heavily dependent upon hydro-power as a source of energy. Due to the declaration of Bhagirathi Eco-sensitive Zone (BESZ) which has permitted only micro (2MW) and mini (less than 100 kilowatt) Hydro-Electric Power (HEPs) projects, the State Government has lost an investment opportunity of Rs 17000 crores with a revenue loss of about Rs 2000 crores per year. It was stated that 10 HEPs below 25 MW with a cumulative capacity of 82 MW have been approved prior to the date of the notification and have been stopped. These are small (HEPs) upto 25 MW capacity and can be safely constructed in this zone. They are based on Trench Weir Technology causing no obstruction of river flow. The tunnels are also very small of 2x2x2.5m and will not involve excessive excavation affecting hill slope stability causing landslides. Besides, small hydro projects below 25 MW in similar terrain condition are being permitted in Himachal Pradesh and other places. The Central Pollution Control Board has also categorised “HEPs below 25 MW as “White” causing no air and water pollution”. Accordingly, these projects may also be considered for approval.
- It was further stated that to fulfill the energy needs of the local communities, State Government has issued a policy for harvesting Micro and Mini Hydropower Projects in 2015. As per this Policy, development of Micro and Mini Hydro projects is reserved for the Panchayati Raj Institution. It was further informed that no new HEPs other than those

within the capacity provided in the Notification are being planned/proposed in the Bhagirathi ESZ.

(d) **Degree of Hill Slope categorized as “Steep”:**

- Para 16 of the Notification for the protection of Hill Slopes has stipulated that “No development shall be undertaken in areas having a steep slope” and steep hill slope has been defined in the Bhagirathi Notification as that with a gradient of 20 degrees or more. Uttarakhand (Bhagirathi ESZ in particular) being a predominantly hill State, this limits all types of developmental activities in the ESZ.
- As per the Indian Road Congress (IRC) Guidelines for Rural Highways, the percent cross slope of the country for mountainous terrain is 25% to 60% and for steep terrain is greater than 60%. In this regard reference was drawn to a site visit on 4th -5th May’16 of the by representatives from UJVNL, NHIDCL, PWD, PMGSY and experts. The Abstract of Report submitted by Dr. Shivansh Kimothi, Geologist Garhwal University Srinagar mentioned that 20 degree slope configuration is not the normal feature in rugged mountainous terrain and a relaxation is needed in this clause.
- The proposed slope angle of 20° as upper cut-off value for implementation of development schemes is impractical and untenable in Himalayan terrain. In this context, a scheme of classification of slopes as proposed by the Bureau of Indian Standards vide IS Code No. 14496 (Part-2) 1998 may be adopted. The Scheme of BIS is as given below:

a) Escarpment/Cliff	-	> 45°
b) Steep Slope	-	36° to 45°
c) Moderately steep slope	-	26° to 35°
d) Gentle slope	-	16° to 25°
e) Very Gentle Slope	-	≤ 15°

- (e) **Construction and Developmental Activities on steep slopes:** Different schemes for Rural Development such as Indira Awas Yojna, Deen Dayal Awas Yojna, Credit cum subsidy, MNREGA, Uttarakhand Semant Pichhda Shetra Vikas Yojna, MPLADS, MLALADS for the welfare, employment,

housing and other developmental needs of the residents of eco-sensitive zone have been taken up. The State Government has already issued six Notifications on various aspects of environmental management. For urban development of township of Gangotri and Uttarkashi (which according to the State Government is at the edge of the Bhagirathi ESA), the Nagar Palika Parishad Uttarkashi has future plans for the redevelopment of existing shops at Sabzi Mandi using Ecologically safer pre-fabricated structures and construction of Bus Stand at Indira Colony. To implement the aforesaid programmes, the State Government had sought permission for construction activities in the slopes of degree upto 60-70 and change in land use for construction of residential houses within the 500meter radius from the main habitation.

(f) Village Harshill requires being included in the Notification.

(v) **Construction of Roads on Mountainous Terrain:**

- Roads construction in the Himalayan Region requires to be undertaken addressing the issues of hill slope stability. Cutting of hill slope cannot be decided arbitrarily based on cross slope only and type of rock, fracture, joints etc are deciding factors in finalizing the alignment of roads and is taken care in detailed geological investigation before fixing of alignment.
- It was informed that Guidelines are available for construction of roads in hilly terrain. The slopes and toe first need to be stabilised and treated (instead of cutting and road laying). It was mentioned that China, in the Tibet Autonomous Region (TAR) across the border, has constructed excellent roads across mountainous terrain. It was mentioned that when landslides occur due to faulty road construction especially in the monsoon, costs for stabilisation and treatment are incurred *post facto*. Therefore, Slope & Toe stabilisation and treatment, rock bolting, etc need to be taken up concurrently along with road laying and the costs for stabilisation and treatment may be factored in even as the road projects are prepared and constructed on hilly terrain taking into consideration the peak rainfall data of the past 100 years, degree of stability of hill slopes, maximum road width/widening, etc.

- In hilly terrain, tunnel roads may be preferable as in long run; they are cheaper than conventional roads.

- (vi) The State Government has established a Watershed Management Directorate (WMD) as a nodal agency for co-ordination, monitoring and implementation of integrated watershed development programs in the State.

- (vii) Conservation and management of Forest and Wildlife, Management of Water Bodies and Wetland, Biodiversity Conservation and Development, Plantation and Regulation of Tree Felling is being implemented with peoples participation and conflict resolution on man-animal conflict.

- (viii) Introduction of exotic species and drastic change in the agricultural system is regulated. Rain water harvesting, water conservation, organic farming, local bio-resource based industries are promoted in the region.

- (ix) **Eco-Tourism:** Eco-tourism guidelines and regulation are being followed in Gangotri and Gaumukh region and only 150 tourists are being allowed per day. There are 22 trek trails in the ESZ and the guidelines for their development have been detailed in the Zonal Master Plan (ZMP). Heritage Property Conservation and Revitalisation have been addressed in the Tourism Master Plan of BESZ to maintain its Archaeological sanctity & historic significance. Also, it is planned to “go green” in the best possible way to maximise usage of solar energy in all new tourist facilities. Also, it is prohibiting development activities within 100m around heritage structures and Construction free zone up to 50m from High Flood Line (HFL). Further, it is incentivising resorts/ hotels based on environmental efficiency.

- (x) **Solid Waste Management** is becoming an increasing problem in hilly areas and need focussed attention as construction of landfills is not feasible on mountainous terrain. Schemes on village drinking water supply, construction of individual household latrines, community toilets have been taken up under the Swachh Bharat Mission, under Sewage Management and Sanitation Schemes of the State Government. In addition, Solid/Liquid Waste Management Works are proposed under Namami Gange programme along

with 14 Gram Panchayats. It was also stated that there has been complete ban on the use of Polythene bags in the region. A detailed Sewerage Plan and STP for the town of Uttarkashi (which according to the State Government falls outside the ZMP) are under preparation.

- (xi) Ten projects under the National Mission on Sustainable Himalayan Ecosystem have been started a few months back with the Department of Science & Technology, which includes glaciers, springs and aquifer studies.
- (xii) To promote organic farming in the region an Organic Farming Board has been created for production of organic crops.

4. In conclusion, the following issues emerged:

- 4.1 Being a eco-fragile mountain ecosystem and being the source of River Ganga and its tributaries and harbouring many flora and fauna and Protected Areas, the Bhagirathi eco-sensitive region is of immense ecological and environmental importance. The final Notification declaring an area of 4179.59 sq km as eco-sensitive is based on a study based recommending the area as eco-sensitive based on a watershed approach of the Bhagirathi River Basin.
- 4.2 The Zonal Master Plan prepared by Government of Uttarakhand has mainly compiled the existing programmes and regular activities of respective Departments of the State Government. The Master Plan should go beyond the existing activities and project future requirements and plans over a time scale (of 5/10/15 years) to address the issues of livelihood of the common people and other developmental plans for the next 5-10/15 years.

The Govt of Uttarakhand agreed to revise the Zonal Master Plan accordingly.

- 4.3 **Amending the Bhagirathi ESZ Notification requested by State Government with respect to the following:**
 - (i) The MoEF&CC could consider inserting a Transitional clause to permit the 10 HEPs less than 25MW capacity of a total combined capacity of 82.3MW which were approved prior to the date of Notification. For taking a decision in this regard, a Carrying Capacity Study needs to be initiated

immediately by the Govt of Uttarakhand in line with the MoEF Guidelines No. J-11013/112013-IA-I dated 28.05.2013 for carrying out a Bhagirathi River Basin Cumulative Impact Assessment Study for establishment of HEPs in the Bhagirathi River Basin for taking a decision on whether the 10 HEPs approved prior to the date of the Notification could be commissioned. In addition, the views of the MoWR, RD & GR would also be obtained.

(ii) Based on discussions, Para 16 of the Bhagirathi ESZ Notification to replace 20 degree for “Steep Hill slopes” with that as defined in Bureau of Indian Standards IS Code No. 14496 (Part-2) 1998 was agreed to.

(iii) Amending para 12 of the Notification on restricting landuse could be considered as given below:

“Change of land use from green uses such as orchards, horticulture areas, agriculture parks and other such places to non green uses shall be permitted in the ZMP, except that strictly limited conversion of such lands may be permitted to meet the local needs including civic amenities together with natural growth of the existing local populations with the prior approval of the Chief Secretary, Government of Uttarakhand. Similarly, no change in the use of land from tribal uses to non-tribal uses shall be permitted without the prior approval of the Chief Secretary, Government of Uttarakhand and as per extant laws and regulations.”

(iv) Construction activities along high flood line (HFL) areas should be properly regulated in the Zonal Master Plan based on scientific Impact Assessment Studies and with Flood Plain Zoning Study in the Eco-sensitive Zone. A Floodplain Restoration Study should be undertaken and implemented. Buildings/structures should be constructed beyond 50m of the HFL based on peak rainfall data of IMD for the past 100 years.

(v) Para 16 containing provisions on Development and Construction on steep hills slopes shall remain unchanged, however, the construction activities and development along hill slopes including townships shall be

based on the classification of “Steep Hill slopes” as defined in BIS Standard IS Code No: 14496 (Part-2) 1998.

(vi) Including the village ‘Harshil’ in the Notification was agreed to.

4.4 **With respect to para 3 (v) on the Road Sector:**

The Government of Uttarakhand must undertake projects for road construction concurrently with slope stabilisation and treatment measures for slope and toe stability. Tender specifications for road construction projects on hilly terrains in the entire State must mandatorily include this clause. The Govt of Uttarkhand may also take up this issue with the Forest Department for diversion of adequate forestland taking into consideration the area required for slope stability and treatment while laying roads on mountain terrain.

4.5 **Man-Animal Conflict:** There is an increased man-animal conflict despite the high level of forests and protected areas. Wildlife Management Plans and Strategies need to comprehensively address all aspects of the problem including increasing ‘Prey Base’, especially outside Protected Areas and also increasing and maintaining wildlife corridors for the free movement of wild animals.

4.6 **Biodiversity Conservation:** Data is required regarding the location of various species, and also he emphasized for the species restoration and rejuvenation. The Plan must also include one chapter on aquatic and terrestrial species and their spatial distribution in the Region for preparation of Wildlife Management Plan and Habitat Restoration.

- A Biodiversity Management Plan (BMP) is required for restoration and reintroduction (wherever necessary) of floral and faunal biodiversity in the region through *ex-situ* measures. In addition, the importance of cultivation of medicinal plants in the area was also emphasised.

4.7 **River Bed Mining**

The river-borne material (RBM) is a fluvial deposit, which is seen in and around the river course. These materials are deposited as a result of

successive flooding. Though deep mining of more than 2m may lead to change in the river regime of sub-surface water, the riverbed mining of 1-2m depth within the flood plain of river will practically have no impact on the local environmental condition. Moreover these excavations are likely to be filled in again during the next floods. In this context, it is suggested to ensure continuous monitoring of mining activities by maintaining proper records of excavations and fillings.”

The Committee after deliberations noted that River Bed Mining upto a depth of 2 meters could be allowed and may not affect the ecology as river beds change dynamically. Due to frequent accumulation of materials in river bed, mining upto 2m could be permitted, however deeper mining should be restricted. River Bed Mining should be limited to meeting local needs only. Undue mining beyond 2m of river bed should not be undertaken. River Bed Mining should be undertaken as per Sand Mining Regulations issued by MOEF&CC.

- 4.8 **Sanitation facilities and Solid Waste Management** especially along fast developing townships and villages need to be comprehensively addressed and could be synergized with the Namami Gange project.
- 4.9 The Govt of Uttarakhand has written to Geological Survey of India (GSI) for submitting proposal to establish continuous Geological Monitoring Station in the Bhagirathi ESZ. It has also requested Indian Institute of Remote sensing (IIRS) IIRS to submit proposal to carryout detailed GIS mapping of the Eco-sensitive Area for the purpose of implementation of the Zonal Master Plan. These would be integrated while revising the Zonal Master Plan.
- 4.10 A **Comprehensive Plan for Disaster Preparedness and Management** is lacking and requires being prepared based on identification of areas vulnerable to disasters. Guidelines on Materials and housing design resilient to disasters such as earthquakes should be prepared and used in housing and construction projects.

4.11 Plantation of Pine trees in the region should be discouraged. Local communities should be involved under the MNEREGA Scheme to collect fallen pine needles during drought and dry seasons to reduce forest fires.

4.12 The Government of Uttarakhand was requested to forward a CD of the ZMP along with coloured maps of the following for record and uploading on the MoEF&CC website:

- Area demarcating the boundary of the Bhagirathi ESA on a **SOI Topo sheet** (1:5000) showing land use features using standard colour codes for maps such as forests/vegetation (green colour), water bodies (blue), settlements (brown), wasteland (grey), agriculture (yellow) etc. A copy of this should also be provided on a A4 size for the purpose of uploading on Ministry website.
- In addition, a recent colour map (A4 Size- JPEG) (1: 5000) of the Bhagirathi eco-sensitive area with landuse features of Bhagirathi ESA and the surrounding area upto 7-10 km beyond the boundary of the ESA.
- A **Geographical Colour Map** (A4 Size-JPEG) (1:5000) showing details of villages, towns, and settlements in and around 7-10 km of the ESA and infrastructure, and industrial and township projects, if any within the ESA and around the ESA.
- A recent **Drainage Colour Map** (A4 Size-JPEG) (1:5000) of River Bhagirathi and its tributaries within the ESA and adjoining area of 7-10km around the ESA along with the existing and the proposed hydel projects along with their capacities in MW.
- A recent **Google Earth Map** (1:5000) demarcating the ESA boundary and the adjoining area of 7-10km around the ESA showing the terrain features and land use features of the ESA including water bodies with . The Date of the map should be displayed on the map.

5. In the concluding remarks, the Chair appreciated the efforts of Govt of Uttarakhand in preparation of the Zonal Master Plan for Bhagirathi ESZ. AS(AP) suggested incorporating the comments of the experts in the document for making a future plan for 15 years. AS (AP) further stated that expertise of other relevant institutions could be obtained in preparation of the Plan. She emphasised that the Man-Animal conflict should be addressed properly and Skill India Programme should be integrated in the Master plan. In addition, a component on Information

Dissemination and Awareness, Education and Communication should also be included.

On the issues relating to the Hydro Power project in the Bhagirathi ESZ, she mentioned that a scientific basis is needed for proceeding further. Accordingly, she asked the State Government of Uttarakhand for Commissioning a study on the 'carrying capacity' involving field experts. Based on the submission of the report of the study on carrying capacity the expert committee would take a decision. She also suggested that Evaluation and Monitoring of the activities under the ESZ should be taken up.

6. The meeting ended with vote of thanks to the Chair.

Annexure-A**21th Expert Committee on ESZ held on 31st August, 2016 on Bhagirathi Eco-Sensitive Zone Notification dated 18th December 2012****List of Participants****Members of Expert Committee**

1. Dr. Amita Prasad, Additional Secretary, Chairperson
2. Shri Paramjit Singh, Director, Botanical Survey of India.
3. Shri S.A. Hussan, Scientist 'G', WII, Dehradun
4. Shri K. Chandra Sekar, Scientist 'D', GB Pant Institute of Himalayan Environment & Development
5. Shri Gopinathan Maheswaran, Scientist 'D', Zoological Survey of India.
6. Ms. Abha Agarwal, Associate Town Planner, TCPO, MOUD.
7. Dr. T. Chandini, Adviser, MoEF&CC

Special Invitees

8. Dr. Sandeep Behera, Consultant Biodiversity, NMCG, MoWR, RD & GR.
9. Shri Sanjay K Jain, Scientist 'G', National Institute of Hydrology, Roorkee.
10. Shri R. Anbalagan, Fellow & Prof., IIT Roorkee.
11. Dr. S. Kerketta, Director, IA Division, MoEF&CC.

Ministry of Environment, Forest and Climate Change, GOI

1. Shri Subrata Bose, Additional Director, MoEF & CC-Member Secretary
2. Shri Pankaj Verma, Joint Director
3. Ms. Jafrin Farha Hussain, Research Assistant

Officials of Government of Uttarakhand

1. Shri S. Ramaswamy, Additional Chief Secretary, Govt. of Uttarakhand
2. Smt. Meenakshi Joshi, Additional Secretary, Govt. of Uttarakhand
3. Shri Sachin Chauhan, SWM(E), UDD Govt. of Uttarakhand
4. Shri Anand Singh, DDO Uttarkashi, Rural Development, Govt. of Uttarakhand
5. Shri Sandeep Kumar, DDO Uttarkashi, Forest Dept., Govt. of Uttarakhand
6. Shri K.K. Srivastava, Chief Engineer, Uttarakhand PWD, Govt. of Uttarakhand
7. Shri Om Prakash, Superintending engineer, PWD Uttarkashi, Govt. of Uttarakhand
8. Shri R.S. Khatri, Executive Engineer, PWD Uttarkashi, Govt. of Uttarakhand
9. Shri Shiv K Gupte, OSD-PR, Uttarakhand Tourism Development Board, Govt. of Uttarakhand.
10. Shri K.S. Negi, D.T.D.O, Tourism Uttarkashi, Govt. of Uttarakhand
11. Shri Suresh Pal, Project Manager, CMU Uttarkashi, Govt. of Uttarakhand.
12. Shri K.C. Pathak, Addl. Director, agent, Govt. of Uttarakhand
13. Shri D.K , D.M. Uttarkashi, Govt. of Uttarakhand.

14. Shri Babulal, S.D.O. forest, Govt. of Uttarakhand.
15. Shri M.S. Tomar, C.A.O. Agriculture, Govt. of Uttarakhand.
16. Shri BCK Mishra, Director, UJNL Ltd., Govt. of Uttarakhand.
17. Shri Harsh Bamgna, DGM & JVML, UJNL Ltd., Govt. of Uttarakhand.
18. Shri Ajay Patel, GM (SHP), UJNL Ltd., Govt. of Uttarakhand.
19. Shri Manoj Keshawani, E.E., UJNL Ltd., Govt. of Uttarakhand.
20. Shri Jitendra S. Rawat, Environment and Social safeguard, UJNL Ltd., Govt. of Uttarakhand.
21. Shri Ajay Verma, Cheif Engineer, Irrigation Dept., Govt. of Uttarakhand
22. Shri Narendra Yadav, District Horticulture officer, Horticulture Dept., Govt. of Uttarakhand
23. Shri Shilendra k. Yadav, GM(P), NHIDCL, Govt. of Uttarakhand.
24. Shri M. Mohamad Ilyas, AD, AEIOM, Govt. of Uttarakhand
25. Shri Atanu Adhikari, Geotechnical Engineer, AEIOM, Govt. of Uttarakhand
26. Shri Amit Rau Joshi, Mgr(P), NHIDICL, Dehradun
27. Shri Amanjit Singh, EE, UEPPA, Dehradun.
28. Shri Lopamudra Dutta, Geotechnical Engineer, AECOM.
29. Shri R. Dutt, Project analyst, SWAJAL.
30. Dr. B S Negi, Director, Horticulture & Food Processing, Govt. of Uttarakhand
31. Shri Prashant Sagar, Manager (civil), MoEF&CC.
