

**Report of the Independent Multidisciplinary Expert Committee on
Lakhwar MPP (300MW) in Uttarakhand**

Constituted by

Hon'ble National Green Tribunal

Vide order dated 20/01/2022 in response to Appeal No. 35/ 2021 in the matter
of Manoj Kumar Mishra &Anr.Vs Union of India &Ors.

August, 2022

Independent Multidisciplinary Expert Committee with Respect to Lakhwar Multipurpose Project (MPP) (300MW)

We the undersigned, members of an independent expert committee constituted by Hon'ble National Green Tribunal vide order dated 20/01/2022 in response to Appeal No. 35/ 2021 in the matter of Manoj Kumar Mishra &Anr.Vs Union of India &Ors. understand that the Hon'ble NGT has assigned the task of having a comprehensive review in light of available data or such other data which may be required in the opinion of domain experts to facilitate informed decision of the Tribunal about the viability of the Lakhwar Multi Purpose Project (300MW)and additional conditions apart from the already laid conditions subject to which the same can be allowed.

The committee after reviewing the claims of petitioners, clarifications from the UJVN Limited and consideration of the same by respective domain experts finalized the report for further submission to Hon'ble NGT.

No.	Name	Designation & Organization	Role in Committee
1.	Ms. Debashree Mukherjee	Additional Secretary, MoWR,GoI, New Delhi.	Chairperson
2.	Ms .Ranjana Rajguru	Additional Secretary, Department of Energy, GoU.	Member Secretary
3.	Dr .Debajit Sarma	Principal Scientist, Directorate of Cold Water Fisheries Research, Bhimtal, Nainital.	Member
4.	Dr.Timir Baran Ghoshal	Director, GSI, Eastern Region, Kolkata.	Member
5.	Prof. Deepak Khare	Indian Institute of Technology, Roorkee.	Member
6.	Dr. Gopi G.V	Scientist-E, Wildlife Institute of India, Dehradun.	Member
7.	Dr. Sumer Chopra	Director, Institute of Seismological Research, Gandhinagar.	Member
8.	Mr.M. K. Ujjainia	Dy. Director General, Statistics Division, Ministry of Social Justice and Empowerment, New Delhi.	Member

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**Report of the Independent Expert Committee constituted by Hon'ble National Green
Tribunal in Appeal No. 35/2021 Vide orders Dated 20th January 2022,
On Lakhwar Multipurpose Projects (300 MW)**

Background of the Project:

Lakhwar Multi-Purpose Project (300MW) is a storage scheme (204 m high dam) on river Yamuna in Dehradun district. Project provides Irrigation to 33780 ha land, drinking/industrial water benefits of 78.83 MCM and power generation of 300MW/572.54 MU. Water and irrigation benefits from the project will be shared by Delhi, Uttar Pradesh, Uttarakhand, Haryana, Rajasthan and Himachal Pradesh through existing irrigation and drinking water network. The Project will also help to a great extent in controlling flood in river Yamuna as well as its rejuvenation.

Lakhwar Multi-Purpose project (300MW) has been declared as 'National Project' by Government of India (GoI) in 2008.

Combined Lakhwar Vyasi project was accepted by Planning Commission vide their letter no. 11-2(67)/76-I&CAD dated 09.01.1976 in the Fifth plan with a direction that the storage and use of water at Lakhwar Vyasi be determined after taking into account the requirements of eastern and western Yamuna canal system and any release required to be made from Tajewala to meet the requirement of Delhi water supply, Agra and Gurgaon canals. Lakhwar Vyasi project had three major components-Lakhwar dam, Vyasi dam and Katapathar barrage.

Approval of diversion of 868.08 hectare forest land of combined Lakhwar Vyasi project in favour of Irrigation Departments, Govt. of Uttar Pradesh was accorded by MoEF in year 1986. The Forest and Environmental clearance of Lakhwar Vyasi project was granted by Ministry of Environment & Forest, Department of Environment Forest and Wild Life, GoI in October, 1986 and February, 1987 respectively.

Compensatory Afforestation for the project has been done by the State Forest Department of Uttar Pradesh (UP) during the years 1986 to 1991 on 956.0 hectare of waste land in Lalitpur District, UP.

After all necessary clearances and approvals, works on the project commenced by the UP Irrigation Department in the Year 1987 and continued up to 1992. Till 1992, substantial

construction work was done on the project, such as 40 km road infrastructure, dam stripping, diversion tunnel, excavation of intake, underground power house, adit to control room, adit to erection bay, tail race tunnel, etc. Further, projects were bifurcated into Lakhwar MPP (300 MW), Vyasi Hydro Electric Projects (HEP) (120 MW) 5 km downstream of Lakhwar MPP and construction of a barrage at Katapathar about 3 km downstream of Vyasi HEP. A fresh environmental clearance to Vyasi HEP (120 MW) was accorded on 07.09.2007. After review of the request of UJVNL, validity of Environmental Clearance of Lakhwar Multipurpose Project was continued by Ministry of Environment & Forests, GoI vide letter dated 10.01.2011.

Out of 868.08 ha. forest land, 99.03 ha was diverted for Vyasi HEP and balance 768.1552 ha was diverted for Lakhwar MPP. Subsequently, in respect of 768.1552 ha of forest land, MoEF&CC vide letter F. No. 8-172/1986-FC (pt-1), dated 31.01.2014 accorded the approval for transfer of the lease in favour of UJVN Limited.

An expenditure of Rs. 423.13 Crore has already been incurred up to 31st March 2022 including Rs 85.86 Crore and Rs. 64.90 Crore respectively that have been transferred to Compensatory Afforestation Fund Management and Planning Authority (CAMPA) funds against Catchment Treatment Plan (CAT) plan and Net Present Value (NPV) in the year 2014.

It was informed to the committee that Vyasi Project has already been commissioned and work on Lakhwar MPP has been initiated.

Cases before The Hon'ble NGT :-

1. Before the National Green Tribunal Principal Bench, New Delhi Application No. 431 of 2015 in the matter of Manoj Kumar Mishra and Bhim Singh Rawat Vs Union of India & Others.

In the above matter NGT issued an order dated 10.01.2019 and directed the Expert Appraisal Committee (EAC) to appraise the project afresh in terms of EIA notification 2006 and impose additional general and specific conditions as may be considered necessary. The order is placed at **Annexure-I**. EAC deliberated the issue of Lakhwar Multipurpose Project vis-a-vis the NGT Order during its meeting held on January 28, 2019 and recommended a visit by a Sub-Committee of the EAC to the project site for

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additional study, if any, to be taken up based on the standard Terms of Reference (ToR) for River Valley Projects.

The sub-committee of EAC made a visit to the project site during April 2019 and discussed the matter in its meeting held on 23/04/2019. Based on the sub-committee's observations and recommendations after site visit, fresh scoping clearance was sought; which was issued by MoEF&CC vide letter no. J-12011/11/2019-IA-I dated 5th December 2019. In compliance, the updated Environmental Impact Assessment (EIA) Report and Environmental Management Plan (EMP) was prepared by UJVN Limited through a consultant accredited by the National Accreditation Board for Education and Training (NABET) and was submitted to Uttarakhand Environment Protection and Pollution Control Board on 17.02.2020 for conducting Public hearing.

The public hearing of Lakhwar Multipurpose project was successfully conducted in Dehradun on 30.09.2020 and Tehri Garhwal District on 12.10.2020 and thereafter, the updated EIA/EMP report was submitted to MoEF& CC. On submission of fresh EIA/EMP report to MoEF& CC, fresh Environmental Clearance for Lakhwar MPP (300 MW) was issued on 02.02.2021.

National Board of Wild Life (NBWL) clearance was sought as project falls within 10km distance from Mussoorie Wild Life Sanctuary (WLS). The Standing Committee of National Board for Wildlife, MoEF&CC in its meeting held on 07.04.2020 recommended the proposal for construction and commissioning of Lakhwar MPP and communicated vide letter no.F.No.6-2/2020 WL dated 20.04.2020. Project implementation was initiated after getting all statutory clearances (such as Environment, Forest, Wild Life etc.).

2. Before the National Green Tribunal Principal Bench, New Delhi Appeal No. 35/2021 in the matter of Manoj Kumar Mishra &Anr. Vs Union of India &Ors.

In the matter Hon'ble NGT passed directions on 20th January 2022 in respect of Environmental clearance (EC) granted by MoEF & CC, vide order dated 02.02.2021 for Lakhwar Multi-Purpose Project (300 MW) in District Tehri and Dehradun of Uttarakhand by M/s UJVN Ltd. The order is placed at **Annexure-II**.

National Green Tribunal in its order dated 20/01/2022 in response to Appeal No. 35/2021, observed that there is need to conduct comprehensive review which may require

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opinion of domain experts to facilitate informed decision of the Tribunal about the viability of the project and conditions subject to which the same can be allowed, apart from conditions already laid down. The Hon'ble NGT constituted an Independent Expert Committee comprising of below mentioned multi-disciplinary authorities.

- i. Additional Secretary, MoWR (will Chair the Committee)
- ii. Director Cold Water Fisheries, Nainital
- iii. Geological Survey of India (GSI)
- iv. IIT Roorkee
- v. Ministry of Social Justice and Empowerment
- vi. Wildlife Institute of India, Dehradun
- vii. Institute of Seismological Research, Gandhinagar

The Secretary, Department of Energy, Govt of Uttarakhand has been mandated to act as the Member Secretary of the Committee for coordination and compliance.

In compliances of the order, an Independent Expert Committee comprising of multi-disciplinary authorities has been constituted vide GoU OM No. 55/I-1/2022/05/01(Writ)/2022 Dated 02 February 2022 having regard to domain expertise to deal with the issues of seismology, protection of fisheries, flora & fauna, biodiversity, catchment area treatment and other environmental issues including muck dumping and social issues arising out of submergence. The domain experts were required to look into their respective fields, to be collated by the Committee. The Committee was given one month time for meeting and two months' time to review the available data or such other data as might be required to be collected. The Committee was directed to record its observations about the viability of the project, mitigating the adverse impact on environment, flora and fauna and further conditions which may be required to be laid down including the mechanism for monitoring during the setting up and execution of the project and also for resettlement and rehabilitation of inhabitants who may be displaced. The OM issued by GoU is placed at **Annexure-III**.

Further, on 02 February 2022 a letter from Additional Secretary, Govt. of Uttarakhand Vide No. 56/I-1/2022/05/01(Writ)/2022, was issued to respective departments/Institutions for the nomination of domain expert members. All relevant documents/reports were also shared. The letter is placed at **Annexure-IV**. The

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nominations were received from the concerned department/institutions. Details of the individual expert members nominated by the respective department/Institutions for participating in the Committee are listed at **Annexure -V**.

The first meeting of the Independent Multidisciplinary Committee was held in virtual mode on 16.02.2022. The relevant details/reports were made available to the domain expert members. The minutes of the meeting are placed at **Annexure-VI**.

Further, based on the discussions during the meeting, and domain expertise of the individual agency identified by Hon'ble NGT as a part of the expert Committee, the specific items of the terms of reference outlined by NGT were assigned to the individual agencies/expert members as per **Annexure-VII**.

Subsequent to the first meeting based on inputs from the different expert members of the Committee, the specific items of terms of reference assigned to the agencies was suitably modified and the term of reference for each member was finalized as per **Annexure-VIII**. However, regarding appraisal of item at serial no. 1 (drinking water, irrigation component of the project) was decided to be taken up by IIT, Roorkee.

During the first meeting of the expert committee a detailed need of site visit by some of domain experts was expressed and therefore the concerned domain experts visited the site on 04.04.2022. Thereafter, the second meeting of the Committee was held in physical mode at Dehradun, on 05.04.2022. The Member for Ministry of Social Justice & Empowerment attended the meeting by virtual mode. During the meeting, detailed presentations were made by the domain experts of respective Organisations and based on the individual presentations, the Committee suggested the way forward as per requirement. Additional inputs that were sought by the domain experts were provided. Minutes of the meeting are placed at **Annexure-IX**.

Subsequently the third meeting of the Committee was held in physical mode at New Delhi, on 13.06.2022. During the meeting, detailed presentations were given by UJVN Limited as well as some domain expert members. Detailed deliberations were held and observations from members were compiled. Minutes of the meeting are placed at **Annexure-X**.

Subsequently some observations / suggestions were forwarded by the MoSJ&E vide letter no. J-34/1/2022- Statistics Division, dated 09.06.2022 & 21.06.2022. Detailed clarifications were submitted by UJVN Limited for each observation duly supported by relevant provisions mentioned in the EIA/EMP report. vide letter no 118/UJVNL/03/Director Project/GM(C-LWR/C-8) dated 30-06-2022. Expert member from MoSJ&E expressed his satisfaction to the replies of observations however, suggested for effective monitoring mechanism. Replies are placed at **Annexure XI**.

The report and recommendations of the individual agencies were discussed in detail in the fourth meeting of the Committee held in physical mode on 03.08.2022 at New Delhi. The final comments & recommendations are attached at **Annexure- XII**.

Based on the deliberations over the series of meetings and the recommendations of the expert members, the findings and views of the committee are finalized and placed at **Annexure- XIII**.

Assessment of the committee in present context: - The documents and submission made by UJVN Limited with respect to observations & issues raised by the respective domain expert members, has been evaluated & examined thoroughly by the respective domain expert. The committee is of the view that possible impacts have been quantified and amelioration strategies have been suggested. The Committee feels that the conditions laid down by MoEF&CC while according environmental clearance, are comprehensive and duly address the possible impact on environment, biodiversity, flora fauna and other aspects. However, in the interest of due diligence, effective monitoring mechanism during construction and operation phase of the project needs to be developed. It is suggested that a six-monthly review of the implementations of the recommendations may be done by the concerned domain expert member of the committee.

Conclusion: - The Committee wishes to submit the following conclusions to the Hon'ble National Green Tribunal.

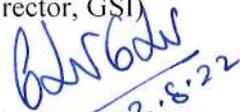
All the committee members are of the view that the project is of National interest and all the clearances have been accorded to the project based on the merits and no material has been placed before the Committee which may insinuate adversely towards viability of the

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project. In view of the above, Lakhwar Multipurpose Project in Uttarakhand (300MW) is recommended to be continued with a effective monitoring mechanism & requisite safeguard measures to ensure that commitments made in EIA/EMP studies as well as conditions stipulated in Environmental clearance are adhered to in letter and spirit.


3.8.22

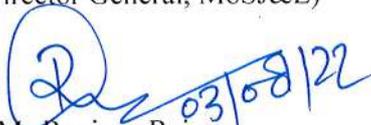
Dr. Timir Baran Ghoshal
(Director, GSI)


3.8.22

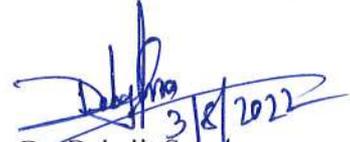
Dr. Gopi G.V.
(Scientist-E, WII)


3/8/22

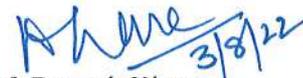
Mr. M. K. Ujjainia
(Dy. Director General, MoSJ&E)


03/08/22

Ms. Ranjana Rajguru
(Additional Secretary, GoU)


3/8/2022

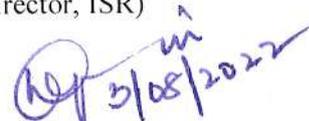
Dr. Debajit Sarma
(Principal Scientist, DCFR)


3/8/22

Prof. Deepak Khare
(IIT, Roorkee)


3/8/22

Dr. Sumer Chopra
(Director, ISR)


3/08/2022

Ms. Debashree Mukherjee
(Additional Secretary, Gol)

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

APPLICATION NO. 431 OF 2015

IN THE MATTER OF:

1. Manoj Kumar Mishra

178-F, Pocket 4,
Mayur Vihar, Phase 1
Delhi -110091

2. Bhim Singh Rawat

House No. 213, Street No. 7
Sanjay Colony,
Safiabad Road,
Narela, Delhi - 110040

.....Applicants

Versus

1. Union of India

Through the Secretary
Ministry of Environment, Forest and Climate Change
Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi - 110 003

2. Ministry of Water Resources, River Development and Ganga Rejuvenation

Through its Secretary,
Shram Shakti Bhawan
Rafi Marg, New Delhi- 110 001

3. Uttarakhand Jal Vidyut Nigam

Maharani Bagh, G.M.S. Road
Dehradun, Uttarakhand - 248006

.....Respondents

COUNSEL FOR APPLICANT:

Mr. Ritwick Dutta, Sr. Adv. with Mr. Rahul Choudhary, Mr. Saurabh Sharma, Ms Meera Gopal, Ms. Geetanjali Sreedhar & Mr. Utkarsh Jain, Advs.

COUNSEL FOR RESPONDENTS:

Mr. Balendu Shekhar, Mr. Sriansh Prakash and Mr. Raj Kumar Maurya, Advs. for MoEF

Mr. Ardhendumauli Kr. Prasad, Mr. Shashank Saxena, Mr. Amritesh and Ms. Diksha Gera, B.V. Niren & Mr. Kshitij Mudgal, Advs for MoWR (R-2)

Mr. Amit Anand Tiwari and Mr. Shashwat Singh, Advs. for UJVNL

Mr. Brajesh Pandey and Mr. Varun Thakur, Advs. for NMCG

JUDGEMENT

PRESENT:

Hon'ble Mr. Justice Raghuvendra S. Rathore (Judicial Member)

Hon'ble Dr. Satyawan Singh Garbyal (Expert Member)

Reserved on: 04th January, 2019
Pronounced on: 10th January, 2019

1. Whether the judgment is allowed to be published on the net?
2. Whether the judgment is allowed to be published in the NGT Reporter?

Dr. S.S. GARBYAL, (EXPERT MEMBER)

This Original Application is regarding Lakhwar Vyasi Hydro Electric Project (HEP) which involves construction of 204 mt. high concrete dam with a 40 km long reservoir on river, Yamuna, Ministry of Environment & Forest gave its approval on 03.02.1987 stipulating following conditions:-

- (a) Adequate fuel arrangement for the labour force to avoid destruction of nearby vegetation cover in the forests;***

- (b) Restoration of the construction area;***
- (c) Catchment area treatment scheme;***
- (d) Grazing to be prohibited in the Reserve Forests;***
- (e) Scheme for training of the displaced people;***
- (f) No additional forest to be acquired;***
- (g) Monitoring Committee to be constituted by the State Government should include the expert on soil conservation, forest research etc.***

2. The construction work started in 1987 and continued till 1992. Thereafter construction work stopped. The project was subsequently bifurcated into two components namely Lakhwar Multipurposes Dam (300 MW) and Vyasi HEP (120 MW). A separate Environmental Clearance was obtained for Vyasi HEP on 07.09.2007.

3. The Construction work on Lakhwar Multipurpose Dam which was stopped in 1992 is yet to restart. This project came up for consideration of the EAC on 12.11.2010 and following clarification were sought by the EAC:-

- I. It was noted that irrigation facility will be increased by augmentation of water by constructing a barrage in Katapathar. However, no details in this regard has been provided.***
- II. The purpose of Vyasi dam shown downstream of Lakhwar dam is not spelt out.***
- III. Katapathar barrage is proposed for irrigation (or regulated) release to Hathinkund barrage (11,100 sq. km basin). No clear description with a flow chart to explain the functioning of schemes is available. A map may be provided showing the followings:-***
 - (a) Lakhwar dam, linkage to Vyasi dam, is Lakhwar dam UG power house a dam to power house?***

- (b) *Vyasi dam, mentioned as 5 km downstream of Lakhwar dam with additional catchment area of 20 km². Its Public Hearing at Hathriary (is this the underground powerhouse of Lakhwar project, or Vyasi project) fig- 1.2 of EMP Report.*
- (c) *Does katapathar barrage, provide direct irrigation and drinking water benefit or merely feed Hathnikund barrage?*
- (d) *Command area of EYC from Hathnikund barrage to be augmented by Katapathar barrage regulation linked with (functioning from the regulated power release of Lakhwar dam and Vyasi power house) Lakhwar project primarily. The extent of irrigation supplementation to the existing command, its impact on drainage, soil quality (due to additional input of water) has to be brought out in the EIA studies. A simulation of 90% and 75% dependable year of Lakhwar reservoir, out flow from Vyasi power house and moderation done at Hathnikund barrage, its water demand, deficit to be met from lakhwar dam be brought out with clarity.*

At page - 4.1 of Vol.- VI (Executive summary), it is mentioned that "Lakhwar hydro project with an installed capacity of 300 MW and downstream Vyasi project with installed capacity of 120 MW are geographically very attractive sites". Where are the details of Vyasi projects such as the dam, the water conductor system and power house, tail race etc.

It is quite obvious the developers have submitted piecemeal documents with no linkage, particularly on the environment aspects. The Vol.-I DPR (Engineering) does not show/ contain Form-1 required for scoping clearance. Instead a long check list required for TEC of CWC/ CEA is enclosed, which is totally irrelevant for environmental scoping. A look at reservoir operation study for 1974-75 shows the project

generates 4-8 hours of electricity every day thereby grossly altering the existing hydrological regime of the river.

DPR Vol.-I (b) "Irrigation Aspects" do not contain any linkage of power release with irrigation drawal/ need either at katapathar or Hathnikund barrages.

In view of the facts that part construction of Lakhwar dam complex is already done, the environmental impacts have already occurred. How do the developers address this issue?

The Lakhwar reservoir operation during non-monsoon has to match the crop water need of the proposed expansion/ stabilization of EY Canal? What is the existing cropping pattern and proposed cropping pattern of the Lakhwar-Vyasi-Hathnikund project? Does the Table - 1.3 at Page-5 at Table at page-6 of irrigation Report depict the position correctly? In the absence of salient features, linkages, sketchy information the scheme cannot be examined. The EIA/ EMP reports prepared do not serve much purpose in the absence of an approved Form-1 and TOR.

This project should be broken down to three independent projects such as Lakhwar, Vyasi and Katapathar with their linkages and clear hydrological details and other environmental issues for examining and granting a scoping clearance. All past clearances of MoEF, CWC, CEA may also be provided.

4. It is revealed from the letter dated 10.01.2011 from MoEF to Director Uttarakhand Jal Vidyut Nigam Limited, which is on record that after bifurcation of the original projects into Lakhwar and Vyasi HEP the construction of Vyasi HEP was transferred to NHPC and EC was granted for this project on 07.09.2007 and subsequently EC was transferred to Uttarakhand Jal Vidyut Nigam (UJVNL). The MoEF

had reviewed the request of the State Government to exempt the project from obtaining fresh EC and it was intimated by the MoEF that the validity of EC issued to the project continues. It was, however, observed as follows:-

However, as the project was granted environment clearance long time back and since then there may be several changes in the surroundings of the project. As such the clarifications sought by the EAC all its meeting held on 12.11.2010 as per current practice should be submitted. Minutes of the meeting is available in the Ministry's website (envfor.nic.in). A copy of the same is annexed. Additional conditions as safeguard measures would be proposed after examining the clarifications.

5. The applicant submits that the approval which was given in 1987 was only an administrative approval and not proper EC as it was given without proper EIA reports and EMP. The applicant contends that there has been many changes on the ground, after 1992 including disaster of 2013 and has also brought to our notice the findings of a study conducted by a noted geologist K.S. Valdiya in 2014 which are summarised as below :-

"In the fault-ridden, seismically and tectonically ravaged by excessive rains and resultant Landslides in Uttarakhand, a very large number of big and small dams are being constructed and planned. Quite many of these projects suffered crippling damages during the 2013 disaster as mountain slopes slid down and floodwater severely eroded stream banks and dumped huge volumes of sediments on critical facilities. If the idea is to have environment-friendly power projects, then the planners and dam builders must not ignore the geological

reality of the geodynamically sensitive region. Better sites for dams can be explored far upstream of the main Central Thrust Zone”.

6. It has further been submitted that after 2013 tragedy an expert body was set up by MoEF IN October, 2013 on the direction of Hon'ble Supreme Court and one of the terms of reference was to assess and review extent of progress made in respect of ongoing/ under construction Hydro Electric Power Projects as on the date of occurrence of the tragedy vis-à-vis progress made in compliance of environmental conditions/ safeguard measures. Summary of “Assessment of Environmental Degradation and Impact of Hydro Electric Power Project during the June, 2013 Disaster in Uttarakhand” submitted to MoEF in 2014 includes observation of one of the Member of the expert body Dr. Hemant Dhyani which reads as follows :-

“It was brought to the notice of the EB that clearances to start work had been granted recently to the Lakhwar (300 MW) and Vyasi (120 MW) projects. This is in violation of the spirit of the Hon'ble Supreme Court's order of August 13, 2013. It is also noticed that these projects were approved more than 25 years ago. Consequently they do not have any EIA/EMP/DMP studies that are mandatory today. Without conducting cumulative impact assessments and disaster management studies of the Yamuna and Kali basins no such projects should be allowed at the risk of fragile ecology, biodiversity and lives of people living in and around the project sites”.

7. It has been noted by the expert Committee that as per the EIA notification dated 14.09.2006 the validity of approval EC is 10 years and that in number of cases the validity of EC is 5 years. The expert Committee have recommended that the validity should not be extended, unless fresh appraisal is done.

8. Learned Counsel for the Project Proponent submits that they have complied with all the conditions of the approvals and have also clarified the various points raised by the EAC in 2010. It is, however, not known whether the clarifications given by the project authorities were placed before the EAC.

9. After considering the pleadings and materials on record, we are of the considered opinion that the clarifications given by the Project Proponent, the report of the expert Committee and finding of various studies need to be looked into and studied by the EAC and project needs to be reappraised in terms of EIA notification, 2006.

10. We, therefore, direct the EAC to appraise the project afresh in terms of EIA notification 2006 and impose additional general and specific conditions as may be considered necessary. EAC will be free to call for any reports which it may consider necessary. EAC is further directed to complete the appraisal by 15.04.2019. Till the project is reappraised status quo shall be maintained.

With above directions this Original Application No. 431/2015 is disposed of, with no order as to cost.

.....
Justice Raghuvendra S. Rathore
(Judicial Member)

.....
Satyawan Singh Garbyal
(Expert Member)

Dated: 10th January, 2019
New Delhi

Item No. 02

(Court No. 1)

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

(By Video Conferencing)

Appeal No. 35/2021

(I.A. No. 247/2021: For waiving requirement of fair copies)

Manoj Mishra & Anr.

Appellant(s)

Versus

Union of India & Ors.

Respondent(s)

Date of hearing: 20.01.2022

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

Appellant: Mr. Ritwick Dutta, Advocate

ORDER

1. This Appeal has been preferred against Environmental Clearance (EC) granted by the Ministry of Environment, Forest & Climate Change (MoEF&CC) vide order dated 02.02.2021 for Lakhwar Multipurpose Project (300 MW) in District Tehri Garwal and Dehradun of Uttarakhand by M/s UJVN Ltd.

2. The appellant had earlier filed *O.A No. 431/2015, Manoj Misra & Anr. v. Union of India & Ors.*, against approval granted by the MoEF&CC on 03.02.1987. The Application was disposed of by the Tribunal on 10.01.2019. The Tribunal noted that the work started in 1987 and continued till 1992. Later, the project was bifurcated into two components

Lakhwar Multipurposes Dam (300 MW) and Vyasi HEP (120 MW). A separate Environmental Clearance was obtained for Vyasi HEP on 17.09.2007. Subsequently, EC was transferred to Uttarakhand Jal Vidyut Nigam (UJVNL). After 2013 tragedy, an expert body was set up by MoEF in October, 2013 on the direction of Hon'ble Supreme Court. One of the terms of reference was to assess and review extent of progress made in respect of ongoing/under construction Hydro Electric Power Projects as on the date of occurrence of the tragedy. Summary of "Assessment of Environmental Degradation and Impact of Hydro Electric Power Project during the June, 2013 Disaster in Uttarakhand" submitted to MoEF in 2014 includes observation of one of the Member of the expert body Dr. Hemant Dhyani.

3. After considering the objection of the applicant that the validity of earlier EC had expired and the project needs to be re-appraised in terms of EIA Notification 2006, the Tribunal directed such reappraisal as follows:-

"7. It has been noted by the expert Committee that as per the EIA notification dated 14.09.2006 the validity of approval EC is 10 years and that in number of cases the validity of EC is 5 years. The expert Committee have recommended that the validity should not be extended, unless fresh appraisal is done.

8. Learned Counsel for the Project Proponent submits that they have complied with all the conditions of the approvals and have also clarified the various points raised by the EAC in 2010. It is, however, not known whether the clarifications given by the project authorities were placed before the EAC.

9. After considering the pleadings and materials on record, we are of the considered opinion that the clarifications given by the Project Proponent, the report of the expert Committee and finding of various studies need to be looked into and studied by the EAC and project needs to be reappraised in terms of EIA notification, 2006.

10. We, therefore, direct the EAC to appraise the project afresh in terms of EIA notification 2006 and impose additional general and specific conditions as may be considered necessary. EAC will be free to call for any reports which it may consider necessary. EAC is further

directed to complete the appraisal by 15.04.2019. Till the project is reappraised status quo shall be maintained.”

2. As shown by the impugned order, re-appraisal was conducted. A sub-committee visited the project site in April, 2019. ToR was issued on 05.12.2019 Public hearings were held on 30th September 2020 at Lakhwar Stadium, Near Mahasu Mandir, Village Lakhwar, District Dehradun and 12th October 2020 at Government Primary School, Ranogi (Debogi), District Tehri (Garhwal, Uttarakhand. Primary Data was collected through field surveys for pre-monsoon and monsoon from May 2019 to August 2019. EIA/ EMP report for Environment Clearance was submitted to the Ministry on 20.11.2020. The proposal was considered by the Expert Appraisal Committee (EAC) on 02.12.2019, EAC deliberated on the information submitted (Form 2, EIA/EMP report Public Hearing issues kml file, etc.) and as presented in the meeting and observed that MoEF&CC vide letter F. No. 8-172/1986-FC (pt-1) dated 31.01.1014 accorded the approval for transfer of the lease in favor of UJVN Ltd. in respect of 768.1552 hectares of forest land already diverted during 1986 for construction of Lakhwar Project. Standing Committee of National Board for Wildlife, MoEF&CC in its meeting held on 17.04.2020 recommended the proposal for construction and commissioning of Lakhwar MPP and communicated the same vide letter F.No. 6-2/2020 WL dated 20.04.2020. EAC during the meeting also noted that though it is a Multipurpose Project, instant application is for only hydroelectric component. EAC after detailed deliberation on the information submitted by the Project Proponent, recommended the proposal for grant of Environmental Clearance subject of compliance of applicable Standard EC conditions with the certain additional conditions as follows:-

“i. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The

budgetary provisions (Rs. 29685.68 lakhs) for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.

- ii. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.*
- iii. Any other clearances from any other organization/ department as applicable to the proposed project shall be obtained.*
- iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.*
- v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.*
- vi. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.*
- vii. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.*
- viii. As the proposed project falls in Yamuna River Basin and its CIA & CCS is already complete, the recommendation of CIA & CCS shall be followed while implementing the Project.*
- ix. Beneficiary states of Lakhwar project shall take separate Environmental Clearance for irrigation as per the EIA Notification, 2006 and as amended thereof.*
- c. The clearance is valid for period of 10 years from the date of issue of this letter for commissioning of the project*
- vi. The EC granted is strictly under the provisions of EIA Notification, 2006 and amendments thereof. It does not amount to be approval under any other acts or rules applicable for the project, the requisite approvals of which have to be ensured by the Project Proponent."*

4. The EAC also noted as follows:-

- “6 Lakhwar Multipurpose Project is located on Yamuna River in the Dehradun and Tehri Districts of Ullarakhand State and being developed by UJVN Lid. The construction of dam and underground power house for Lakhwar Multipurpose Project (300 MW) is proposed near Lohari village in Kalsi Tehsil of Dehradun district of Uttarakhand. Proposed dam site is located at latitude 303103 N and longitude 7756'58" E. All the components of Lakhwar Multipurpose Projects are approachable from National Highway 507 (123). NH 507 is the one the busiest highway in the region from May to October, connecting Dehradun to Yamunotri (a Hindu pilgrim) The project site is approachable from Dehradun by NH-507 up to project site at Lohari village. Kalsi is the nearest important town from the project area which is 20 km away from Project site.
7. PP informed about project components which includes (1) A 204m high concrete gravity dam with top level of the dam at El 800 m and the riverbed level a the dam site is around El 623 m. The Full Reservoir Level (FRL) and minimum draw down level (MDDL) of the reservoir are El 796 m and El 752 m, respectively, with gross storage of 587.84 MCM at FRL for diurnal peaking capabilities. The intake structure has been proposed on right abutment just upstream of dam body Submergence area at FRL of 796m has been worked out as 957 ha; which will provide a gross storage of 587.84 MCM and live storage of 330.40 MCM. Average width of submergence is 483 m and length of submergence is 23 km. Three steel lined penstocks, each of 4.30 m diameters with length of 186.5 m, 211 m and 235 m; (01) An Underground Powerhouse (size of cavern- 165 mx20 m x 48.05 m D-Shaped (unfinished) is proposed with Vertical Francis turbines at axis level of El. 616 m. The reservoir to be created by the dam will operate between FRL 796 m & MDDL 752m with rated head of 148.0m. The installed capacity of the power house will be 300 7. MW.
8. PP informed that total land requirement is 927.0822 ha; out of which 158.927 Ha is private land and 768. 1552 Ha is forest land. Approval of diversion of 868.08 ha forest land of combined Lakhwar-Vyasi Multipurpose Project in favour of Uttar Pradesh Irrigation Department was accorded by MoEF vide letter No -8-172/86-Fry (Cons) 31.01.2014 Dated 31.10.1986. MoEF&CC vide letter F. No. 8-172/1986-FC (pt-1) dated accorded the approval for transfer of the lease in favour of UJVN Ltd in respect construction of 768.1552 of Lakhwar hectares of forestland already diverted during 1986 for Project.
- 9 PP informed that the project is located within 10km aerial distance of Mussoorie Wildlife Sactuary. Standing committee of National Board for Wildlife, MoEF&CC in its meeting held on 07.04.2020 recommended the proposal for Construction and Commissioning of Lakhwar MPP and communicated the same vide letter no.F.No.6-2/2020WL dated 20.04.2020.
10. PP informed that project benefit includes annual Generation- 572.54 MU and in addition, it will also bring irrigation and drinking walker benefits to six states for overall development in

the region, beneficiary states will utilize their share of water as per the agreement signed on 28.08.2018. A number of marginal activities and jobs would be available to the locals during construction phase. During construction about 2000 skilled and unskilled manpower will be engaged for various construction activities. The cost of power component as per the approved revised cost estimate was worked out to be as Rs. 1074.16 crores (18.7% of the total cost of Rs. 5747.17 Crore)."

5. We have heard learned counsel for the appellant. Contentions raised on behalf of the appellant are that the drinking water/irrigation component of the project has not been appraised and the EAC went beyond its mandate while conducting its meeting for granting the Environmental Clearance to the project. The EIA Report prepared for the project is highly deficient and faulty as it did not take into account the impact on biodiversity of the project and the impact of clearing a forest land of 768.15 ha. It is submitted that the disaster management plan is also highly faulty as it does not take into consideration the location of the project with respect to seismic activity. Additionally, the muck disposal sites are at close proximity to the river. The cumulative impact assessment study for Yamuna river basin is not available in public domain. The project has also adversely impacted the flow of water in Yamuna River. The appellant has also questioned the credentials of the Chairman and members of the EAC and it is submitted that the project is not viable on account of adverse impact on flora and fauna and also having regard to the location of the project. Safeguards incorporated are not adequate.

6. We are of the view that having regard to mandate of the Tribunal to conduct merit review, irrespective of any merit in the case of the appellant, merely looking at procedural aspects and credentials of the Chairman and Members of the EAC may not be helpful to the cause of environment. A comprehensive view on substance of the matter may be in larger public

interest. This may require opinion of domain experts to facilitate informed decision of the Tribunal about the viability of the project and conditions subject to which the same can be allowed, apart from conditions already laid down. Accordingly, we constitute an independent expert Committee comprising of multi-disciplinary authorities as follows:-

- i. Additional Secretary, MoWR (will Chair the Committee)
- ii. Director Cold Water Fisheries, Nainital
- iii. Geological Survey of India (GSI)
- iv. IIT Roorkee
- v. Ministry of Social Justice and Empowerment
- vi. Wildlife Institute of India, Dehradun
- vii. Institute of Seismological Research, Gandhinagar

The Secretary, Department of Energy, Govt of Uttarakhand will act as the Member Secretary of the Committee for coordination and compliance.

7. The Committee has been constituted having regard to domain expertise to deal with the issues of seismology, protection of fisheries, flora & fauna, biodiversity, catchment area treatment and other environmental issues including, muck dumping and social issues arising out of submergence. The domain experts will look into their respective fields, to be collated collectively by the Committee. The meeting of the Committee may be called within one month. Further study may be completed within two months in the light of available data or such other data as may be required to be collected. The Committee may record its observations about the viability of the project, mitigating the adverse impact on environment, flora and fauna and further conditions which may be required to be laid down including the mechanism for monitoring during the setting up and execution of the project and also for resettlement and rehabilitation of inhabitants who may be displaced. The Committee may complete its proceedings as far as possible within four months and file its report before

this Tribunal on or before June 30, 2022 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. The report may also be uploaded on the website of the Uttarakhand Government and Ministry of Power, so as to be accessed by any stakeholder/party. Any objection, suggestion, observation for the report may be filed before this Tribunal within one month thereafter i.e. by July 31, 2022.

8. The appellant may also serve a notice of the Appeal on the impleaded respondents for their response, if any. The parties are also free to file their suggestions/observations with the Committee through the Member Secretary.

9. The cost in the form of remuneration of the members of the Committee, expenses on travelling, stay and other expenses will be borne by the UJVN, Dehradun through the Member Secretary of the Committee.

10. In case, any difficulty arises in the execution of this order, the same can be brought before the Registrar General of this Tribunal by email.

List for further consideration on 17.08.2022.

A copy of this order be forwarded to the Secretary, MoWR, Director Cold Water Fisheries, Nainital, Geological Survey of India (GSI), IIT Roorkee, Ministry of Social Justice and Empowerment, Wildlife Institute of India, Dehradun, Institute of Seismological Research, Gandhinagar, the Secretary, Department of Energy, Govt of Uttarakhand and Uttarakhand Jal Vidyut Nigam Limited (UJVN) Dehradun, Govt. of Uttarakhand by email for compliance.

I.A No. 247/2021 filed for waiving the requirement of fair copies will also stand disposed of in view of order on merits.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Brijesh Sethi, JM

Prof. A. Senthil Vel, EM

Dr. Afroz Ahmad, EM

January 20, 2022
Appeal No. 35/2021
(I.A. No. 247/2021)
AB

**Government of Uttarakhand
Energy Section-1**

**No. : 55 /I-1/2022/05/01(Writ)/2022
Dehradun : Dated 02 February, 2022**

OFFICE MEMORANDUM

In pursuance to the directions passed by Hon'ble NGT on 20th January 2022 in respect of Environmental clearance (EC) granted by MoEF&CC, Government of India vide order dated 02.02.2021 for Lakhwar Multipurpose Project (300 MW) in District Tehri Garhwal and Dehradun, an Independent Expert Committee is hereby constituted as below : -

- | | |
|---|--------------------|
| i. Additional Secretary, Ministry of Water Resources,
(Government of India) | : Chairperson |
| ii Director, Cold Water Fisheries, Nainital | : Member |
| iii Representative nominated by Geological Survey of India
(GSI) | : Member |
| iv Representative nominated by Indian Institute of
Technology, Roorkee | : Member |
| v Representative nominated by Ministry of Social
Justice and Empowerment | : Member |
| vi Representative nominated by Wildlife Institute of
India, Dehradun | : Member |
| vii Representative nominated by Institute of
Seismological Research, Gandhinagar | : Member |
| Viii Secretary, Department of Energy,
Government of Uttarakhand | : Member secretary |
2. As per the Hon'ble NGT order dated 20.01.2022, the scope of the Independent Expert Committee is to review the issues of Seismology, protection of fisheries, flora & fauna, biodiversity, catchment area treatment, muck dumping, examination of viability of the project, mitigating the adverse impact on environment and further conditions which may be required to be laid down including the mechanism for monitoring during the setting up and execution of the project and also for resettlement and rehabilitation of inhabitants who may be displaced (including social issues) arising out of submergence.
3. Study may be completed within 2 months. The committee shall complete its proceedings within four months and file its report before the Tribunal on or before June 30, 2022.
4. The cost in the form of remuneration of the members of the Committee, expenses on

travelling, stay and other expenses will be borne by the UJVN, Dehradun through the Member Secretary of the Committee.


(Radha Raturi)
Additional Chief Secretary

No. 55 /I-1/2022/05/01(Writ)/2022, Dated.

Copy to :

1. Hon'ble National Green Tribunal, Faridkot House, Copernicus Marg, New Delhi-110001.
2. Secretary, Ministry of Social Justice and Empowerment, Shastri Bhawan, Dr Rajendra Prasad Road, Near Constitution club of India, Central Secretariat, Delhi 110001.
3. Additional Secretary, Ministry of Water Resources, RD&GR Shram Shakti Bhawan, Rafi Marg, Sansad Marg Area, New Delhi 110001.
4. Director, Cold Water Fisheries, Industrial Area, Bhimtal, Nainital Uttarakhand 263136.
5. Director General, Geological Survey of India, 27 Jawaharlal Nehru Road, Kolkata 700016.
6. Director, Indian Institute of Technology, Roorkee, Haridwar, Uttarakhand 247667.
7. Director, Wildlife Institute of India, P.O Box No 18, Chandrabani Dehradun 248001.
8. Director General, Institute of Seismological Research, Knowledge Corridor, Raisan Gandhinagar 382009.
9. MD, UJVN Ltd, Dehradun.

By Order,

(Vikram Singh Rana)
Joint Secretary
STC

No. 56 /1-1/2022/05/01(Writ)/2022

From,

**Ranjana Rajguru,
Additional Secretary,
Government of Uttarakhand.**

To,

1. **Secretary, Ministry of Social Justice and Empowerment,
Shastri Bhawan, Dr. Rajendra Prasad Road, Near Constitution Club of
India, Central Secretariat, Delhi 110001**
2. **Director,
Cold Water Fisheries,
Industrial Area, Bhimtal- 263136, Nainital.
Uttarakhand.**
3. **Director General,
Geological Survey of India,
27 Jawaharlal Nehru Road-700016.
Kolkata**
4. **Director, IIT-Roorkee –
Haridwar Highway, Roorkee- 247667
Uttarakhand.**
5. **Director
Wildlife Institute of India
Post Box # 18, Chandrabani
Dehradun 248 001 Uttarakhand**
6. **Director General
Institute of Seismological Research, Knowledge corridor, Raisan,
Gandhinagar – 382009, Gujarat.**

Energy Section-1

Dehradun : Dated 02 February, 2022

**Sub : Constitution of Independent multi-disciplinary Expert Committee With respect
to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the
direction of NGT order Dated 20.01.2022.**

Sir,

Please refer to the NGT Order on Appeal no 35/2021, by Shri Manoj Mishra & Anr. Vs Union of India & Ors., Dated 20.01.2022 (copy enclosed). Hon'ble NGT has constituted an independent Expert Committee of domain experts to record its observations about the viability of Lakhwar Multipurpose project, mitigating the adverse impacts on environment. flora and fauna, R&R issues arising out of submergence and further conditions/mechanism for monitoring during the setting up and execution of the project.

The committee is required to complete the proceeding within four months and file its report to the Tribunal before 30 June 2022. The report will be uploaded on the websites of the Uttarakhand Govt. and Ministry of Power, so that it can be assessed by any stake holder/party. Any objections, suggestions and observations on the report are to be filed before NGT within one month there after i.e. by July 31, 2022.

The case is listed for further considerations on 17.08.2022. Therefore, the report is to be finalized in time bound manner. As such it is requested to kindly nominate a domain expert member of senior level from your department/institution (with Name, Designation, E-mail ID, Mobile No. & Address) as early as possible so that the first meeting of the committee can be convened at the earliest.

Further, following documents are annexed herewith as provided by UJVN Ltd :

- 1- NGT order Dated. 20.01.2022.
- 2- Environment clearance letter of Lakhwar 2nd February, 2021.
- 3- Final EIA/EMP report November, 2020 as submitted to MoEF &CC (Annexure sending through e-mail)
- 4- ToR issued by MoEF & CC for preparation of EIA/EMP Report, 5th December 2019.
- 5- Site visit Report of the sub-committee of MoEF & CC April, 2019.
- 6- NGT order Dated 10th January, 2019.
- 7- Additional Chief Secretary, Energy Department, Government of Uttarakhand, Office Memorandum No. 55/I-1/2022/05/01(Writ)/2022, dated 02 February, 2022.

Encl:- As above

Yours Sincerely,

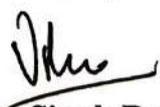

(Ranjana Rajguru)
Additional Secretary
of

No. 56 /I-1/2022/05/01(Writ)/2022 Dated.

Copy to:

- 1- Additional Chief Secretary, Energy ,Government of Uttarakhand, Dehradun for kind information.
- 2- MD, UJVNL, Ujjwal, Maharani Bagh, Dehradun for information and necessary action.

By Order,


(Vikram Singh Rana)
Joint Secretary
of

Annexure-V**Details of Nominated Individual Expert Members**

Sl. No	Name of Institution	Name of Expert
1	Directorate of Cold Water Fisheries Research, Bhimtal, Nainital.	Dr .Debajit Sarma Principal Scientist, Directorate of Cold Water Fisheries Research, Bhimtal, Nainital.
2	Geological Survey of India. (GSI)	Dr.Timir Baran Ghoshal Director, GSI, Eastern Region, Kolkata.
3	Indian Institute of Technology, Roorkee.	Prof. Deepak Khare Indian Institute of Technology, Roorkee.
4	Wildlife Institute of India, Dehradun.	Dr. Gopi G.V Scientist-E, Wildlife Institute of India, Dehradun.
5	Institute of Seismological Research, Gandhinagar , Gujrat.	Dr. Sumer Chopra Director, Institute of Seismological Research, Gandhinagar.
6	Ministry of Social Justice and Empowerment, New Delhi.	Mr.M. K. Ujjainia Dy. Director General, Statistics Division, Ministry of Social Justice and Empowerment, New Delhi.



भा.कृ.अनु.प.- शीतजल मात्स्यकी अनुसंधान निदेशालय
ICAR- Directorate of Coldwater Fisheries Research

An ISO 9001 : 2015 Certified



डॉ. प्रमोद कुमार पाण्डेय
निदेशक

Dr. Pramod Kumar Pandey
Director

F.No.4-4(6)/2015/DC/
February 15, 2022

To,

The Additional Secretary,
Government of Uttarakhand,
Secretariat,
Dehradun - 248 001, Uttarakhand

Subject: Constitution of Independent multi-disciplinary Expert Committee
with respect to Lakhwar multipurpose project (300 MW) in
Uttarakhand as per the direction of NGT order dated 20.1.2022

Madam,

This has reference to your communication No.56/1-1/2022/05/01(Writ)/
2022 dated February 2, 2022 on the subject mentioned above alongwith the
relevant documents provided by the UJVN Limited.

In this connection, I hereby nominate Dr. Debajit Sarma, Principal
Scientist of this Institute as an expert member from this Institute and his
details are furnished below.

Name	Dr. Debajit Sarma
Designation	Principal Scientist
E-mail ID	debajit.sharma@icar.gov.in, dsarma_sh@yahoo.co.in
Mobile No.	8057912707, 8077606910
Address	Anusandhan Bhawan, Industrial Area, Bhimtal - 263 136, Distt. Nainital, Uttarakhand

Thanking you,

Yours faithfully,

(Pramod Kumar Pandey)

Copy for information to:

Dr. Debajit Sarma, Principal Scientist, ICAR-DCFR, Bhimtal

अनुसंधान भवन, औद्योगिक क्षेत्र,
भीमताल-263136, जिला - नैनीताल (उत्तराखण्ड)

Anusandhan Bhawan, Industrial Area,
Bhimtal - 263136,
Distt. - Nainital, Uttarakhand, India

दूरभाष/Phone : 05942-247279, 247280, 247684
फैक्स/Fax : 05942-247693
ईपत्र/E-mail : Director.dcfri@icar.gov.in
dcfrin@gmail.com
dcfrin@rediffmail.com



भारत सरकार
GOVERNMENT OF INDIA
भारतीय भूवैज्ञानिक सर्वेक्षण
GEOLOGICAL SURVEY OF INDIA

By E-Mail



संख्या / No : .../ 198/Nomination /P&M-4/2021-22

दिनांक / Dated: 10.02.2022

प्रेषक / From,
Director
Policy Support System:P&M-4
Geological Survey of India
Central Headquarters
27, J. L. Nehru Road
Kolkata-700016
e-mail: dir.mon4@gsi.gov.in

सेवा में / To,
Energy Section-01
Government of Uttarakhand

विषय/Sub: Nomination of a representative of GSI in the Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022-reg

Reference: Your email dated 02nd February 2022.reg

महोदय/Sir,

With reference to the communication cited above, I am directed to inform you that the competent authority has kindly nominated Dr. Timir Baran Ghosal, Director, Geological Survey of India, Eastern Region, Kolkata-700091, as representative of GSI in the Independent multi-disciplinary Expert Committee with respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022. The details of the GSI nominated officer is given below:

Dr Timir Baran Ghosal, Director, Geological Survey of India, Eastern Region, DK-6, Salt Lake, Sector-II, Kolkata-700091, E-mail: t.ghoshal@gsi.gov.in, Mobile No: 9432331235

You are also requested to give a copy of all the correspondence which are going to be made with Dr. Ghosal to the Deputy Director General, PSS:P&M, GSI, CHQ, Kolkata (at ddgps.gsi@gov.in) and to the undersigned for reference and record.

This is for your kind information and necessary action.

भवदीय / Yours sincerely,

आशीष कुमार नाथ / Ashish Kumar Nath

निदेशक /Director

संख्या / No : .../ 198/Nomination /P&M-4/2021-22

दिनांक / Dated: 10.02.2022

सूचना/आवश्यक कार्रवाई के लिए प्रति अग्रेषित /Copy forwarded for kind information and necessary action to:

1. ADG & NMH-IV, Geological Survey of India, CHQ, 15 A&B, Kyd Street, Kolkata - 700016
2. ADG & HOD, Geological Survey of India, Eastern Region, DK-6, Salt Lake, Sector-II, Kolkata-700091.
3. Dr. Timir Baran Ghosal, Director, Geological Survey of India, Eastern Region, DK-6, Salt Lake, Sector-II, Kolkata-700091.

आशीष कुमार नाथ / Ashish Kumar Nath

निदेशक /Director

2/28/22, 12:21 PM

Gmail - Fwd: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Projec...



Manoj Kesharwani <manoj1176@gmail.com>

Fwd: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022.

Energy Deptt. <energy.section1@gmail.com>
To: Urja PMO <urjapmo@gmail.com>, Manoj Kesharwani <manoj1176@gmail.com>

Thu, Feb 17, 2022 at 11:14 AM

Regards,

**Energy Section-01,
Government of Uttarakhand.**

----- Forwarded message -----

From: Registrar IIT Roorkee <registrar@iitr.ac.in>
Date: Wed, Feb 16, 2022 at 3:45 PM
Subject: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022.
To: Energy Deptt. <energy.section1@gmail.com>
Cc: Deepak Khare <deepak.khare@wr.iitr.ac.in>, Dean SRIC <dsric@iitr.ac.in>

Additional Secretary,
Energy
Government of Uttarakhand
Dehradun

Dear Sir,

1. Please refer to letter No. 56/I-1/2022/05/01 (Writ)/2022 dated 02 February, 2022 on the above subject, for the nomination of an expert in the committee.
2. I am directed to inform you that the IIT Roorkee has nominated the following expert into the Joint Committee, constituted by NGT in the aforesaid subject matter:

Prof. Deepak Khare, Water Resources Development & Management Department
Email: deepak.khare@wr.iitr.ac.in
Phone No. 01332- 285393
9412990808

Please acknowledge and may coordinate accordingly.

Prashant Garg
Registrar
Indian Institute of Technology Roorkee



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

(An Autonomous Institute under Ministry of Environment, Forest & Climate Change, Govt. of India)
पत्रबोटी सं०/Post Box No. 16, चन्द्रबनी, देहरादून/Chandrabani, Dehradun - 248001, उत्तराखण्ड, भारत/ Uttarakhand, INDIA

75
Azadi Ka
Amrit Mahotsav

No: WII/GGV/Lakhwar-MPP/2022

Dated: 25 February, 2022

To,

Ms. Ranjana Rajguru
Additional Secretary
Energy Section-I
Government of Uttarakhand
Email: energy.section1@gmail.com

Sub.: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022 – reg.

Ref: (i) Your Letter No. 56/I-1/2022/05/01 (Writ)/2022 dated 02.02.2022
(ii) Our letter No. Dean/WII/Communication/2022-23 dated 7/2/2022

Madam,

Further to our Letter No. Dean/WII/Communication/2022-23 dated 7/2/2022 on the above cited subject, it is informed that Dr. Gopi G.V., Scientist-E, Wildlife Institute of India (Email: gopigv@wii.gov.in; Mobile No.: 09412053644) is hereby nominated as representative of WII for the Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022 in place of Dr. J.A. Johnson, Scientist-E, WII (Email: jaj@wii.gov.in; Mobile: 9410992211). Inconvenience is deeply regretted.

For further communication, you may please contact the above official in this regard.

Thanking you.

Yours faithfully,

[Dr. Dhananjai Mohan]
Director, WII

Copy to:

- (i) Dr. Gopi G.V., Scientist-E, Wildlife Institute of India (Email: gopigv@wii.gov.in; Mobile No.: 09412053644)
- (ii) Dr. J.A. Johnson, Scientist-E, WII (Email: jaj@wii.gov.in; Mobile: 9410992211)



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

(An Autonomous Institute under Ministry of Environment, Forest & Climate Change, Govt. of India)
पत्रपेटी सं./Post Box No. 18, चन्द्रबनी, देहरादून/Chandrabani, Dehradun - 248001, उत्तराखण्ड, भारत/ Uttarakhand, INDIA

75
Azadi Ka
Amrit Mahotsav

F. No. Dean/WII/Communication/2022-23

Dated: February 07, 2022

To,

Ms. Ranjana Rajguru
Additional Secretary
Energy Section-1
Government of Uttarakhand
E-mail ID: energy.section1@gmail.com

Sub.: Constitution of Independent multi-disciplinary Expert Committee with respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022-reg.

Ref.: Your Letter No. 56/I-1/2022/05/01 (Writ)/2022 dated 02.02.2022.

Madam,

With regard to the above subject matter, the undersigned has nominated Dr. J.A. Johnson as a domain expert member. His contact details are as follows:

Dr. J.A. Johnson, Scientist-E, E-mail ID: jaj@wil.gov.in, Mobile No.: 9410992211

Address: Wildlife Institute of India, Post Box No. 18, Chandrabani, Dehradun-248001, UK

For further communication, you may contact the officer.

Thanking you,

Yours sincerely,

(Dr. Dhananjai Mohan, IFS)
Director

2/28/22, 12:18 PM

Gmail - Fwd: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Projec...



Manoj Kesharwani <manoj1176@gmail.com>

Fwd: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022.

Energy Deptt. <energy.section1@gmail.com>

Fri, Feb 11, 2022 at 5:27 PM

To: Manoj Kesharwani <manoj1176@gmail.com>, Urja PMO <urjapmo@gmail.com>

Regards,

**Energy Section-01,
Government of Uttarakhand.**

----- Forwarded message -----

From: Dr. Sumer Chopra <dg-isr@gujarat.gov.in>

Date: Fri, Feb 11, 2022 at 1:01 PM

Subject: Fw: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022.

To: energy.section1@gmail.com <energy.section1@gmail.com>

Kind Attention: Additional Secretary, Energy Department, GoU.

Dear Madam,

I am receipt of the hard copies today. Thanks for the same. I have gone through the contents and found that in Annexure V regarding MEQ study, only letter from NCSDP is attached. I will appreciate if full MEQ study report along with report submitted to NCSDP may be shared to me so that I can have a look on this from seismological perspective. Soft copy is sufficient for me.

Regards

Dr.Sumer Chopra

Director

ISR

From: Dr. Sumer Chopra

Sent: Thursday, February 3, 2022 10:02 AM

To: Energy Deptt.

Subject: Re: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022.

2/28/22, 12:18 PM

Gmail - Fwd: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Projec...

Dear Madam,

Institute of Seismological Research nominates Dr.Sumer Chopra, Director and expert in Seismology for the said committee. The details are:

Name : Dr.Sumer Chopra

Designation: Director

E mail: sumer.isr@yahoo.com ; dg-isr@gujarat.gov.in

Mobile : 9426564038

Address : Dr.Sumer Chopra, Director, Institute of Seismological Research, Near Petroleum University, Raisan, Gandhinagar, Gujarat 382009.

Regards

Officiating DG

ISR

From: Energy Deptt. <energy.section1@gmail.com>

Sent: Wednesday, February 2, 2022 5:59:23 PM

To: officesjem@gmail.com; secywel@nic.in; director.dcf@icar.gov.in; dcfrin@gmail.com; dcfrin@rediffmail.com; dg.gsi@gov.in; director@iitr.ac.in; dwii@wii.gov.in; Dr. Sumer Chopra; director.isr@gmail.com

Subject: Constitution of Independent multi-disciplinary Expert Committee With respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022.

***** This mail is from external domain, i.e. not from gujarat.gov.in domain. Kindly open attachment and link with caution. *****

 Final EIA EMP Report Nov.2020.pdf

Regards,

**Energy Section-01,
Government of Uttarakhand.**

This message contains confidential information and is intended only for the individual named. If you are not the named addressee you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system. E-mail transmission cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. The sender therefore does not accept liability for any error or omissions in the contents of this message, which arise as a result of e-mail transmission.

File No.DP -9/2/2022-DP-II

IMMEDIATE

F.N.P-9/2/2022-DP-II

Government of India

Ministry of Social Justice & Empowerment
Department of Social Justice & Empowerment
(Drug Prevention Division)

Shastri Bhawan, New Delhi -110001

Dated: 18.04.2022

To

Ms. Ranjana Rajguru,
Additional Secretary,
Energy Department,
Govt. of Uttarakhand, Dehradun.

Subject: Nomination to represent M/o Social Justice & Empowerment in the multi - disciplinary Expert Committee with respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per direction of NGT order dated 20-01-2022.

Madam,

I am directed to refer to your Meeting Notice dated 10/03/2022 on the subject noted above and also refer to National Green Tribunal (NGT)'s Order on Appeal No.35/2021 by Shri Manoj Mishra & Anr. Vs Union Of India & Ors. dated 20.01.2022, vide which the Hon'ble NGT has constituted an independent Expert Committee of domain experts to record its observations about the viability of Lakhwar Multipurpose project including Resettlement & Rehabilitation issues arising out of submergence during the setting up and execution of the project. It is understood that the Hon'ble NGT has also chosen Ministry of Social Justice & Empowerment, among others, for Social issues arising out of submergence and Resettlement & Rehabilitation of inhabitants.

2. In this regard, it is informed that Shri Mahender Kumar Ujjainia, Dy. Director General, Statistics Division, D/o Social Justice &

Empowerment has been nominated to represent this Ministry for aforesaid purpose.

3. This issues with the approval of Secretary, SJE

Yours faithfully,
Signed by Rajeev Kumar

Date: 18-04-2022 17:15:16

Reason: Approved
(Rajeev Kumar)

Under Secretary to Govt. of India

Telephone: 011-23385171

Email: rajeev.swati@nic.in

Copy to :

I. Shri Mahender Kumar Ujjainia, Dy. Director General, Statistics Division, D/o SJE - With a copy each of the documents received from Govt. of Utrakhand on the mentioned subject. Next meeting of the Committee is tentatively scheduled during the 1st week of May 2022).

II. PPS to Secretary, SJ&E

Government of Uttarakhand

Energy Section-1

No : 112 /I-1/2022-05/01(Writ)/2022

Dehradun : Dated 25 February, 2022

In compliance of NGT order dated 20.01.2022, meeting of Independent Multi-disciplinary Expert Committee for Lakhwar Multi-purpose Project in Uttarakhand was held on 16.02.2022 at 11:30 Hrs through video conferencing. List of members present in the meeting is annexed as **Annexure-1**.

The Additional Secretary, MoWR, GoI and the Chairperson of the committee, welcomed the committee members and requested Additional Secretary, Department of Energy, GoU to apprise about the project and issue in reference to NGT order.

Additional Secretary, Department of Energy, GoU apprised that in compliance to decision in meeting dated 28.1.2022. Independent Multi-disciplinary Expert Committee was constituted vide OM dated 02 February 2022 and all the concerned institute/organization were requested to nominate their domain expert member. All the concerned institute/organization have nominated their domain expert member except Ministry of Social Justice and Empowerment. It was also apprised to the committee that documents related to issue i.e. NGT order, EIA & EMP report, TOR by MoEF for EIA/EMP, site visit report of sub-committee of MoEF etc. have been made available to the members. It was further briefed that various issues raised in NGT order and petition filed before NGT related to various domains, need to be clarified to move ahead with discussion on the issue. MD, UJVNL was requested to give brief detail about the current status and other important aspect of the project.

Managing Director UJVNL briefed about the status of Lakhwar Multipurpose project, various available clearances, previous NGT order and its compliances, revised Environmental Clearance and NGT order dated 20.01.2022. It was also appraise that NGT in its order directed the committee to complete the proceeding within four months and file its report to the tribunal before 30 June 2022.

Dr. J. A. Johnson, WII, Dehradun informed that he was the member of EAC and sub-committee of MoEF for Environmental Clearance of Lakhwar MPP. He raised concern whether he can be part of this committee.



Chairperson deliberated that the matter will be discussed with Director WII, Dehradun on the concern raised by Dr. J. A. Johnson and Chairperson also informed that Ministry of Social Justice and Empowerment will be requested for early nomination.

Chairperson, after detail deliberation with the committee members finalized allocation of issues to various agencies as tabulated in **Annexure-2**.

The Chairperson directed UJVNL to give detailed presentation before the committee in the next meeting to be scheduled within next 15 days and requested members to review the documents forwarded by Additional Secretary GoU. The member may submit requirement of additional details/ data to Additional Secretary GoU to prepare scope of work dealt by them, the methodology to address the issue along with the timeline for completion of the same and give a brief presentation in the next meeting to be held in last week of February 2022.

The meeting ended with vote of thanks to the chair.

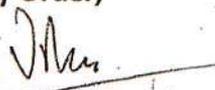
Encl: As above


(Ranjana Rajguru)
Additional Secretary

No. 112 /1-1/2022-05/01(Writ)/2022, Dated.

Copy to the following for information and necessary action :

- 1- Ms. Debashree Mukherjee, Additional Secretary, MoWR RD&GR, Gol, New Delhi.
- 2- Dr. Debajit Sarma, Principal Scientist, Cold Water Fisheries, Nainital, Uttarakhand.
- 3- Dr. Timir Barun Ghosal, Director, GSI, Eastern Region, Kolkata.
- 4- Prof. Deepak Khare, Indian Institute of Technology, Roorkee
- 5- Dr. J. A. Johnson Scientist-E, Wildlife Institute of India, Dehradun.
- 6- Dr. Sumer Chopra, Director, Institute of Seismological Research, Gandhinagar
- 7- Managing Director, UJVN Limited, Dehradun

By Order,

(Vikram Singh Rana)
Joint Secretary

Annexure-1**List of Members present in the meeting**

Sl. No.	Name	Designation & Organisation	Role in Committee
1.	Ms. Debashree Mukherjee	Additional Secretary, MoWR	Chairperson
2.	Dr. Debajit Sarma	Principal Scientist, Cold Water Fisheries, Nainital	Member
3.	Dr. Timir Barun Ghosal,	Director, GSI, Eastern Region, Kolkata.	Member
4.	Prof. Deepak Khare	Indian Institute of Technology, Roorkee	Member
5.	Dr. J. A. Johnson	Scientist-E, Wildlife Institute of India, Dehradun.	Member
6.	Dr. Sumer Chopra	Director, Institute of Seismological Research, Gandhinagar	Member
7.	Ms. Ranjana Rajguru	Additional Secretary, Department of Energy, GoU	Member Secretary
In presence			
1.	Mr. A. S. Goel	Commissioner (SPR), MoWR	
2.	Mr. D.P. Mathuria	E D (Technical) NMCG, MoWR	
3.	Mr. Sandeep Singhal	Managing Director, UJVNL	
4.	Mr. Suresh Baluni	Director (Projects), UJVNL	

ALLOCATION OF ISSUES RAISED IN NGT ORDER

Sl. No.	Issue	Agency
1.	Drinking water irrigation component of the project has not been appraised.	IIT Roorkee MoWR
2.	Protection of biodiversity – EIA Report prepared for the project is highly deficient and faulty as it did not take into account the impact on biodiversity of the Project	Wildlife Institute of India, Dehradun
3.	Impact of clearing a forest land of 768.15ha.	IIT Roorkee Wildlife Institute of India, Dehradun
4.	Issues of seismology- Disaster management plan is also highly faulty as it does not take into consideration the location of the project with respect to seismic activity.	Institute of Seismological Research, Gandhinagar, IIT Roorkee, Geological Survey of India (GSI)
5.	The muck disposal sites are at close proximity to the river.	IIT Roorkee MoWR
6.	The cumulative impact assessment study for Yamuna river basin is not available in public domain.	Chairperson directed EIA and EMP to be posted on website of UJVNL.
7.	The project has also adversely impacted the flow of water in Yamuna River.	IIT Roorkee MoWR
8.	Protection of Flora & Fauna- The project is not viable on account of adverse impact on flora and fauna.	Wildlife Institute of India, Dehradun.
9.	Protection of fisheries	Cold Water Fisheries, Nainital.
10.	Catchment area treatment & other Environmental issues including muck dumping.	IIT, Roorkee.
11.	Social issues arising out of submergence. Resettlement and Rehabilitation of inhabitants.	Ministry of Social Justice and Empowerment.
12.	Mitigating the adverse impact on environment.	WII, Dehradun IIT Roorkee, Cold water Fisheries, Nainital
13.	Further conditions which may be required to be laid down.	By all.
14.	Monitoring Mechanism	By all.

ALLOCATION OF ISSUES RAISED IN NGT ORDER

Sl. No.	Issue	Agency
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11.	Social issues arising out of submergence. Resettlement and Rehabilitation of inhabitants.	Ministry of Social Justice and Empowerment.
12.	Mitigating the adverse impact on environment.	WII, Dehradun IIT Roorkee, Cold water Fisheries, Nainital
13.	Further conditions which may be required to be laid down.	By all.
14.	Monitoring Mechanism	By all.

ALLOCATION OF ISSUES RAISED IN NGT ORDER

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1.	Drinking water irrigation component of the project has not been appraised.	IIT Roorkee MoWR
2.	Protection of biodiversity – EIA Report prepared for the project is highly deficient and faulty as it did not take into account the impact on biodiversity of the Project	Wildlife Institute of India, Dehradun
3.	Impact of clearing a forest land of 768.15ha.	Wildlife Institute of India, Dehradun
4.	Issues of seismology- Disaster management plan is also highly faulty as it does not take into consideration the location of the project with respect to seismic activity.	Institute of Seismological Research, Gandhinagar, Geological Survey of India (GSI)
5.	The muck disposal sites are at close proximity to the river.	IIT Roorkee
6.	The cumulative impact assessment study for Yamuna river basin is not available in public domain.	UJVNL.
7.	The project has also adversely impacted the flow of water in Yamuna River.	IIT Roorkee
8.	Protection of Flora & Fauna- The project is not viable on account of adverse impact on flora and fauna.	Wildlife Institute of India, Dehradun.
9.	Protection of fisheries	Cold Water Fisheries, Nainital.
10.	Catchment area treatment & other Environmental issues including muck dumping.	IIT, Roorkee.
11.	Social issues arising out of submergence. Resettlement and Rehabilitation of inhabitants.	Ministry of Social Justice and Empowerment.
12.	Mitigating the adverse impact on environment.	WII, Dehradun IIT Roorkee, Cold water Fisheries, Nainital
13.	Further conditions which may be required to be laid down.	By all.
14.	Monitoring Mechanism	By all.

File No. ES1-CC/CC/10/2022-I-1-Energy Department (Computer No. 26979)

I/36724/2022

I/36724/2022

Government of Uttarakhand
Energy Section-1
No: 378 I-1/2022-05/01(Writ)/2022
Dehradun: Dated 20 May, 2022

In compliance of NGT order dated 20.01.2022, second meeting of Independent Multi-disciplinary Expert Committee for Lakhwar Multi-purpose Project in Uttarakhand was held on 05.04.2022 at 2:30 Hrs in the head office of UJVN Limited, "Ujjwal" Maharani Bagh, G.M.S Road, Dehradun. List of members present in the meeting is annexed as Annexure-1.

The Additional Secretary, MoWR, GoI and the Chairperson of the committee, welcomed the committee members and requested Additional Secretary, Department of Energy, GoU to apprise about the project in reference to first meeting dated 16.02.2022.

Managing Director UJVNL gave a detailed presentation on the status of Lakhwar Multipurpose project, various available clearances, previous NGT order and its compliances, revised Environmental clearance and NGT order dated 20.01.2022.

Expert members made a presentation in respect to their findings/observations on the basis of field visit and project documents pertaining to their domain.

Prof. Deepak Khare, Indian Institute of Technology, Roorkee gave a brief presentation and informed that: -

Following Documents/Inputs were provided by Project Authorities to IIT Roorkee.

1. MOU of water sharing between Hon'ble Chief Ministers of beneficiary states (i.e. Haryana, UP, Uttarakhand, Rajasthan, H.P., Delhi) dated 28 Aug., 2018
2. Water sharing (Tentative) between beneficiary states (i.e. Haryana, UP, Uttarakhand, Rajasthan, H.P., Delhi) communicated vide Upper Yamuna River Board, Govt of India, Ministry of Jal Sakti No- UYRB/Tech-8/2020/699-709 dated 25 Aug. 2020
3. Uttarakhand Government order regarding release of minimum E-Flow vide Letter-708/I/2018-05/24 (writ)/2016 Dated 05 June, 2018
4. CAT Plan for Lakhwar MPP prepared by Mussoorie Forest Division, Department of Forest, Uttarakhand,

Inputs/Clarification given by the Project Authorities pertaining to IIT Roorkee and all the committee members:

1. There is no dry stretch in the u/s and d/s of the Lakhwar project. Lakhwar Vyasi Projects were conceived together and were approved accordingly.
2. The distance between the Lakhwar and Vyasi Dam is around 5.0 km, therefore there is no possibility of adverse impact in Yamuna river water, as the reservoir of Vyasi project (d/s of Lakhwar) is extending upto Lakhwar Dam i.e. Toe/energy dissipation system (which was visible also during site visit). Therefore, flow in the Yamuna River, shall be governed by releases from Vyasi Project instead of Lakhwar Projects and at Vyasi project provision has been made in dam body for environmental releases as per GoU orders.

1/36724/2022

1/36724/2022

3. The Lakhwar project is a storage project, which will store in rainy season and release in the lean period resulting in enhancing the availability of water in the Yamuna river during lean periods thus augmenting the flow conditions.

4. Beneficiary states will use their own existing system/structures for irrigation and drinking water

5. At present there is no new irrigation project planned in connection to Lakhwar and therefore appraisal of irrigation component is not required.

6. If any of the beneficiary states plan new or expansion of existing irrigation projects in future separate approval process shall be initiated by the concerned states.

Regarding Muck Disposal: -

Muck disposal issue was also discussed, and project authorities explained that the mechanism and details of the muck disposal plan mentioned in EIA/EMP is as per the prevailing guidelines mentioned in the Terms of Reference (TOR) issued by MoEF dated 05.12.2019 for carrying out EIA/EMP study for seeking Environmental clearance.

It was decided that the detailed muck disposal plan may be presented by UJVNL in the next meeting for consideration and suggestion of the members.

Dr. Debajit Sarma, Principal Scientist ICAR-DCFR, Nainital, Uttarakhand gave a brief presentation and discussed the following points:-

1. Construction of mahseer hatchery and farm for conservation of mahseer is necessary which was duly mentioned in the EIA/EMP in two identified villages.

2. As duly mentioned in the EIA/EMP, the management of reservoir with stocking right kind of fishes should be properly implemented for its rehabilitation.

3. For encouraging construction of fish farms by the farmers in their own land, the technical assessment and inputs will be supplied free of cost, which has been clearly mentioned in the EIA/EMP document. The recommendation should be properly implemented by forming self-help groups.

4. However, for the conservation of snow trout and other indigenous species like *Bagarius bagarius*, a separate strategy should be adopted. For doing the same, it is recommended to conduct a detail quantitative study sometime during project implementation on "Habitat ecology and ichthyofaunal diversity of Aglar river and upper parts of Yamuna", so that, an action plan could be formulated for its rehabilitation and conservation prior to filling of reservoir.

Dr. Sumer Chopra, Director, Institute of Seismological Research and expert on seismological aspects gave a brief presentation on the seismological aspects of Lakhwar Multipurpose Project which is summarized as below: -

The seismological investigation in and around the Lakhwar project were reviewed. The EIA, site-specific design earthquake parameters and micro-earthquake study reports were shared by UJVNL. The dam-site is also visited by the expert on April 4, 2022. Dr. Chopra informed that the site is in Zone IV as per seismic zoning map of India where earthquake of magnitude 7 can be expected. He informed the committee that not much seismicity is noticed in and around the dam-site in the last 150 years. The seismic hazard assessment at the Lakhwar dam-site has been carried out by IIT, Roorkee as per the guidelines prescribed by National Committee on Seismic Design Parameters (NCSDP) for dams. The same is also approved by NCSDP. He opined that the site-specific earthquake design parameters considered are found to be reasonable looking into the historical seismicity records available in the literature in and around the dam-site.

1/36724/2022

1/36724/2022

Dr. Chopra recommended that the Lakhwar project may be monitored closely with a permanent network of at least 5 seismological observatories installed in and around the project site. Every big river valley project is doing the same. One set of Broadband Seismographs and Strong Motion Accelerographs each may be installed in each of the observatory. This will help in monitoring micro-seismicity in the vicinity of the dam and identification of active faults.

Dr. Gopi G.V, Scientist-E, Wildlife Institute of India, Dehradun raised certain queries regarding Flora, Fauna and sought some clarifications in the data mentioned in the EIA/EMP report. UJVNL was directed to submit clarification in a week's time for review by the expert.

Mr. Rajesh Kumar Makkar, Dy. Secretary, Ministry of Social Justice and Empowerment, Govt. of India was also present in the meeting through video conferencing. The Chairperson requested him to prepare a brief presentation on the issues pertaining to their domain for discussion in the next meeting.

Dr. Timir Barun Ghosal, Director, GSI, Eastern Region, Kolkata was also present in the meeting through video conferencing and informed that GSI Dehradun Unit is already associated with the Lakhwar MPP and any issue pertaining to GSI shall be suitably dealt with by them and they have nothing to add for any suggestion on the issue. GSI shall remain associated during project implementation stage and any issue developed during implementation is decided based on merits.

The Chairperson stressed upon the need to submit the report to NGT within the prescribed timelines. The next meeting of the committee was tentatively scheduled in May 2022.

The Meeting ended with the vote of thanks to the Chair.

Encl: As above

No. **378** /I-1/2022-05/01(Writ)/2022, Dated.

Copy to the following for information and necessary action:

1. Ms. Debashree Mukherjee, Additional Secretary, MoWR RD&GR, Gol, New Delhi.
2. M. K. Ujjainia, Dy. Director General Statistics Division, Ministry of Social Justice and Empowerment, Delhi
3. Dr. Debajit Sarma, Principal Scientist, Cold Water Fisheries, Nainital, Uttarakhand.
4. Dr. Timir Barun Ghosal, Director, GSI, Eastern Region, Kolkata.
5. Prof. Deepak Khare, Indian Institute of Technology, Roorkee
6. Dr. Gopi G.V Scientist-E, Wildlife Institute of India, Dehradun.
7. Dr. Sumer Chopra, Director, Institute of Seismological Research, Gandhinagar
Managing Director, UJVN Limited, Dehradun

Signed by Ranjana Rajguru

(Ranjana Rajguru) 20-05-2022 16:42:31
Additional Secretary

List of Members present in the meeting

Sl. No	Name	Designation & Organisation	Role in Committee
1.	Ms. Debashree Mukherjee	Additional Secretary, MoWR, Gol, New Delhi	Chairperson
2.	Dr. Debajit Sarma	Principal Scientist, Cold Water Fisheries, Nainital	Member
3.	Dr. Timir Barun Ghosal,	Director, GSI, Eastern Region, Kolkata.	Member
4.	Prof. Deepak Khare	Indian Institute of Technology, Roorkee	Member
5.	Dr. Gopi G.V	Scientist-E, Wildlife Institute of India, Dehradun.	Member
6.	Dr. Sumer Chopra	Director, Institute of Seismological Research, Gandhinagar	Member
7.	Mr. Rajesh Kumar Makkar	Dy. Secretary, Social Justice and Empowerment, New Delhi	Member
8.	Ms. Ranjana Rajguru	Additional Secretary, Department of Energy, GoU	Member Secretary
In presence			
1.	Mr. A. S. Goel	Commissioner (SPR), MoWR , New Delhi	
3.	Mr. Sandeep Singhal	Managing Director, UJVNL	
4.	Mr. Suresh Chandra Baluni	Director (Projects), UJVNL	

(Ranjana Rajguru)
Additional Secretary

File No. ES1-CC/CC/10/2022-I-1-Energy Department (Computer No. 26979)

/46825/2022

/46825/2022

Government of Uttarakhand
Energy Section-1
No: 659 I-1/2022-05/01(Writ)/2022
Dehradun: Dated 01 July, 2022

In compliance of NGT order dated 20.01.2022, third meeting of Independent Multi-disciplinary Expert Committee for Lakhwar Multi-purpose Project in Uttarakhand was held on 13.06.2022 at 11:00 Hrs in the Committee room, 1st Floor, Department of Water Resources RD & GR, Shram Shakti Bhawan, New Delhi. List of members present in the meeting is annexed as Annexure-1.

The Additional Secretary, MoWR, GoI and the Chairperson of the committee, welcomed the committee members and requested Additional Secretary, Department of Energy, GoU to apprise about the project in reference to second meeting dated 05.04.2022.

Managing Director, UJVNL gave a detailed presentation on the project background, status of Lakhwar Multipurpose project, various available clearances, previous NGT order, revised Environmental clearance, on-going NGT order dated 20.01.2022 and its compliances. As per decision of the committee in second meeting, a detailed muck disposal plan was presented before the committee and it was informed by UJVNL Limited that all new proposed muck dumping sites are 30 meter away from the HFL of river as per requirement of MoEF & CC guidelines. In reference to old muck dumping sites, it was informed that most of these sites are in stabilized condition and no scattering of the material has been observed. The overall condition of already dumped site is quite sound as they were supported with the help of crate walls and compacted also wherever necessary (Ref. CAT PLAN 2013). However, any further measure as required during project execution shall be undertaken as per MoEF&CC guidelines. The committee discussed the issue at length and was of the view that the proposal seems to be satisfactory, however proper compliance needs to be ensured during implementation for which monitoring team may visit the site at regular interval.

On the issue of impact on forest and forest land, it was informed that the project construction would require 768.155 Ha of forest land, which had already been diverted during 1986 for construction of Lakhwar Project and MoEF vide letter no 8-172/86-FC (pt-1) Dt. 31.01.2014 accorded approval for transfer of the lease in favor of UJVNL Ltd. Compensatory afforestation for Lakhwar Project had already been done by State forest department of UP in the year 1986-1991 on 956 Ha of waste land in Lalitpur Distt. UP. CAT plan was prepared for a total amount of Rs 8586.25 Lacs by Mussorie Forest Division. Funds were transferred on 06.01.2014 to CAMPA and CAT plan is in implementation stage. Fund transferred to CAMPA fund against NPV of the forest land in year 2014 is Rs 6490.91 Lac. The adverse impact will also be mitigated by implementation of green belt development plan and biodiversity conservation and wildlife management plan. The issue was discussed and deliberated before the committee at length and committee was of the view that proper monitoring is required during implementation of the project to ensure effective implementation of mitigation plans.

Some Expert members made their presentation in respect to their findings/observations on the basis of field visit and appraisal of project documents pertaining to their domain.

Prof. Deepak Khare, Indian Institute of Technology, Roorkee after reviewing Inputs/clarification on the issues highlighted by the project authorities during the second meeting held on 05.04.2022, gave a presentation on issue of drinking water and irrigation component of the project, flow of water in Yamuna River and Catchment area treatment plan along with recommendations. In view of the above following was opined :-

- Since existing infrastructure for drinking water and irrigation is to be used by beneficiary States, therefore there is no need to appraise irrigation component at this stage. If any of the six beneficiary states plan new or expansion of irrigation projects, and then there will be a separate appraisal of those projects.
- The distance between the Lakhwar and Vyasi Dam is around 5.0 km, therefore there is no possibility of adverse impact in Yamuna river water due to dry stretch, as the reservoir of Vyasi project (d/s of Lakhwar) is extending upto Lakhwar Dam Toe/energy dissipation system.
- As the E-flow would be released after Vyasi dam as per guidelines, there is no adverse impact of flow on Yamuna River.
- The CAT plan is in order. However, due care is required to insure its proper implementation.

Dr. Gopi G.V, Scientist-E, Wildlife Institute of India, Dehradun give a detailed presentation on protection of flora fauna, biodiversity aspects and its impact on environment. It is informed that replies/clarifications submitted by UJVNL on the raised queries are satisfactory and convincing. He also recommended certain measures for habitat improvement and monitoring mechanism to ensure effective execution of EIA/EMP recommendations during project implementation.

Dr. Sumer Chopra, Director, Institute of Seismological Research and expert on seismological aspects informed that he has already given suggestions and recommendations on the seismological aspects of Lakhwar Multipurpose Project, during the second meeting held on dated 05.04.2022. He reaffirmed that there is nothing adverse in respect of seismological aspects.

Mr. Mahender Kumar Ujjainia, Dy. Director, General, Statistics Division, D/o, Social Justice and Empowerment, Govt. of India raised certain queries on the R& R aspects of the project. The project authorities informed that all the informations are available in the documents provided. However, additional inputs/documents regarding queries were provided to him again during the meeting. It was also informed that 105.422 ha of private land has already been acquired and remaining 53.505 ha of private land will be acquired for the projects as per the provisions of RFCTLARR Act. - 2013.

Dr. Debajit Sarma, Principal Scientist ICAR-DCFR, Nainital, Uttarakhand was also present in the meeting through video conferencing. Dr. Sarma informed that he has already given presentation in the second meeting. He further reconfirmed that he has already confirmed his views however, as already recommended a study on fish habitat may be conducted simultaneously with project implementation.

Dr. Timir Barun Ghosal, Director, GSI, Eastern Region, Kolkata was also present in the meeting through video conferencing and informed that GSI Dehradun Unit is

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already associated with the Lakhwar MPP. Presently there is no issue pertaining to GSI however, if any issue develops during project implementation the same shall be suitably dealt with by them and they have nothing to add for any suggestion on the issue. Project authorities informed that to ensure regular review and input from geological aspects MoU is signed with GSI and they are made part of the projects implementation team during execution.

The Chairperson informed that recommendations with regard to monitoring mechanism shall be discussed and finalized in the next meeting, which will be convened shortly. She further gave directions about the structure of the report which will cover all the aspects mentioned in the NGT order, and it needs to submit within the prescribed timelines. All domain expert members were requested to send their final recommendation upto 25th June, 2022.

The committee deliberated on the necessity of extension of time for filing report before the NGT. It was decided to direct UJVNL to seek time extension of 5 weeks from NGT on behalf of the committee.

The Meeting ended with the vote of thanks to the chair.

Encl: As above

No. 659 - I-1/2022-05/01(Writ)/2022, dated.

Copy to the following for information and necessary action:

1. Ms. Debashree Mukherjee, Additional Secretary, MoWR RD&GR, GoI, New Delhi.
2. M. K. Ujjainia, Dy. Director General Statistics Division, Ministry of Social Justice and Empowerment, Delhi
3. Dr. Debajit Sarma, Principal Scientist, Cold Water Fisheries, Nainital, Uttarakhand.
4. Dr. Timir Barun Ghosal, Director, GSI, Eastern Region, Kolkata.
5. Prof. Deepak Khare, Indian Institute of Technology, Roorkee
6. Dr. Gopi G.V Scientist-E, Wildlife Institute of India, Dehradun.
7. Dr. Sumer Chopra, Director, Institute of Seismological Research, Gandhinagar.
8. Managing Director, UJVN Limited, Dehradun.

Signed by Ranjana Rajguru

Date: 30-06-2022 18:26:40

(Ranjana Rajguru)
Additional Secretary

Annexure-1**List of Members present in the meeting**

Sl. No	Name	Designation & Organisation	Role in Committee
1.	Ms. Debashree Mukherjee	Additional Secretary, MoWR, Gol, New Delhi.	Chairperson
2.	Dr. Debajit Sarma	Principal Scientist, Cold Water Fisheries, Nainital. (virtually connected)	Member
3.	Dr. Timir Barun Ghosal,	Director, GSI, Eastern Region, Kolkata. (virtually connected)	Member
4.	Prof. Deepak Khare	Indian Institute of Technology, Roorkee.	Member
5.	Dr. Gopi G.V	Scientist-E, Wildlife Institute of India, Dehradun.	Member
6.	Dr. Sumer Chopra	Director, Institute of Seismological Research, Gandhinagar.	Member
7.	Mr. M. K. Ujjainia	Dy. Director General, Statistics Division, Ministry of Social Justice and Empowerment, New Delhi.	Member
8.	Ms. Ranjana Rajguru	Additional Secretary, Department of Energy, GoU.	Member Secretary
In presence			
1.	Mr. A. S. Goel	Commissioner (SPR), MoWR, New Delhi	
3.	Mr. Sandeep Singhal	Managing Director, UJVNL	
4.	Mr. Suresh Chandra Baluni	Director (Projects), UJVNL	

J-34/1/2022-Statistics Division
Government of India
Ministry of Social Justice and Empowerment
Department of Social Justice and Empowerment

B-2, Ground Floor,
Pt. Deen Dayal Antyodaya Bhawan,
CGO Complex, New Delhi - 110003
Dated : 09.06.2022

To,
Shri A.S.Goel,
Commissioner (State Projects),
Government of India,
Ministry of Jal Shakti,
Department of Water Resources, RD & GR,
411, Shram Shakti Bhawan, Rafi Marg,
New Delhi-110001.

Subject:- Committee constituted by Hon'ble NGT regarding Lakhwar Multipurpose Project.

In continuation to Meeting Notice dated 10/03/2022 on the subject noted above and also refer to National Green Tribunal (NGT)'s Order on Appeal No.35/2021 by Shri Manoj Mishra & Anr. Vs Union Of India & Ors. dated 20.01.2022, vide which the Hon'ble NGT has constituted an independent Expert Committee of domain experts to record its observations about the viability of Lakhwar Multipurpose project including Resettlement & Rehabilitation issues arising out of submergence during the setting up and execution of the project. It is understood that the Hon'ble NGT has also chosen Ministry of Social Justice & Empowerment, among others, for Social issues arising out of submergence and Resettlement & Rehabilitation of inhabitants.

2. Ministry of Social Justice & Empowerment observed that Resettlement issues due to following some main issues i.e.

- a. The compensation for the land lost is often not paid; it is delayed or even if paid, is too small both in monetary terms and social changes forced on them by these mega developmental projects
- b. The displaced people have to leave their ancestral land and forests on which they depend for their livelihood. Many of them have no skills to take up another activity or pick up any other occupation. Usually, the new land that is offered to them is not as they are currently living
- c. Basic infrastructure and amenities are not provided to them in new area where people are resettled
- d. Lack of nutrition due to the loss of agriculture and forest based livelihood, lead to the general decline in the health of the people. People are used to traditional home remedies. But the herbal remedies and plants gets submerged due to the developmental projects.

- e. One of the most important Life of Tribal communities (District-Tehri – 2.46% and District – Dehradun – 47.12%). The tribal are simple people who have a lifestyle of their own. Displacements have a negative impact on their livelihood, culture and spiritual existence.

3 Ministry of Social Justice & Empowerment suggested that before the people are given an alternative site for living following point should be taken care off :-

- a. Villagers should be given the option of shifting out with others to enable them to live a community based life.
- b. The people displaced should get an appropriate share in the fruits of the development
- c. Tribal people should be allowed to live along the lives of their own patterns and others should avoid imposing anything on them.
- d. Provide means to develop their own traditional art and culture in every way
- e. Resettlement should be in the neighbourhood of their own environment
- f. The displaced people should be given employment opportunities
- g. If resettlement is not possible in the neighbour area, priority should be given to the development of the irrigation facilities and supply of basic inputs for agriculture, drinking water, wells, grazing ground for the cattle, schools for the children, primary healthcare units and other amenities
- h. One of the objectives of rehabilitation should be removal of poverty
- i. Villagers should be taken into confidence at every stage of implementation of the displacement and they should be educated, through public meetings, discussion about the legalities of the Land Acquisition act and other rehabilitation provisions.
- j. Village elders should be taken into confidence and involved in decision making

4 It is also suggested that **Section 41 - Special provisions for Scheduled Castes and Scheduled Tribes alongwith the First, second and third Schedule given in LARR Act 2013 should be adhere with it.**

Yours Sincerely,


(Mahender Kumar Ujjainia)
Deputy Director General

J-34/1/2022-Statistics Division
Government of India
Ministry of Social Justice and Empowerment
Department of Social Justice and Empowerment

B-2, Ground Floor,
Pt. Deen Dayal Antyodaya Bhawan,
CGO Complex, New Delhi - 110003
Dated : 21.06.2022

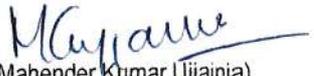
To,
Shri A.S.Goel,
Commissioner (State Projects),
Government of India,
Ministry of Jal Shakti,
Department of Water Resources, RD & GR,
411, Shram Shakti Bhawan, Rafi Marg,
New Delhi-110001.

Subject:- **Committee constituted by Hon'ble NGT regarding Lakhwar Multipurpose Project.**

In continuation to the suggestion given by Ministry note no. J-34/1/2022-Statistics Division dated 09.06.2022 (copy enclosed) and as per the decision taken in the Third meeting of Expert Committee held on 13.6.2022 that to give comment on the report. It is suggested that:-

2. As per the standard TOR for EIA Report the following should be covered under Socio-economic Analysis :
 - Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
 - Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
 - Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
 - Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
3. The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
 - Impact on local community including demographic profile.
 - Impact on socio-economic status
 - Impact on economic status.
 - Impact on human health due to water / vector borne disease
 - Impact on increase traffic
 - Impact on Holy Places and Tourism
 - Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studied. Proper record shall be maintained of the baseline information in the post project period.
 - Positive and negative impacts likely to be accrued due to the project are listed.
4. **Steps taken as per "Section 41 - Special provisions for Scheduled Castes and Scheduled Tribes" given in LARR Act 2013 should be elaborated in the report.**

Yours Sincerely,


(Mahender Kumar Ujjainia)
Deputy Director General



यूजेवीएन लिमिटेड

(उत्तराखण्ड सरकार का उपक्रम)

UJVN LIMITED

(A Govt. of Uttarakhand Enterprise)

कार्यालय महाप्रबंधक (जानपद), लखवाड़ परियोजना, लखवाड़ भवन, डाकपथार, (देहरादून) दूरभाष: 01360-222839 फैक्स: 01360-222499
Office of the General Manager (Civil), Lakhwar Project, Lakhwar Bhawan, Dakpathar (Dehradun), Phone -01360-222839, Fax 01360-222499
CIN No.U40101UR2001SGC025866

Deputy Director General,
Ministry of Social Justice & Empowerment,
Department of Social Justice & Empowerment,
New Delhi-110003

Subject: Replies to the suggestion given by Independent Multi Disciplinary Expert Committee constituted by Honble NGT regarding Lakhwar Multipurpose Project.

Kindly refer your office letters dated 09.06.2022,& 21.06.2022 addressed to Sri A. S. Goel, Commissioner (State Projects) DoWR, RD & GR, Ministry of Jal Shakti New Delhi and meeting held on 13.06.2022.Replies to the suggestions given vide above letter and during the meeting, are enclosed herewith for your kind consideration.

Enclosures:- As above.

(Sujeet Kumar Singh)
General Manager (Civil)

Copy forwarded to the following in compliance to their instruction.

- 1.Managing Director, UJVN Limited, Dehradun.
- 2.Director (Projects) UJVN Limited, Dehradun
- 2.Executive Director (Civil) LVP, UJVN Limited. Dakpathar.

Ministry of Social Justice & Empowerment observed that Resettlement issues due to following some main Issues i.e. (vide letter no. J-34/1/2022-Statistics Division, Dated: - 21.06.2022)

S. No.	Ministry of Social Justice & Empowerment Comments	UJVNL Comments
2.	As per the standard TOR for EIA Report the following should be covered under Socio-economic Analysis:	Coverage is discussed below pointwise.
a	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.	<p>As part of EIA study, Socio-economic survey was carried out during October 2019. Outcome of the socio-economic survey is discussed in EIA report. Refer Chapter 7.1. Information was collected with respect to social awareness about the developmental activity in the area (Please refer 7.1.5.4 of EIA report). Social welfare measures existing and proposed by project proponent are also elaborated in the report.</p> <p>People in general have favorable opinion for the project because PAF's whose private land was acquired long time back could not avail project benefits like business opportunity, improved infrastructures, drinking water supply, medical facilities, farming facilities etc. and are looking forward for the development in the area.</p> <p>People of the area showed concern about the education of their children as local education facilities are not adequate at present. These facilities will improve during construction of project. Keeping the above expectations in view and assessment of need and requirement of locals, activities have been planned under the local Area Development and budgeted for. It is expected that project will help improve quality of life of local population. (Please refer- LAD Chapter7.4)</p>
b	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.	Project lies in Jausar-Bhabar region of Dehradun district and Jaunpur region of Tehri District of Uttarakhand State which are rich in culture and traditions. There are many festivals celebrated in Jaunsar-Bhabar and Jaunpur region. These festivals are Magh Mela (Maroj Festival), Bissu, Jagra, Maun, Nunai. The Maund festival is unique and historical as it was rooted in tribal traditions dating back to the time of Maharaja Tehri. The festival is being

		<p>held for past 152 years.</p> <p>As far as ecological sensitive habitat is concerned, project located within 10 Km from Benog/Mussorrie Wild Life Sanctuary in the absence of specific Eco sensitive Zone notification. No land is proposed to be acquired in the Mussorrie Wild Life Sanctuary. As no part of the project lies within the Sanctuary.</p> <p>Please refer: - EIA Chapter 3: Description of The Environment; Section 3.2.3.11, 3.2.2.3 & 3.2.2.4</p>
c	<p>Documentation of demography, Ethnography, Economic Structure and development profile of the area.</p>	<p>According to the 2011 census, population of Tehri District is 6,18,931 and literacy rate 76.36%. The population of Dehradun district is 16,96,694 and literacy rate 84.25%.</p> <p>Occupation of PAF's is 74% main worker and 26% are marginal worker.</p> <p>Demographic profile of both districts (Tehri and Dehradun) is summarized in table 3.58, 3.60.</p> <p>Primary education facilities are available within 2KM, higher secondary and senior secondary education facilities are available within 5KM from villages.</p> <p>The project area does not have good medical facilities and there is one community health center in Nainbag and one primary health center in Lakhwar village. For Major ailments people visit sub district hospital Vikasnagar and District Hospital in Dehradun.</p> <p>Public health delivery system will improve during implementation of project.</p> <p>Please refer: - EIA Chapter 3: Description of The Environment; Section 3.2.3, 3.2.3.6, 3.2.3.7, 3.2.3.8 & 3.2.3.10.</p>
d	<p>Special attention has to be given to vulnerable groups like women, aged person etc. and to any ethnic/indigenous groups that are getting affected by the project.</p>	<p>This aspect is covered in EIA report at section 3.2.3.4.</p> <p>Special attention to vulnerable groups like women, aged person, etc. and to any ethnic/indigenous groups that are getting affected by the project has been proposed in the report.</p> <p>Local Area Development Plan is proposed at a total budget outlay of Rs. 28.75 crore for the welfare of the local population including vulnerable and ethnic groups. This is in addition to any R&R compensation or cost of land.</p>

		Please refer: - EIA Chapter 7.4 Local Area Development.
3.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described:	Social Impact Assessment (SIA) study has been carried out as part of EIA study (Chapter 7.1) SIA, along with EIA report, adequately covers the impacts on local community, socio-economic status, human health; impact of increased traffic, impact on holy places, impact of blasting activities have all been covered in the report.
a	Impact on local community including demography profile.	Impact on Local Community including demography is discussed in detail under Chapter 7.1.
b	Impact on socio-economic status.	<p>Positive as well as negative impacts on Socio-economic environment is discussed in section 4.1.7. and Chapter 7.1.</p> <p>Socio-Economic Impact of the project</p> <p>A. Impact due to Acquisition of Land</p> <p>One of the major social & economic impacts of the project is the acquisition of private land coming under submergence and for construction of project components/infrastructure. Displacement of families to new areas, have socioeconomic impacts on the life of affected families. Private Land of 158.927 ha (105.422 ha of land has already been acquired and 53.505 ha is yet to be acquired) is coming under acquisition for the project, total project affected families are 1809, 1159 families were affected during earlier acquired 105.422 ha land and out of 1159 families 88 were fully affected families and have already taken compensation during earlier land acquisition process. Remaining 650 families have been identified as partially affected families for balance land 53.505 ha. After getting compensation during earlier acquisition most of the affected families from these villages settled near Vikasnagar town and at present very few families are residing in these villages.</p> <p>B. Impact on Occupational Pattern</p> <p>Agriculture and allied activities are the main sources of livelihood and income for most of the project affected local people. Other people are engaged in household industries and ancillary works. Tourism, Hotel & Travel related businesses are also seen in the area. As mentioned in EIA Report of Lakhwar Multipurpose Project of UJVN Ltd, requirement of land for the project and payment of compensation in cash in lieu of land, may result in shifting of</p>

		<p>population especially young working population to bigger towns and therefore their means of livelihood and occupational pattern will change.</p> <p>C. Impact due to Influx of Labour Force</p> <ul style="list-style-type: none"> a) Impact on Local Infrastructure b) Increased incidence of Diseases c) Impacts of Social Conflict d) Increase in Illicit Behaviour/Crime e) Impact on Forest and Wildlife <p>Please refer: - EIA Chapter 7.1 Social Impact Assessment Section 7.1.5.3</p>
c	Impact on economic status.	<p>Apart from direct employment, the opportunities for indirect employment will also be generated which would provide great impetus to the economy of the local area. Various types of business, like shops, food-stalls, tea stalls will set up. Besides a variety of suppliers, traders, transporters will concentrate here and will benefit immensely as demand will increase significantly for almost all types of goods and services. The locals will avail these opportunities arising from the project and increase their income levels. The proposed project will also lead to job opportunities for the local population, leading to improvement of economic status of locals.</p> <p>Please refer: - EIA Chapter 7.1 Social Impact Assessment Section 7.1.5.3 (D)</p>
d	Impact on human health due to water/vector borne disease.	<p>Impacts on human health is discussed in section 4.1.7. and Chapter 7.1.</p> <p>Project construction may bring about some changes in the socio-economic environment of the area including increased threats to the health of the community. Possible threats to public health include:</p> <ul style="list-style-type: none"> • Chances of spread of new diseases in the area due to migrant workers. • Chances of increase in water borne diseases as malaria and dengue. • Chances of increase in respiratory troubles due to increase in suspended particles during the construction phase affect mainly labour. • Chances of occurrence of gastroenteritis, cholera and typhoid in the labour camp. <p>Mitigation Steps:</p> <ul style="list-style-type: none"> • Two fully equipped ambulance to be procured to provide pre-hospital care. • Two first-aid posts to be established near proposed construction sites and colony areas.

		<ul style="list-style-type: none"> • As the existing medical facilities in the area are not adequate, budget provisions have been made for strengthening existing facilities in the project area. <p>Budgetary estimate</p> <p>A provision of Rs. 254.00 Lakhs have been made for public health delivery system in the EMP. (Please refer Chapter 10- Environment Management Plan, Section 10.9)</p>
e	Impact on increase traffic.	<p>Sources of noise will be the vehicles and equipment for excavation and construction at the project site. Due to construction activity in the area, noise levels will increase during the period of construction, however, they will remain limited to the work area mainly where large-scale construction activity will progress. Additionally, noise levels will increase on approach roads due to increased traffic.</p> <p>Various mitigation measures for control of noise pollution in the project area are suggested below:</p> <ul style="list-style-type: none"> • Diesel Generator sets are to be placed in acoustic enclosures to reduce the noise. • Ear protection aids such as ear plugs, earmuffs, etc., must be provided to the workers who have to work in the noise prone area. • Proper and regular maintenance/lubrication of machines should be done. • Noise producing machines (such as crushers, aggregate processing plants, etc.) should be provided with sound barriers. • Salient machines and vehicles with high quality silencers should be used. • Afforestation around the residential colonies and office complexes should be done as proposed under the Afforestation Programmes. • Ambient noise should be monitored periodically at different locations. <p>A provision of Rs. 85.00 Lakhs have been made for Pollution Mitigation Measures in the EMP. (Please refer Chapter 10- Environment Management Plan, Table 11.1)</p>
f	Impact on Holy Places and tourism.	<p>Impact on holy places and tourism has been identified in the EIA report. One important issue captured was impact on a local festival i.e. Maund Mela, in the Aglar river and the present site will come under submergence after impoundment.</p> <p>Mahaseer migrate from Yamuna River to Aglar river for spawning as this river is relatively calm and</p>

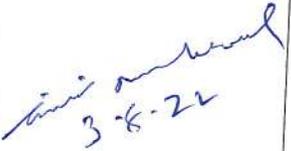
		<p>provide favourable habitat for aquatic fauna. Every year in the end of June month, the locals celebrate a mass fish catch event (<i>Maund Mela</i>) in Aglar river which is a traditional festival in the area. <i>Maund Mela</i> is celebrated in end of June month (28 or 29 June) as this time coincide with the arrival of the migratory fishes (i.e. <i>Tor tor</i>, and <i>Schizothorax richardsonii</i>) to the Aglar from the Yamuna river. (Please refer EIA Chapter 10 Environment Management Plan, section 10.6)</p> <p>Awareness programs have been proposed to ensure ecologically sustainable celebrations as well additional infrastructure in terms of approach road at a budget of Rs. 10.00 crore to mitigate the impact on Mela site.</p>
g	<p>Impact of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise pollution will be studies. Proper record shall be maintained of the baseline information in the post project period.</p>	<p>Impact of blasting activities have been discussed under various sections in EIA report.</p> <p>Mechanism of controlled blasting is proposed to minimise the adverse impact of blasting on land stability, catchment of soil erosion, air pollution, noise pollution and impact on biodiversity due to blasting have covered.</p> <p>Mitigation Steps:</p> <ul style="list-style-type: none"> • Controlled blasting during construction activities will be ensured. • Ambient noise should be monitored periodically at different locations. • Generated muck shall be stored and treated through a approved Muck Disposal plan prepared strictly in line with the guidelines. <p>(Please refer EIA Chapter 02, section 2.7.1.7, Chapter 06 section 6.1.3 and Chapter 10 Section 10.7 respectively)</p>
h	<p>Positive and negative impacts likely to be accrued due to the project are listed.</p>	<p>Positive impact: A number of marginal activities and job would be available to local skilled and unskilled workers during construction phase and also more employment opportunities will be available to locals during operation phase with increase income. The project will make provision of Rs. 28.74 Crore under the Local Area Development (LAD) and the fund will be utilized in the affected area for skill development and local infrastructure improvement as per directions of GoU.</p> <p>Negative impacts:</p>

		<p>Following anticipated impacts during construction phase and operational phase:</p> <ul style="list-style-type: none"> • Air Quality • Noise Environment • Water Resources • Land Environment • Terrestrial Ecology • Socio-Economic Environment <p>Mitigation measures has been suggested in the report under respective Chapter.</p>
3.	<p>Steps taken as per “Section 41- Special provision for Schedule Caste and Schedule Tribes” given in LARR Act should be elaborated in the report.</p>	<p>The Lakhwar Multipurpose Project is spread over two different cultural regions i.e. Jaunpur region of Tehri Garhwal and Jaunsar- Bawar region of Dehradun district. Jaunpur is State declared OBC region of Uttarakhand. while Jaunsar-Bawar was included in the list of schedule tribes by government of India in 1967. The special provisions for SC and ST families will be given as per terms of “Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013” and direction of Gol and GoU.</p> <p>UJVN Limited being a Gou entity is under obligation to abide by all the directions and guidelines of the Gol in totality.</p>

Table-1 Summary of the Reports

Sl. No.	Agency	Allocated field (Term of references)	Concluding remark and Key Outcome (Recommendation)	Assessment/ recommendation report place at Annexure
1.	Cold Water Fisheries, Nainital	Protection of fisheries	<p>Provisions made in the EIA/EMP report are satisfactory to mitigate the impacts. However, following points are recommended to strengthen the EMP:-</p> <ul style="list-style-type: none"> • Construction of Mahaseer hatchery and farm in two identified villages is necessary, for conservation and rehabilitation of mahaseer in large scale in due course of time i.e. prior to filling of reservoir. • After construction of Dam, for rehabilitation of endemic fishes in the reservoir a proper strategy is essential. Therefore, management of reservoir with stocking right kind of fishes should be properly implemented for its rehabilitation at the right time. • To encourage construction of fish farms by the local farmers /people of the area and PAFs in their own land, the technical training and inputs are to be provided free of cost to improve the livelihood security of the rural people by forming self-help groups and 	Annexure-XIV

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			<p>societies.</p> <ul style="list-style-type: none"> For conservation of snow trout and other indigenous group of fishes a detail quantitative study on "Habitat Ecology and Ichthyofaunal diversity of upper stretches of Yamuna and its adjoining tributaries" of the proposed project site is recommended simultaneously with project implementation. For this purpose, a specific budget may be included in the EMP. 	
2.	Geological Survey of India (GSI)	<p>Issues of seismology- Disaster management plan is also highly faulty as it does not take into consideration the location of the project with respect to seismic activity.</p>	<p>GSI is involved for all the Geological investigations works for the Lakhwar Project since its inspection i.e 1970-71. Presently there is no issue pertaining to GSI and they have nothing to add for any suggestions on the issue. GSI, State Unit, Uttarakhand is associated with project implementation and if any issue arises during project implementation the same shall be suitably dealt.</p> <p>Opinion on the issues of seismology and seismic activities of the project area will be separately given by the expert of ISR, Gandhinagar.</p>	<p>Annexure-XV</p> 
3.	Indian Institute of Technology (IIT), Roorkee	<p>1. Drinking water irrigation component of the project has not been appraised.</p>	<ul style="list-style-type: none"> At present there is no new irrigation project planned or associated for Lakhwar Project. Beneficiary states (i.e. Haryana, UP, Uttarakhand, Rajasthan, H.P., Delhi) will use their existing system/structure for irrigation and drinking purpose. Therefore irrigation 	<p>Annexure-XVI</p> 

		<p>2. The project has adversely impacted the flow of water in Yamuna River.</p>	<p>component need not to be appraised at this stage.</p> <ul style="list-style-type: none"> • If any of the six beneficiary states plan new or expansion of existing irrigation projects, then there will be a separate appraisal of those projects by the respective state. <ol style="list-style-type: none"> 1. The Lakhwar project is a storage project, which will store in the rainy season and release in the lean period resulting in enhancing the availability of water in the Yamuna river. 2. There is no dry stretch in the u/s and d/s of the Lakhwar project. 3. The distance between the Lakhwar and Vyasi Dam is around 5.0 km, therefore adverse impact in Yamuna river is not anticipated, as the reservoir of Vyasi project (d/s of Lakhwar) is extending upto Lakhwar Dam i.e. Toe/energy dissipation system. Therefore, flow in the Yamuna River, shall be governed by releases of the Vyasi Project. 4. Since Lakhwar project is storage project there will be impact of flows in the river in the d/s, side but E-flow shall be released as per the guidelines of the Utrakhnad Government (Ref: Uttarakhand Government Order Regarding Release Of Minimum E-flow Vide Letter.708/1/2018-05/24/(Writ)/2018/Dated 05 June,,2018). As the E-flow would be released as per guidelines, adverse impact of flow on Yamuna River is not anticipated. 	<p><i>Ahmed</i> 3/8/2022</p>
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		<p>3. Catchment area treatment & other Environmental issues including muck dumping.</p>	<p>It is to suggest that, Discharge Gauging site on both u/s and d/s of the Lakhwar project be established with real time monitoring so as to have regular monitoring during construction and after commissioning of the project.</p> <p>Catchment Area Treatment Plan (2013) (Ref: Catchment Area treatment Plan (CAT-Plan) For Lakhwar Multipurpose Project (300 MW), Prepared By Mussoorie Forest Division, Department Of Forest, Uttarakhand (2013) has considered the followings:</p> <ul style="list-style-type: none"> • Soil and Water Conservation measures are planned • Watershed Management plan would help in increasing recharge/infiltration, particularly in springs • CAT Plan would reduce the soil erosions as well • Plantation Works proposed to seem adequate • Drainage line Treatment proposal seems OK • Treatment of Gullies and construction of Gabions/Check Dams would help in increasing infiltration • Micro Irrigation and Rainwater Harvesting are taken up separately, these works seem adequate • Livelihood activities are also part of the CAT plan 	<p><i>M. M. M.</i> 3/8/2022</p>
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		3. Catchment area treatment & other Environmental issues including muck dumping.	The CAT plan is in order however, proper monitoring is required during implementation of the project to ensure effective implementation of mitigation plans.	
4.	Ministry of Social Justice and Empowerment (MoSJ&E), New Delhi	Social issues arising out of submergence. Resettlement and Rehabilitation of inhabitants.	<p>Clarification was submitted by UJVN Ltd. towards observations from MoSJ&E providing reference to the relevant provisions mentioned in EIA/EMP report and seems to be satisfactory. However following is recommended:-</p> <ul style="list-style-type: none"> • Remaining private land (53.505ha.) should be acquired in accordance to the provisions of "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013". • An independent monitoring agency should be put in place for proper implementation of R&R as well as Local Area Development (LAD) Plan. • Implementation reports of R&R and LAD measures should be shared with department of Social Justice & Empowerment New Delhi. • Grievance Redressal Mechanism (GRM) to be established for the project and GRM records should be maintained for periodic review. 	Annexure-XVII <i>Wheerack</i>
5.	Wildlife Institute of India (WII), Dehradun	1. Protection of biodiversity –EIA Report prepared for the project is highly deficient and faulty as it	The user agency had provided satisfactory and convincing responses on the elaborated comments which were provided to strengthen the EIA/EMP report. However following is recommended:-	Annexure-XVIII <i>Wheerack</i>

		<p>did not take into account the impact on biodiversity of the Project.</p> <p>2. Impact of clearing a forest land of 768.15ha.</p> <p>3. Protection of Flora & Fauna -The project is not viable on account of adverse impact of flora and fauna.</p>	<ul style="list-style-type: none"> • Efforts should be enhanced by implementing the EMP in true spirit. • Present budget of Rs. 208 Lakhs for Biodiversity Conservation and Management Plan (BCWMP) is inadequate, therefore the same should be increased. • Allocated time of 6 years to be increased to 10 years to document during construction and post-commissioning monitoring of the plan. • Biodiversity Management Plan (BMP) monitoring committee should have experts from WII, FRI and ICFRE to timely monitor the effective implementation of plan. 	
6.	Institute of Seismological Research (ISR), Gandhinagar	<p>Issues of seismology- Disaster management plan is also highly faulty as it does not take into consideration the location of the project with respect to seismic activity.</p>	<p>The project site is located in Zone IV as per seismic zoning map of India where earthquakes up to M7 can be expected and zone factor prescribed by BIS is 0.24g. The probable intensity of earthquake in zone IV corresponds to earthquake of intensity VIII on MSK64 scale. The seismic hazard assessment at the Lakhwar dam-site has been carried out by Department of Earthquake Engineering, Indian Institute of Technology, Roorkee to obtain site-specific earthquake parameters. Both probabilistic and deterministic approaches were followed for the seismic hazard assessment as per the guidelines prescribed by National Committee on Seismic Design Parameters (NCSDP). The study recommended site-specific design earthquake parameters of 0.47g and 0.27g for horizontal ground motions for maximum</p>	<p>Annexure-XIX</p> 

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credible earthquake (MCE) and design basis earthquake (DBE), respectively. For vertical ground motions, the parameters are 0.31g for MCE and 0.18g for DBE. IIT, Roorkee also carried out micro earthquake investigation in and around the Lakhwar project site as per the recommendations of NCSDP. The study found very low-level seismic activity within 40 km of dam-site and seismicity is scattered in the range 40-80 km. NCSDP cleared/ approved the parameters and report in 2018. The site-specific earthquake design parameters considered are found to be reasonable and as per the seismicity in and around the dam-site. The dam-site was also visited on April 4, 2022.

As per data obtained from historical records, local network that worked for around a year and seismic networks working in Garhwal region and as per latest research papers related to seismicity in this area not much seismicity is noticed in and around the dam-site in the last 150 years. Therefore there is nothing to support the claim that the project does not take into consideration the location of the project with respect to seismic activity.

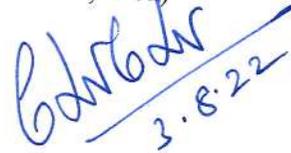
However on the safer side, following are the recommendations

- Project may be monitored closely with a permanent network of at least 5 seismological observatories installed in and around the project site.
- One set of Broadband Seismographs and Strong

			<p>work, terms of Reference, time frame, cost estimates, deliverables is required to be invited for completing the study in Yamuna river basin as above.</p> <p>The total number of hydroelectric projects (operational, under construction and proposed) to be considered in the River Basin Study (RBS) shall be finalized and frozen in consultation with both the State governments. No other HEP's shall be considered once the RBS has been finalized.</p> <p>In this regard, ICFRE, Dehradun has submitted a detailed proposal to the MoEF & CC. After finalization of the CIA study by MoEF&CC, study report of Yamuna river basin shall be uploaded in the public domain and UJVN Limited shall abide by the directions and recommendations.</p>	<p><i>Handwritten signature</i> M 3-8-22 M D M F WND</p>
8.	All Expert members	The muck disposal sites are at close proximity to the river.	<p>As per decision of the committee in second meeting held on 05.04.2022, a detailed muck disposal plan was presented before the committee and it was informed by UJVN Limited that all new proposed muck dumping sites are 30 meter away from the HFL of river, as per requirement of MoEF & CC guidelines.</p> <p>In reference to Old muck dumping sites it was informed that most of these sites are in stabilized condition and no scattering of material has been observed. The overall condition of already dumped site is quite sound as they were supported with the help of crate walls and compacted also wherever necessary (Ref. CAT plan 2013 for Lakhwar MPP</p>	

		<p>prepared by Mussoorie, forest Division). However any further measures as required during project execution shall be undertaken as per MoEF&CC guidelines. The Committee members discussed the issue at length and was of the view that the proposal seems to be satisfactory. However, proper compliance need to be ensured during implementation for which monitoring team may visit the site at regular interval.</p>	
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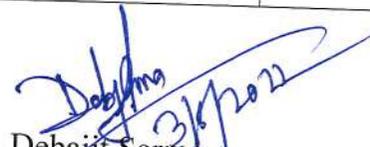

 Dr. Timir Baran Ghoshal
 (Director, GSI)


 3.8.22

Dr. Gopi G.V
 (Scientist-E, WII)


 Mr. M. K. Ujjainra
 (Dy. Director General, MoSJ&E)


 Ms. Ranjana Rajguru
 (Additional Secretary, GoU)


 Dr. Debajit Sarma
 (Principal Scientist, DCFR)


 Prof. Deepak Khare
 (IIT, Roorkee)


 Dr. Sumer Chopra
 (Director, ISR)

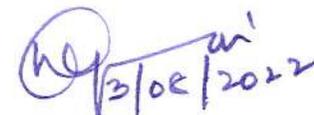

 Ms. Debashree Mukherjee
 (Additional Secretary, GoI)

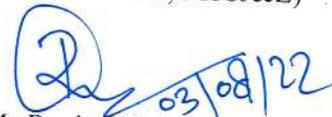
Table-2 Views and findings of the committee

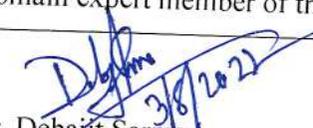
Sl. No	Issues on which inputs have been sought by the Hon'ble NGT	Findings of the Committee
1.	Viability of the project	No material has been placed before the Committee which suggests that the project is not viable.
2.	Mitigating the adverse impact on Environment, flora and fauna	The Committee feels that the conditions laid down by MoEF&CC while according environmental clearance, are comprehensive and duly address the possible impact on environment, flora and fauna. However, in the interest of due diligence, additional measures are suggested by the expert members of the Committee.
3.	Further conditions which may be required to be laid down including the mechanism for monitoring during the setting up and execution of the project and also for resettlement and rehabilitation of inhabitants who may be displaced.	Recommendations for additional conditions/measures are for monitoring purposes, the Committee is of the opinion that this issue has also been adequately addressed in the various statutory clearances. However, again to be on the side of due diligence, the specific suggestions towards monitoring of the environmental protection measures, as also for R&R, are submitted. In addition, it is proposed that a six-monthly review of the implementation of the recommendations may be done by the concerned domain expert member of the committee.

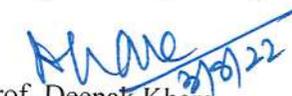

Dr. Timir Baran Ghoshal 3/8/22
(Director, GSI)


Dr. Gopi G.V 3/8/22
(Scientist-E, WII)

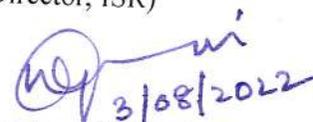

Mr. M. K. Ujjainia 3/8/22
(Dy. Director General, MoSJ&E)


Ms. Ranjana Rajguru 03/08/22
(Additional Secretary, GoU)


Dr. Debajit Sarma 3/8/22
(Principal Scientist, DCFR)


Prof. Deepak Khare 3/8/22
(IIT, Roorkee)


Dr. Sumer Chopra 3/8/22
(Director, ISR)


Ms. Debashree Mukherjee 3/08/2022
(Additional Secretary, Gol)

**Independent multi-disciplinary Expert Committee with respect to Lakhwar
Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT
order Dated 20.01.2022**

Undersigned as nominated member of an independent expert committee constituted by Hon'ble National Green Tribunal vide order dated 20/01/2022 in response to Appeal No. 35/ 2021 in the matter of Manoj Kumar Mishra & Anr. Vs Union of India & Ors. Undersigned was required to look in to the respective field i.e Protection of Fisheries. After reviewing the reports it is revealed that Provisions made in the EIA/EMP report are satisfactory to mitigate all the possible impacts However, following is recommended to strengthen the EMP:-

In reference to the online discussion held during the third meeting of Independent Multi-disciplinary Expert Committee for Lakhwar Multi-purpose project in Uttarakhand on 13.06.2022 at 11: 00 hrs.in the committee room, 1st floor, Department of Water Resources, New Delhi, the following recommendation were made for the purpose-

1. Construction of mahseer hatchery and farm for conservation of mahseer is necessary for conservation and rehabilitation of mahseer in a large scale and time period which has been duly mentioned in the EIA/EMP in two identified villages with specific budget. It is expected that it will be implemented properly in due course of time i.e prior to filling of reservoir.
2. For rehabilitation of endemic fishes particularly in the reservoir after construction of Dam, a proper strategy for stocking the reservoir with right kind of fishes and sizes is very much essential. The detail plan has been mentioned in the revised EMP. Therefore, it is anticipated that the management of reservoir with stocking right kind of fishes should be implemented for its rehabilitation at the right time.
3. For encouraging construction of fish farms by the farmers in their own land those who are residing near bank of the river on the project site, the technical assessment and inputs will be supplied free of cost, which has been clearly documented in the revised EMP. This will be a very good step to improve the



livelihood security of the rural people residing on the bank of the river and to learn about the fish farming techniques. The recommendation mentioned in the EMP should be properly implemented by forming self help groups in due course of time.

4. However, for the conservation of snow trout and other indigenous group of fishes, a separate strategy and plan should be adopted. For doing the same, it is recommended to conduct a detail quantitative study on "Habitat ecology and ichthyofaunal diversity of upper stretches of Yamuna and its adjoining tributaries" of the proposed project site simultaneously with project implementation. For this purpose, a specific budget may be included in the EMP. so that, a management action plan could be formulated for its rehabilitation and conservation. It is also put forward to include a specific budget for the same in the EMP.


(Dr. Debajit Sarma)
Principal Scientist
ICAR -DCFR, Bhimtal

Independent Multidisciplinary Expert Committee with respect to Lakhwar MPP (300MW)

Undersigned as members of an independent expert committee constituted by Hon'ble National Green Tribunal vide order dated 20/01/2022 in response to Appeal No. 35/ 2021 in the matter of Manoj Kumar Mishra &Anr. Vs Union of India &Ors. understand that the Hon'ble NGT have assigned task of merit review related to Geology of the Lakhwar Multipurpose Project (300MW).

In the above context, undersigned has gone through in detail the Geological data such as the Geology DPR, various Geological reports submitted by GSI and other organizations such as IIT Roorkee, NIRM, CSMRS related to Geological investigations since the inception of the Lakhwar Multi-Purpose Project (300MW). All the above data was provided by the Project for the study and further comments if any.

After reviewing the claims of petitioners, the brief report considering all the Geological aspects of the Project is as below for further submission to Hon'ble NGT.

Geology of the Project area:

The Lakhwar Vyasi project area comprises rocks of Jaunsar Group belonging to Pre-Cambrians of Kumaun Lesser Himalayas. The Jaunsar Group of rocks found around both the projects comprise of slate, phyllites, quartzite and limestone of Mandhali, Chandpur and Nagthat Formation.

Dam Geology:The rock belonging to Chandpur Formation have been intruded by volcanics comprised of basic rocks, at Lakhwar dam site, where a large intrusive body of 'Jaunsar Trap' having a width of nearly 300m has been selected for placing the 204m high dam. The intrusive rock comprised of hard and mainly massive dolerite and its variants. A huge xenolith body within the volcanic intrusion comprising of slate/ slaty quartzite shall be the part of dam foundation at left abutment. Since the rock around the Dam site is hard and compact and in good condition, so there is no serious issue related to the Geology of the Dam area.

Power House Geology:The underground power house shall be placed within volcanic rock mass on right bank near to the dam body. The overall rock of the Power house cavern is very hard and compact, very good in condition and has no issue related to Geology and stability of the cavern. However it is suggested to take necessary precautionary measures through controlled blasting and implementation of concurrent support to avoid any collapse in the cavern

At both the dam abutments hard and compact rock mass is present and partially stripping has already been done long back in 1990's. The remaining stripping work will be executed as per construction design & drawing made available during construction. There is no major issues related to the stability of the cut slopes, the rock type, rock condition and discontinuity pattern is

favorable in both the abutments, however utmost precautions needs to be taken at the time of further stripping of the abutments. Any slope stability issue, if raised in future may be handled by the project authority in consultation with GSI.

Geological Survey of India (GSI) is the apex organization in country, in the field of Geological investigation for Hydropower Projects. GSI is involved for all the Geological investigation works for the Lakhwar MPP since its inception.

Geological Investigation of the Lakhwar–Vyasi Dam Complex, Yamuna Hydrel Scheme Stage-V, Dehradun District, UP has started by the GSI since 1970-71 and all the reports are available with the project authority.

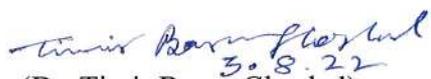
Various geological investigation carried out by UP Irrigation Department under the guidance of GSI is summarized below (as communicated by the project authority):-

SI. No.	Nature of Investigation	Scale/ Description
1	Geological Mapping	1:1000 Scale
2	Drilling	88 Drill holes
3	Drifting	31 drifts measuring 3200m & additional 2 nos. along new dam axis
4	Shaft	One shaft of 65 m deep

The Micro earthquake studies around Lakhwar HE project, on river Yamuna, Uttarakhand has been done by the department of Earthquake Engineering, Indian Institute of Technology (IIT) Roorkee.

The site specific design earthquake parameters for Lakhwar H.E. Project site was also done by the department of Earthquake Engineering, Indian Institute of Technology (IIT) Roorkee by Project No. P - 2004-03 in October, 2004.

Considering the proficiency of the above working organizations i.e. GSI and IIT Roorkee, NIRM & CSMRS, it may be concluded that the issues raised before Hon'ble NGT related to seismology and the location of the project are not appropriate.


3.8.22
(Dr. Timir Baran Ghoshal)
Director, GSI, Eastern Region, Kolkata

**Independent multi-disciplinary Expert Committee with respect to
Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the
direction of NGT order Dated 20.01.2022**

Response

**Prof. Deepak Khare
Department of Water Resources Development and Management
Indian Institute of Technology Roorkee**

Following Tasks were finally assigned to IIT Roorkee after deliberations

1. Drinking water irrigation potential component of the project has not been appraised
2. The project has also adversely impacted the flow in Yamuna River
3. Catchment area Treatment

Following reports/documents were shared

1. Environmental Impact Assessment Report Of Lakhwar Multipurpose Project (300 MW), November, 2020
2. Detailed Project Report, Volume – I Engineering (Price Level May 2012), Lakhwar Multipurpose Project (3x100 Mw = 300 Mw), Dakpatthar (District-Dehradun)
3. MOU Of Water Sharing Between Hon'ble Chief Ministers Of Beneficiary States (I.E. Haryana, Up, Uttarakhand, Rajasthan, H.P., Delhi) Dated 28 Aug., 2018
4. Water Sharing (Tentative) Between Beneficiary States (I.E. Haryana, Up, Uttarakhand, Rajasthan, H.P., Delhi) Communicated Vide Upper Yamuna River Board, Govt Of India, Ministry Of Jal Sakti No UYRB/Tech-8/2020/699-709/Dated 25 Aug., 2020
5. Uttarakhand Government Order Regarding Release Of Minimum E-flow Vide Letter.708/1/2018-05/24/(Writ)/2018/Dated 05 June, ,2018
6. Catchment Area treatment Plan (CAT-Plan) For Lakhwar Multipurpose Project (300 MW), Prepared By Mussoorie Forest Division, Department Of Forest, Uttarakhand (2013)
7. Comprehensive Environmental Management Plans for Lakhwar Hydro Electric Project (Jan, 2007)

1. Drinking water irrigation potential component of the project has not been appraised

As per EIA Report irrigation and drinking water will benefit to 6 states (Chapter-8 P/8.1)

- Details of these components are not available in EIA report, however, in the IInd meeting, of the committee (on 5 April, 2022) project authorities provided inputs and relevant documents pertaining to irrigation and drinking water:

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- Accordingly, project authorities view that the details at this stage are not required is appropriate due to the followings:

- a) ***At present there is no new irrigation project planned for Lakhwar Project and therefore irrigation component cannot be appraised at this stage.***
- b) ***Beneficiary states (i.e. Haryana, UP, Uttarakhand, Rajasthan, H.P., Delhi) will use their existing system/structures for irrigation and drinking purposes. Therefore, irrigation components need not be appraised.***
- c) ***If any of the beneficiary states will plan new or expansion of irrigation projects, then there will be a separate appraisal of those projects***

- **References:**

- i. MOU Of Water Sharing Between Hon'ble Chief Ministers Of Beneficiary States (i.e. Haryana, UP, Uttarakhand, Rajasthan, H.P., Delhi) Dated 28 Aug., 2018
- ii. Water Sharing (Tentative) Between Beneficiary States (i.e. Haryana, Up, Uttarakhand, Rajasthan, H.P., Delhi) Communicated Vide Upper Yamuna River Board, Govt Of India, Ministry Of Jal Sakti No UYRB/Tech-8/2020/699-709/Dated 25 Aug., 2020

Recommendation:

Drinking water and irrigation potential component of the project are not appraised as there is no new irrigation project planned for Lakhwar Project and therefore irrigation component cannot be appraised at this stage. However, if any of the six beneficiary states plan new or expansion of irrigation projects, then there will be a separate appraisal of those projects

2. The project has also adversely impacted the flow in Yamuna River

Based on the EIA report and inputs/clarification given by the Project Authorities during IInd meeting (4 April, 2022) and site visit made on 4th April, 2022, the following findings are stated:

1. The Lakhwar project is a storage project, which will store in the rainy season and release in the lean period resulting in enhancing the availability of water in the Yamuna river.
2. There is no dry stretch in the u/s and d/s of the Lakhwar project.
3. The distance between the Lakhwar and Vyasi Dam is around 5.0 km, therefore adverse impact in Yamuna river is not anticipated, as the reservoir of Vyasi project (d/s of Lakhwar) is extending upto Lakhwar Dam i.e. Toe/energy dissipation system. Therefore, flow in the Yamuna River, shall be governed by releases of the Vyasi Project.
4. Since Lakhwar project is storage project there will be impact of flows in the river in the d/s side, but E-flow shall be released as per the guidelines of the Uttarakhand Government (Ref: Uttarakhand Government Order Regarding Release Of Minimum E-flow Vide Letter.708/1/2018-05/24/(Writ)/2018/Dated 05 June,,2018). As the E-flow would be released as per guidelines, adverse impact of flow on Yamuna River is not anticipated.

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Recommendation:

In view of the above, adverse impact of flow on Yamuna River is not anticipated.

Suggestion:

Discharge Gauging site on both u/s and d/s of the Lakhwar project be established so as to have regular monitoring during and after the project is commissioned.

3. Catchment Area Treatment Plan (2013)

Catchment Area Treatment Plan (2013) (Ref: Catchment Area treatment Plan (CAT-Plan) For Lakhwar Multipurpose Project (300 MW), Prepared By Mussoorie Forest Division, Department Of Forest, Uttarakhand (2013) has considered the followings:

- Soil and Water Conservation measures are planned
- Watershed Management plan would help in increasing recharge/infiltration, particularly in springs
- CAT Plan would reduce the soil erosions as well
- Plantation Works proposed to seem adequate
- Drainage line Treatment proposal seems OK
- Treatment of Gullies and construction of Gabions/Check Dams would help in increasing infiltration
- Micro Irrigation and Rainwater Harvesting are taken up separately, these works seem adequate
- Livelihood activities are also part of the CAT plan

Recommendation:

In general, the CAT plan is very good, if implemented as per the proposal and capacity building is done while executions, so that the system becomes sustainable.

Suggestion:

Soil Erosion measurement at few locations of the Catchment be carried out (during and after the construction of the project) to assess the pattern/quantity of soil erosion so that extensive/appropriate measures for soil conservation and treatment can be taken up (if required) even after the construction of project so as to minimize the possibility of sedimentation in the reservoir.


(Prof. Deepak Khare)
WRDM, IIT Roorkee

J-34/1/2022-Statistics Division
Government of India
Ministry of Social Justice and Empowerment
Department of Social Justice and Empowerment

B-2, Ground Floor,
Pt. Deen Dayal Antyodaya Bhawan,
CGO Complex, New Delhi - 110003
Dated : 22.07.2022

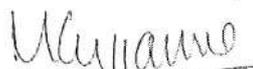
To,
Shri A.S.Goel,
Commissioner (State Projects),
Government of India,
Ministry of Jal Shakti,
Department of Water Resources, RD & GR,
411, Shram Shakti Bhawan, Rafi Marg,
New Delhi-110001.

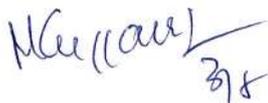
Subject:- Independent Multi-disciplinary Expert Committee with respect to Lakhwar Multi-purpose Project (300MW) in Uttarakhand.

In the meetings of Independent Multi-disciplinary Expert Committee with respect to Lakhwar Multi-purpose Project (300MW) in Uttarakhand on dated 13-06-2022, undersigned had raised certain issues on resettlement and Rehabilitation which were communicated vide this office letter no. J-34/1/2022- Statistics Division, dated 09.06.2022 & 21.06.2022. Clarifications were submitted by UJVN Limited vide letter no 118/UJVNL/03/Director Project/GM(C-LWR/C-8) dated 30-06-2022. These clarifications were reviewed and found to be satisfactory. Now there is a need to have an implementation and monitoring mechanism so that the benefits are reaped by locals and are distributed adequately among the project affected families. Therefore, adherence to the following is recommended:

1. Remaining private land (53.505ha.) should be acquired in accordance to the provisions of "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013".
2. Effective monitoring mechanism should be in place for proper implementation of R&R as well as local area development plan. For the purpose, an independent agency should be put in place, at commencement of work and shall remain in constant contact with locals and record the implementation of R&R as well as LAD measures. These reports should be shared with Department of Social Justice & Empowerment, New Delhi.
3. Grievance Redressal Mechanism (GRM) to be established for the project and information of such a mechanism should be available to people in the local language to ensure its effective implementation. GRM records should be maintained for periodic review.

Yours Sincerely,


(Mahender Kumar Ujjainia)
Deputy Director General



UJVN Limited

Mailbox of mdujvnl@ujvnl.com

Subject: Re: Second meeting of constituted Independent multi-disciplinary Expert Committee with respect to Lakhwar Multi-Purpose Project (300MW) in Uttarakhand, as per direction of NGT order dated 20.01.2022.

From: Gopigv <gopigv@wii.gov.in> on Tue, 21 Jun 2022 10:31:35

To: aswrs-mowr@nic.in

Cc: "Energy Deptt." <energy.section1@gmail.com>, MD UJVNL <mdujvnl@ujvnl.com>

1 attachment(s) - Recommendation.doc (376.50KB)

Dear Madam,

In continuation to the 3rd meeting of Independent multi-disciplinary Expert Committee with respect to Lakhwar Multi-Purpose Project (300MW) in Uttarakhand held on 13 June 2022 in New Delhi, a document containing my observation and recommendations is attached herewith.

Sincerely,

Gopi

Diary No. 2705/MD/UJVNL/1722-79
Dated 27/6/22

h-1

G.V.Gopi, Ph.D
Scientist E & Head, Department of Endangered Species Management
Nodal Officer, EIA Cell
Wildlife Institute of India
P.O. Box # 18, Chandrabani
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The undersigned had provided elaborate comments to strengthen the EIA report (Annexure I) and sought clarifications regarding certain issues in the EIA report. The user agency had provided satisfactory responses (Annexure II). After careful scrutiny and discussions with the user agency and Independent multi-disciplinary committee members, I recommend the following to strengthen the EIA and EMP:

1. The detailed responses given by UJVN is satisfactory and convincing
2. However, efforts should be enhanced by implementing the EMP in true spirit. This requires enhanced fund allocation for BCWMP and time allocation. 208 Lakhs budgeted now is inadequate and has to be increased. 6 Yrs to be increased to 10 Years to document during and post-commissioning monitoring.
3. BMP monitoring committee should have experts from WII, FRI and ICFRE to timely monitor the effective implementation of plan.

G.V.G
3/8/22

Dr. G.V.Gopi
Scientist E

Wildlife Institute of India

G.V.G
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Annexure I

S.No	Scope of the Study (ToR)	Delivered in EIA report
1		The content table has to match with that of the headings and sub headings in the main text of the report.
2	Methodology for collection of Biodiversity Data. Number of sampling locations should be adequate to get reasonable idea of diversity and other attributes of flora and fauna.	<p>A map of the sampling locations for the biodiversity components (flora and fauna) in the report may be included. The methodology can be properly discussed by mentioning the number of sampling plots, transects, sign survey etc. in the report.</p> <p>Total number of sampling plots for vegetation (tree, shrub and herbs), total plots in pre-monsoon and post monsoon season needs to be mentioned in the report.</p> <p>(Study design and data collection methods need to be elaborated in detail, the results could very much differ from the actual results).</p> <p>There are around 15 types and sub forest types mentioned in the report, and only 311 plant species are reported (under reported).</p> <p>No differentiation in the secondary and primary data collected from the field.</p> <ul style="list-style-type: none"> • Methodology for faunal components need to be discussed. • In the mammal survey, conducted during two seasons (pre monsoon and post monsoon) efforts should be mentioned. • In Table 3.47: The following facts may be considered and checked for correctness: • The distribution of Himalayan striped squirrel is not present in Uttarakhand, whereas its distribution is in North-east India. • In Table 3.47: The species <i>Semnopithecus entellus</i> is not distributed in the Himalayan region. The mentioned species is mostly found in the plain regions. This may be <i>Semnopithecus hector</i> and <i>Semnopithecus schistaceus</i>. Kindly check and incorporate.
3		<p>Avifaunal component:</p> <ul style="list-style-type: none"> • In the methodology section, avifaunal diversity and abundance can be included. • As the study area is located in the mid-elevation range, the altitudinal migration of the birds should be common in the area. However, in the report mostly resident species were recorded. Total number of migratory and resident species can be mentioned in the report. • In table 3.48, House crow and Jungle crow species has the same scientific name. The distribution of Common Raven may not be occurring in the present study site. It is found above timberline in the Himalayas. Similarly Fork tailed drongo are not found in western Himalayas. <p>There is no such species as Dark grey tit. There is no such species called as Plane headed parakeet as well.</p> <p>Eurasian blackbird is not under the Psittaciformes order, and</p>

		the species is not distributed in the Himalayan region. Tawny owl is not distributed in Uttrakhand. These may be corrected.
4		In the table 3,49: <ul style="list-style-type: none"> • In the list of butterfly and moths, the conservation status of insects may be given as mentioned in the title of table. • The species <i>Precis Octavia</i> is found in African countries and not distributed in India. This may kindly be checked. • <i>Cepora Nerissa</i> is under Schedule II and <i>Euploea core</i> is under schedule IV of IWPA. Not mentioned in the list. This may be incorporated. • A species mentioned in the list as <i>Neptis</i> sp. (Sailer). There are 19 species of <i>Neptis</i> genus in butterflies which are under the schedules of IWPA. Among <i>Neptis</i> genus 10 sp. are in schedule I and 9 in schedule II, so it is important to mention the species name also. This may be considered and incorporated.
5		The list of Herpetofauna and Amphibians may be arranged in proper order. Starting with snakes, lizard and amphibians and then again lizard. <ul style="list-style-type: none"> • <i>Python molurus</i> and <i>Varanus bengalensis</i> are under Schedule I of IWPA, and Near threatened category of IUCN redlist. Rat snake, <i>Naja naja</i>, Russell's Viper, is under schedule II of IWPA. This may be mentioned in the list. These above suggestions may be incorporated.
6		Overall the conservation status of the flora and fauna may be properly reviewed. Many species are under globally threatened categories of IUCN and/or schedule I or II of IWPA. This may be incorporated.
7	As per the ToR, entire study area should be divided in to 5km × 5km of grid for biodiversity data in GIS domain	This may be mentioned in the report
8	Species area curve in graphical form should be provided in the EIA report.	Species area curve may be provided in the report for floral and faunal group.
9	Description of RET species and species specific methodologies should be developed	<ul style="list-style-type: none"> • In the vegetation section there is no mention about the RET species (IUCN red list, IWPA schedule, CITES). • Sambar is Vulnerable as per the IUCN red list category, but the species in the present report has been mentioned as Least concern. • Common Mongoose is under Schedule II of IWPA. In the report, its mentioned as Schedule IV. • Though globally threatened and schedule II species (IWPA) are listed, species specific methodology has not been adopted for their population estimation. • In the Bird checklist all the Accipitridae family members are under the Schedule I of IWPA but in the report it is mentioned in schedule IV. • In the Butterfly and moth table, and Herpetofauna table, information on the schedule and IUCN status may be included. <p>The above suggestions may be considered and</p>

		incorporated.
10	EIA study C. Biological Environment Besides primary studies, review of secondary data/ literature published for project area on flora and fauna including RET sp. shall be reported in EIA report.	Kindly mention about the source of the data either from primary or secondary source in the report. In the methodology section, study design, data collection, data analysis of the primary data has to be mentioned. Reference and citation of the secondary data sources may be provided in the report.
11	Plant species wrt. To dominance, density, diversity, frequency, abundance, diversity index, similarity index, IVI, Shannon Index, etc. Method for vegetation analysis with details of location and no of quadrats, size of quadrats etc to be clearly reported.	The methodology may further be discussed in detail the Report. Various vital information such as sampling design, habitat characterization, number of quadrats laid, size of the quadrats etc may be included.
12	Details of Endemic species found in Project area	This important section may be included in the report.
13	Flora under RET categories, should be documented using IUCN red list, and BSI criteria along with economic significance, sp. diversity curve should be given	This information may be included in the report.
14	II Fauna Inventorisation should be carried out for all group of animals in study area. their present status along with schedule species. Authenticated info of avifauna along with migration status.	The species names, their distribution, IUCN and IWPA status needs to rechecked and corrections be made accordingly. The avifauna names have to follow a particular taxonomy and correctly written. Please include species that have distribution in the project site. The migration status of the species may be given as the project area falls under the mid elevation zone and hence there should be a significant number of altitudinal migratory species.
15	RET Species-Voucher specimens should be collected along with GPS readings to facilitate rehabilitation.	Information about the GPS locations of RET species reported in the study area may be included.
16	7. Impact prediction and mitigation measures D. Biological Environment	<ul style="list-style-type: none"> • Possible impact of the multi-purpose hydro project on the biological environment in the report may be discussed in detail. • Various mammals, birds, insects and reptile's species are mentioned in the list of the report are protected under the Indian Wildlife Protection Act, and mentioned in the IUCN red list. Mitigation measures for these species may be included. • The bird species in the report seems to be under reported and the migration status is also not given for the species in the list. Necessary corrections be made. • May discuss in detail about habitat restorations for the faunal diversity. • May provide details of identification of important wildlife corridors in the report. • In Conservation Measure of Birds, flycatchers are mentioned as migrant whereas in the sub section it has been mentioned as resident. Most of the wagtails are

	Conservation Measure of Birds	<p>migrants but in report they are mentioned as resident species. This may be considered and incorporated in the report.</p> <ul style="list-style-type: none">◦ In this section nest box for the targeted species are not mentioned.◦ List of species that will effectively utilize the nest box may be mentioned in the report.◦ There should be scientific justification for the given size and shape of the nest box and hole in it.
	Provision of the Nest box	

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Annexure II

UJVNL's response to WII's Observation/ Comments to strengthen the EIA/EMP report of the Lakhwar Multipurpose Project (300 MW)

1. Methodology for collection of Biodiversity Data.

Number of sampling locations should be adequate to get reasonable idea of diversity and other attributes of flora and fauna.

A map of the sampling locations for the biodiversity components (flora and fauna) in the report may be included. The methodology can be properly discussed by mentioning the number of samplings plots, transects, sign survey etc. in the report.

Total number of sampling plots for vegetation (tree, shrub and herbs), total plots in pre-monsoon and post monsoon season needs to be mentioned in the report. (Study design and data collection methods need to be elaborated in detail).

The project was discussed in the EAC meeting held on 28.01.2019 based on the order vide dated 10.01.2019 (OA No. 431 of 2015 by Manoj Mishra Vs. Union of India and Others) of the Hon'ble NGT, Principal Bench, New Delhi. The EAC had recommended for a site visit by a Sub-Committee of the EAC to the project site for any additional study, if any, to be taken up based on the standard ToR for River Valley Projects. A Sub-committee consisting of 7 members was constituted and the Sub-committee visited the project site on 22.04.2019. The report of Sub-committee suggested that baseline data for pre-monsoon and monsoon season shall be collected and the same be incorporated in the EIA/EMP report.

Based on the recommendation of Sub-committee, the Term of reference/ Scope of study was accorded by the Expert Appraisal Committee (EAC) for River Valley & Hydroelectric Power Projects (RV & HEP) for Lakhwar Multipurpose Project in its meetings held on 09.07.2019, recommended that "*the baseline studies should be collected for 2 seasons (Pre-monsoon & Monsoon). Based on the baseline data collected for two seasons (Pre- Monsoon & Monsoon) the status of the existing environment in the area and capacity to bear the impact on this should be analyzed*".

As per the Work order/ agreement with environmental consultant, the total time period to complete the study was 09 months. It includes scoping clearance, baseline data collection and analyses, submission of draft EIA/EMP report to State Pollution Control Board to conduct public hearing and to present the case before EAC for Environmental Clearance.

➤ **Methodology for Vegetation Sampling**

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Considering the hilly topography of the study area and the time period given for collection and analyses of baseline data was very limited. The entire study area is inaccessible in given time period. Hence, the data collection was focused on direct Impact zone and surrounding area. Out of six sampling location four lies in the directly affected area (direct impact zone: grids including project components such as reservoir, dam, access roads etc.) and remaining sampling sites lies in the rest of the area or indirect impact zone (10 km buffer zone of the study area).

As per methodology prescribed in Standard ToR for biological sampling, study area was divided in grids of 5km x 5km in GIS domain (EIA Chapter 3, Figure 3.13; Page no. 3.28). There after 25% of the total grid cover entire study area, was selected randomly for sampling. The study has been conducted covering different land use/ land cover categories like Forest, Scrubland, fallow/abandoned land, etc. Phytosociological surveys were conducted at 6 sampling locations.

Nested quadrat sampling method was used for the study of community structure of the vegetation. For arriving at the requisite size and number of the quadrats, species area curve was plotted. At each site the quadrats were laid along the altitudinal gradient beginning from the vegetation along the riverbank and further up along the slope ensuring maximum possible representative coverage of the vegetation at a particular sampling location. The quadrats (a sampling unit) of different sizes were used depending upon the habit. The size of the quadrat in which maximum diversity of species can be recorded, is considered as the minimum size of quadrat for that area.

For sampling of trees at each sampling location 10 quadrats were studied with a quadrat size of 10m x 10m. In the case of shrubs quadrats of 5m x 5m were laid while for herbs quadrat size of 1m x 1m was used. For shrubs and herbs, 10 quadrats were laid at each sampling site.

The data thus obtained was compiled in tabular form and analysed for different attributes like density, frequency, and basal cover (basal area).

The frequency density and abundance were calculated as follows:

$$\text{Density} = \frac{\text{Total no. of individuals of a plant species recorded from all quadrats}}{\text{Total number of quadrats studied}}$$

$$\text{Abundance} = \frac{\text{Total no. of individuals of a plant species recorded from all quadrats}}{\text{Total number of quadrats of occurrence of a species}}$$

$$\text{Frequency (\%)} = \frac{\text{Number of quadrats of occurrence of a species}}{\text{Total number of quadrats studied}} \times 100$$

Calculation of Dominance & Diversity Indices

Dominance: For calculation of dominance Basal area/cover of trees was calculated by measuring the 'cbh' (the circumference at breast height) of each individual tree belonging to different species, which was then converted into the basal area using the formula as follows:

Basal area = πr^2

where r value was calculated from *dbh* using the formula $dbh = 2 \pi r$

The data on density and basal cover obtained above was then converted into per ha.

The **Importance Value Index (IVI)** for trees was determined as the sum of relative density, relative frequency, and relative dominance as per Curtis, 1959.

Species diversity of the vegetation was calculated by using the Shannon-Wiener Diversity Index (1963).

The index of diversity was computed by using the Shannon Wiener Diversity Index (Shannon Wiener, 1963) as:

$$H = - \sum (ni/n) \times \ln (ni/n)$$

Where n_i is the individual density of a species and n is the total density of all the species.

➤ **Methodology for faunal Sampling**

The data collected has been analysed and tabulated based upon direct sighting as well as indirect evidence in the form of scats and pug marks, etc. The project as well as the catchment area was extensively surveyed for the presence of wildlife along with their habitat affinities. Exploration was carried out for the species of mammals, birds, herpetofauna and insects with respect to the habitat type and altitude where they occurred.

The study area was divided into different strata based on topography and vegetation pattern. Sampling for habitat and animals was done in different strata. The coverage of the study area was hampered by inaccessibility of certain areas due to inhospitable terrain. The normal systematic transects for mammals and birds were not possible in this study area due to difficult terrain, so maximum numbers of trails were used for faunal sampling in the same area selected for vegetation sampling.

To study the wild mammalian fauna of the study area, 2 - 5 km long transects and trails were walked during early morning and evening hours following Visual Encountered Sampling. Direct sighting of animals as well as indirect signs like scat, pellets, pugmarks, vocalizations, etc. were also recorded during the survey trails. Animals and birds observed along the route were recorded, together with information on their habitat. Four to five separate walks were done along both the banks of Yamuna and Aglar rivers to collect information on riverine tract.

Direct sighting of mammals is rare in the area. Therefore, the fauna of the study area has been compiled with the help of secondary sources supplemented with information provided by local people during field surveys in the study area. For the preparation of checklist of animals, Forest Working Plan of Mussoorie Forestry Division and Kalsi Forest Divisions. In addition, data was compiled from "Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries".

The birds were also sighted on the same transect and trails marked for mammals. Sampling was carried out on a fixed width trails of 2 km wherever the terrain permitted and point counts were carried out at a fixed distances at more or less regular intervals.

In addition to point sampling, Opportunistic sampling for avifaunal diversity was also followed. Bird species sighted data during travelling and data collection were also noted and enlisted with the birds sighted during point sampling. A prismatic field binocular (10 × 50) was used for bird watching during transect survey and nearby the human habitation of study area. Birds were identified as per the field guide of Ali & Ripley (1983), Grimmett and Flaming *et al.* (1984), Krysz Kazmierczak (2006) and Grimmett (2007).

The herpetofauna were sampled on the same transect marked for mammals. Visual Encounter Survey (VES) methodology was followed for recording herpetofauna (amphibians and reptiles). VES is a method in which field personnel walk through an area or habitat for a given time period systematically searching for animals. The sampling was carried along riverbanks and the sampling was repeated during evening time.

Map of sampling location is given in EIA Chapter 3, Figure 3.13; Page no. 3.28. The sampling area marked for floral sampling also represent the sampling area for the faunal survey in the area.

2. There are around 15 types and sub forest types mentioned in the report, and only 311 plant species are reported (under reported). No differentiation in the secondary and primary data collected from the field.

- As per TOR Forest type needs to describe by referring concerning Forest Division Working Plan. Therefore, Forest type mentioned in the EIA report was referred from Forest Working Plan.
- As discussed earlier the present study is time constraint study. The data collection is focused on Impact zone and surrounding area. The list of plant species was prepared from the observation of field survey and species mentioned in forest working plan.
- Methodology adopted for faunal survey is discussed under Reply of Point 1.

3. In Table 3.47: The following facts may be considered and checked for correctness:

The distribution of Himalayan striped squirrel is not present in Uttarakhand, whereas its distribution is in North-east India. In Table 3.47: The species Semnopithecus entellus is not distributed in the Himalayan region. The mentioned species is mostly found in the plain regions. This may be Semnopithecus hector and Semnopithecus schistaceus. Kindly check and incorporate.

- List of mammalian species was prepared with the help of secondary literature and public consultation. No direct sighting or evidence of presence of Himalayan striped squirrel (*Tamiops mccllellandii*) was recorded during field survey. However, the presence of Himalayan striped squirrel is reported in "Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries".
- Similarly, species of langur is sighted during field survey, for identification of species, secondary literature and published data viz; Forest Working Plan of Mussoorie Forest

Division and *Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries*" were consulted.

Semnopithecus entellus (Common Langur) is the only species of Langur mentioned in Forest Working Plan of Mussoorie Forest Division and Study report of "*Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries*."

- After reviewing the presence and distribution of Langur species and Himalayan striped squirrel in the study area, correction has been made. *Semnopithecus entellus* is replaced by *Semnopithecus schistaceus* and Himalayan striped squirrel is removed from the list of mammals (*Revised and updated list mammals reported from the study area is attached as Annexure-I of the document*).

4. Avifaunal component:

- In the methodology section, avifaunal diversity and abundance can be included.
- As the study area is located in the mid-elevation range, the altitudinal migration of the birds should be common in the area. However, in the report mostly resident species were recorded. Total number of migratory and resident species can be mentioned in the report.
- In table 3.48, House crow and Jungle crow species has the same scientific name. The distribution of Common Raven may not be occurring in the present study site. It is found above timberline in the Himalayas. Similarly, Fork tailed Drongo are not found in western Himalayas.
- There is no such species as Dark grey tit.
- There is no such species called as Plane headed parakeet as well.
- Eurasian blackbird is not under the Psittaciformes order, and the species is not distributed in the Himalayan region.
- Tawny owl is not distributed in Uttarakhand. These may be corrected

- As suggested the revised and updated list of avifaunal species with their conservation status is attached as Annexure-II of the document.
- There is a typographical error; it will be updated as House crow (*Corvus splendens*) and Jungle crow (*Corvus macrorhynchos*).
- Common Raven (*Corvus corax*) is sighted during opportunistic sampling while traveling in the study area. The individual is sighted near waste dumping site near Kempty fall along the road between Mussoorie to Yamuna Bridge (30° 30' 02.87" N; 78° 01' 30.31" E).
- For distribution of Fork tailed Drongo Cuckoo, *Surniculus dicruroides*, BirdLife International (<http://datazone.birdlife.org/species/factsheet/fork-tailed-drongo-cuckoo-surniculus-dicruroides>) and The IUCN Red List of Threatened Species. Version 2021-3 (<https://www.iucnredlist.org/species/22736080/95124166>) were consulted.
- There is a typographical error: Rufous-naped Tit is correct common name for *Periparus rufonuchalis*. Similarly common name of *Psittacula krameri* is Rose-ringed Parakeet. Instead of Eurasian Black Bird, the species should be read as Grey Winged Black Bird (*Turdus boulboul*) belonging to Order Passeriformes.
- Tawny owl is reported in study report of "*Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries*." Carried out by Salim Ali Center for Ornithology and Natural History, Coimbatore, Tamil Nadu.

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- Out of 59 species reported from the area, 53 are Resident birds, 2 birds are summer visitor, 3 birds are winter visitor and one bird is resident/ winter visitor.

Correction incorporated in revised and updated list of avifaunal species with their conservation status is attached as Annexure-II of the document.

5. In the table 3.49: In the list of butterfly and moths, the conservation status of insects may be given as mentioned in the title of table.

*The species *Precis octavia* is found in African countries and not distributed in India. This may kindly be checked.*

**Cepora nerissa* is under Schedule II and *Euploea core* is under schedule IV of IWPA. Not mentioned in the list. This may be incorporated.*

*A species mentioned in the list as *Neptis sp. (Sailer)*. There are 19 species of *Neptis* genus in butterflies which are under are the schedules of IWPA. Among *Neptis* genus 10 sp. are in schedule I and 9 in schedule II, so it is important to mention the species name also. This may be considered and incorporated.*

- Revised and updated list of Butterflies and Moths with their conservation status is attached as Annexure-III of the document.
- Due to inaccessible terrain, it is not possible to capture and identify all species at site. The process of taxonomic identification of species is length process. As the study is time constraint study, with limited resources. Therefore, based on the sighting and consulting literature "The Book of Indian Butterflies" by Isaac Kehimkar, the name genus has been identified and same has been mentioned in report.

6. The list of Herpetofauna and Amphibians may be arranged in proper order. Starting with snakes, lizard and amphibians and then again lizard.

**Python molurus* and *Varanus bengalensis* are under Schedule I of IWPA, and Near threatened category of IUCN redlist. Rat snake, *Naja naja*, Russell's Viper, is under schedule II of IWPA. This may be mentioned in the list.*

- Revised and updated list of Herpetofauna with their conservation status is attached as Annexure-IV of the document.

7. Overall, the conservation status of the flora and fauna may be properly reviewed. Many species are under globally threatened categories of IUCN and/or schedule I or II of IWPA. This may be incorporated.

- Revised and updated list of faunal species with their conservation status is given in Annexure I to Annexure IV of the document.

8. As per the ToR, entire study area should be divided in to 5km × 5km of grid for biodiversity data in GIS domain.

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- As per methodology prescribed in Standard ToR for biological sampling, study area was divided in grids of 5km x 5km in GIS domain (EIA Chapter 3, Figure 3.13; Page no. 3.28). There after 25% of the total grid cover entire study area, was selected randomly for sampling.

9. Species area curve in graphical form should be provided in the EIA report. Species area curve may be provided in the report for floral and faunal group.

- Species area curve could not be plotted due to short duration for the study, as stated earlier the study was under time constraint and the entire study area was inaccessible in given time. However, the effort of the study was to establish the ecological baseline data for all the species found in the area and this was achieved as reflected in the enclosed annexures. Detailed methodology followed for floral and faunal sampling is discussed in Point 1.

10. Description of RET species and species specific methodologies should be developed. In the vegetation section there is no mention about the RET species (IUCN red list, IWPA schedule, CITES).

- Sambar is Vulnerable as per the IUCN red list category, but the species in the present report has been mentioned as Least concern.
- Common Mongoose is under Schedule II of IWPA. In the report, its mentioned as Schedule IV.
- Though globally threatened and schedule II species (IWPA) are listed, species specific methodology has not been adopted for their population estimation.
- In the Bird checklist all the Accipitridae family members are under the Schedule I of IWPA but in the report it is mentioned in schedule IV.
- In the Butterfly and moth table, and Herpetofauna table, information on the schedule and IUCN status may be included.

- Description on Conservation status of flora and faunal species following IUCN 2019-2 and IWPA 1972 is given in EIA Chapter 3, Section 3.2.2.2 Sub section (f) and Section 3.2.2.2 Sub section (v), respectively.
- Revised and updated list of faunal species with their conservation status is given in Annexure I to Annexure IV.

11. EIA study: Biological Environment; Secondary Literature

Besides primary studies, review of secondary data/ literature published for project area on flora and fauna including RET sp. shall be reported in EIA report.

Kindly mention about the source of the data either from primary or secondary source in the report. In the methodology section, study design, data collection, data analysis of the primary data has to be mentioned. Reference and citation of the secondary data sources may be provided in the report.

- **Bibliography:** Secondary literature reviewed for present study is given in Annexure VI of the document.

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- As explained before, detail methodology followed for floral and faunal sampling is discussed in Point 1.

12. Plant species w.r.t. To dominance, density, diversity, frequency, abundance, diversity index, similarity index, IVI, Shannon Index, etc. Method for vegetation analysis with details of location and no of quadrats, size of quadrats etc. to be clearly reported.

The methodology may further be discussed in detail the Report. Various vital information such as sampling design, habitat characterization, number of quadrats laid, size of the quadrats etc may be included.

- As explained before, detailed methodology for floral and faunal survey is discussed in reply to Point 1.

13. Details of Endemic species found in Project area

- As per RED data Book of Indian for Plants and Animals, no endemic species were recorded during field survey. Conservation status of Plant species is given in EIA Report Chapter 3 Section 3.2.2.2 Sub-section (f).

14. Flora under RET categories should be documented using IUCN red list, and BSI criteria along with economic significance.

- Conservation status is as per IUCN ver. 2019-2, BSI published RED data book of Indian Plants has been consulted. Conservation status of Plant species is given in EIA Report Chapter 3 Section 3.2.2.2, Sub-section (f).
- Economically Important Plant Species is given in section 3.2.2.2, Sub section (e).

15. Fauna: Inventorisation should be carried out for all group of animals in study area. their present status along with schedule species. Authenticated info of avifauna along with migration status.

The species names, their distribution, IUCN and IWPA status needs to recheck and corrections be made accordingly. The migration status of the species may be given as the project area falls under the mid elevation zone and hence there should be a significant number of altitudinal migratory species.

- Revised and updated list of avifaunal species with their conservation status and migration status is attached as Annexure-II of the document. All suggested corrections are incorporated in the list.

16. RET Species-Voucher specimens should be collected along with GPS readings to facilitate rehabilitation.

Information about the GPS locations of RET species reported in the study area may be included.

- No Schedule I species were recorded during field survey in the study area, therefore no GPS location is available for RET species. Schedule-I species have been reported from secondary literature in the study area.
- EIA Chapter 3, Section 3.2.2.3 Faunal Diversity, Sub section (i) refers the forest working Plan of Mussoorie Wildlife Division. The Working Plan does mention the presence of Common Leopard (*Panthera pardus*) and Asiatic Black Bear (*Ursus thibetanus*) in their jurisdiction. These species are also mentioned in "Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries" to be present in the area, however, no direct or indirect evidence could be recorded during the field survey about their presence in and around the project area.
- As per the forest working plan of the concerned forest divisions and study report of ICFRE on "Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries", among the faunal species reported from the area *Panthera pardus*, *Circaetus gallicus*, *Ictinaetus malaiensis*, *Milvus migrans*, *Ocyrceros birostris*, *Varanus bengalensis* and *Python molurus* are listed as Schedule I species under IWPA, 1972. *Felis chaus*, *Vulpes vulpes*, *Paguma larvata*, *Ursus thibetanus*, *Macaca mulatta* and *Semnopithecus schistaceus* are listed as Schedule II species, *Muntiacus muntjak*, *Cervus unicolor*, *Naemorhedus goral* and *Sus scrofa* are listed as Schedule III species under IWPA 1972. Rest of the species are either listed as Schedule IV or V.
- As per IUCN Red List of Threatened Species ver. 2021-3, *Panthera pardus*, *Ursus thibetanus*, and *Cervus unicolor* are under Vulnerable category (VU), and *Naemorhedus goral*, *Gyps himalayensis*, *Python molurus* and *Varanus bengalensis* are the species listed under Near Threatened category (NT). Rest of the species reported in the project area are under Least Concern (LC) category.

17. Impact prediction and mitigation measures: Biological Environment

- Possible impact of the multi-purpose hydro project on the biological environment in the report may be discussed in detail.
- Various mammals, birds, insects and reptile's species are mentioned in the list of the report are protected under the Indian Wildlife Protection Act and mentioned in the IUCN red list. Mitigation measures for these species may be included.
- The bird species in the report seems to be under reported and the migration status is also not given for the species in the list. Necessary corrections be made.
- May discuss in detail about habitat restorations for the faunal diversity.
- May provide details of identification of important wildlife corridors in the report.
- In Conservation Measure of Birds, flycatchers are mentioned as migrant whereas in the sub section it has been mentioned as resident. Most of the wagtails are migrants but in report they are mentioned as resident species. This may be considered and incorporated in the report.
- In this section nest box for the targeted species are not mentioned.
- List of species that will effectively utilize the nest box may be mentioned in the report. There should be scientific justification for the given size and shape of the nest box and hole in it.

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- The impact of various activities on biological environment is discussed in EIA chapter 4 Anticipated Environmental Impacts and Mitigation Measures.
 - Table 4.2 Impact matrix shows the impact of construction and operation of proposed project on Terrestrial Flora, fauna, Terrestrial Flora fauna and Aquatic ecology.
 - As per ToR Biodiversity Conservation and Wildlife Management Plan has been proposed with financial provision of Rs 208.00 lakh, out of Rs. 26810.68 lakh under Environmental Management Plan to be implemented in the project area.
 - The Plan is executed by Biodiversity Monitoring Committee, constituted as per Section 41(1) of the **Biological Diversity Act, 2002**, in consultation with wildlife experts under supervision of Forest Department.
 - For identification of important wildlife corridors, officials of forest department were consulted. As per forest department there is no wildlife corridor in the area.
 - Generally, Flycatchers are migratory in nature and winter visitors in North-Western Himalaya. As per "The Book of Indian Birds" (13th edition) by Salim Ali, published by BNHS, Asian Paradise-Flycatcher is resident in some locality. Therefore, during preparation of conservation plan, flycatchers was considered as resident.
 - Nest boxes have been found beneficial for attracting and sustaining populations of bird's resident. Based on review of case studies and prior experience from other project sites, the size and shape of the nest box is suggested. However, the plan will be executed by forest department. Based on habitat requirement, adaptability by species and vegetation cover, wildlife expert of state forest department finalize the location and numbers of nest box. Similarly based on presence and absence of species the size and shape of the nest box will be decided by the wildlife expert of forest department.

Biodiversity Conservation and Wildlife Management Plan

During field survey no Schedule I species were sighted in the study area. However, as per the forest working plan of the concerned forest divisions and study report of ICFRE on "Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries", there are Schedule-I species of mammals, birds and herpetofauna reported from the area. Therefore, for monitoring and conservation of wildlife habitat in the study area Biodiversity Management and Wildlife Conservation Plan is prepared with financial assistance.

Proposed Biodiversity Management and Wildlife Conservation Plan was implemented by forest department and association with Biodiversity Management Committee (BMC) constituted Under section 63 of the Biological Diversity Act, 2002, Uttarakhand Biological Diversity Rules, 2015 has been notified by the Government of Uttarakhand.

The objective and scope of BMC are

- Monitoring the project activities and its impact on biodiversity of the project area
- Implementation of Management Plan in respect to conservation efforts and

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- Effectiveness of conservation efforts and necessary action to be taken for conservation and management of wildlife habitat in the area.

Total budget allocated for the Biodiversity Conservation and Wildlife Management Conservation Plan for Lakhwar MPP Project would be **Rs. 208.00 lakh**.

The costs involved for implementation of Environmental Management Plan and Corporate Environment Responsibility Plan for Lakhwar Multipurpose Project are summarized in Annexure V.

ANNEXURE I

List of Mammalian species reportedly found in the study area based upon secondary data

S. No.	Family/ Scientific name	Common name	Conservation status		
			IUCN 2021-3	WPA 1972 Schedule	CITES Appendix
Order: CARNIVORA					
Felidae					
1	<i>Felis chaus</i>	Jungle Cat	LC	II	II
2	<i>Panthera pardus</i>	Common Leopard	VU	I	I
Ursidae					
3	<i>Ursus thibetanus</i>	Asiatic Black Bear	VU	II	I
Canidae					
4	<i>Vulpes vulpes</i>	Red Fox	LC	II	III
5	<i>Canis aureus</i>	Jackal	LC	II	III
Herpestidae					
6	<i>Herpestes edwardsii</i> *	Common mongoose	LC	II _e	III
Viverridae					
7	<i>Paguma larvata</i>	Himalayan palm civet	LC	II	III
Order: CETARTIODACTYLA					
Cervidae					
8	<i>Muntiacus muntjak</i>	Barking Deer	LC	III	-
9	<i>Cervus unicolor</i>	Sambar	VU	III	-
Bovidae					
10	<i>Naemorhedus goral</i>	Himalayan Goral	NT	III	I
Suidae					
11	<i>Sus scrofa</i>	Wild Pig	LC	III	-
Order: PRIMATES					
Cercopithecidae					
12	<i>Macaca mulatta</i> *	Rhesus Macaque	LC	II	II
13	<i>Semnopithecus schistaceus</i> *	Central Himalayan langur	LC	II	I
Order: RODENTIA					
Hystricidae					
14	<i>Hystrix indica</i>	Indian Crested Porcupine	LC	IV	-
Sciuridae					
15	<i>Funambulus pennantii</i> *	Five-striped palm squirrel	LC	IV	-
Order: LAGOMORPHA					
Leporidae					
16	<i>Lepus nigricollis</i>	Indian Hare	LC	IV	-

*Sighted during survey; IUCN 2021-3- International Union for Conservation of Nature; WPA – Wildlife (Protection) Act, 1972; CITES-The Convention on International Trade in Endangered Species of Wild Fauna and Flora; VU – Vulnerable; NT- Near Threatened; LC - Least Concern;

ANNEXURE II

List of avifauna sighted and reported from the study area with their conservation status

S. No.	Order	Family	Common name	Scientific name	Resident Status	IUCN Status	IWPA Schedule	CITES Appendix
1	Accipitriformes	Accipitridae	Short-toed Eagle	<i>Circetus gallicus</i>	R	LC	I	II
2	Accipitriformes	Accipitridae	Himalayan Griffon	<i>Gyps himalayensis</i>	R	NT	IV	II
3	Accipitriformes	Accipitridae	Black Eagle	<i>Ictinaetus malaiensis</i>	R	LC	I	II
4	Accipitriformes	Accipitridae	Black Kite	<i>Milvus migrans</i>	R	LC	I	II
5	Anseriformes	Anatidae	Northern Pintail	<i>Anas acuta</i>	WV	LC	IV	-
6	Bucerotiformes	Bucerotidae	Indian Grey-Hornbill	<i>Ocyrocus birostris</i>	R	LC	I	-
7	Bucerotiformes	Upupidae	Common Hoopoe	<i>Upupa epops</i>	R	LC	IV	-
8	Charadriiformes	Charadriidae	Red wattled Lapwing	<i>Vanellus indicus</i>	R	LC	IV	-
9	Columbiformes	Columbidae	Rock Pigeon	<i>Columba livia</i>	R	LC	IV	-
10	Columbiformes	Columbidae	Spotted Dove	<i>Streptopelia chinensis</i>	R	LC	IV	-
11	Columbiformes	Columbidae	Oriental Turtle-Dove	<i>Streptopelia orientalis</i>	R/WV	LC	IV	-
12	Columbiformes	Columbidae	Yellow-footed Green-Pigeon	<i>Treeron phoenicopterus</i>	R	LC	IV	-
13	Coraciiformes	Alcedinidae	Lesser Pied Kingfisher	<i>Ceryle rudis</i>	R	LC	IV	-
14	Coraciiformes	Alcedinidae	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	LC	IV	-
15	Coraciiformes	Coraciidae	Indian Roller	<i>Coracias benghalensis</i>	R	LC	IV	-
16	Coraciiformes	Meropidae	Green bee-eater	<i>Merops orientalis</i>	R	LC	IV	-
17	Cuculiformes	Cuculidae	Koel	<i>Eudynamis scolopacea</i>	R	LC	IV	-
18	Galliformes	Phasianidae	Red Jungle fowl	<i>Gallus gallus</i>	R	LC	IV	-
19	Passeriformes	Aegithalidae	Red-headed Tit	<i>Aegithalos concinnus</i>	R	LC	IV	-
20	Passeriformes	Corvidae	Common Raven	<i>Corvus corax</i>	R	LC	IV	-
21	Passeriformes	Corvidae	Jungle Crow	<i>Corvus macrorhynchos</i>	R	LC	V	-
22	Passeriformes	Corvidae	House Crow	<i>Corvus splendens</i>	R	LC	IV	-
23	Passeriformes	Corvidae	Grey Tree Pie	<i>Dendrocitta formosae</i>	R	LC	IV	-
24	Passeriformes	Corvidae	Red billed blue Magpie	<i>Urocissa erythroryncha</i>	R	LC	IV	-
25	Passeriformes	Corvidae	Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>	R	LC	IV	-
26	Passeriformes	Dicruridae	Ashy Drongo	<i>Dicrurus leucophaeus</i>	SV	LC	IV	-
27	Passeriformes	Dicruridae	Black Drongo	<i>Dicrurus macrocerus</i>	R	LC	IV	-
28	Passeriformes	Emberizidae	Crested bunting	<i>Emberiza lathami</i>	R	LC	IV	-
29	Passeriformes	Estrildidae	Black Head Munia	<i>Lonchura malacca</i>	R	LC	IV	-
30	Passeriformes	Leiothrichidae	Jungle Babbler	<i>Argya striata</i>	R	LC	IV	-
31	Passeriformes	Monarchidae	Asian Paradise-Flycatcher	<i>Terpsiphone paradisi</i>	SV	LC	IV	-
32	Passeriformes	Motacillidae	White Wagtail	<i>Motacilla alba</i>	WV	LC	IV	-
33	Passeriformes	Motacillidae	Yellow Wagtail	<i>Motacilla flava</i>	WV	LC	IV	-

S. No.	Order	Family	Common name	Scientific name	Resident Status	IUCN Status	IWPA Schedule	CITES Appendix
34	Passeriformes	Muscicapidae	White-throated Fantail	<i>Rhipidura albicollis</i>	R	LC	IV	-
35	Passeriformes	Muscicapidae	Spotted Forktail	<i>Enicurus maculatus</i>	R	LC	IV	-
36	Passeriformes	Muscicapidae	Blue Whistling-Thrush	<i>Myophonus caeruleus</i>	R	LC	IV	-
37	Passeriformes	Muscicapidae	Brown Rock Chat	<i>Oenanthe fusca</i>	R	LC	IV	-
38	Passeriformes	Muscicapidae	Pied Bushchat	<i>Saxicola caprata</i>	R	LC	IV	-
39	Passeriformes	Nectariniidae	Green-tailed Sunbird*	<i>Aethopyga nipalensis</i>	R	LC	IV	-
40	Passeriformes	Nectariniidae	Purple Sunbird	<i>Cinnyris asiaticus</i>	R	LC	IV	-
41	Passeriformes	Paridae	Himalayan Black-lored Tit	<i>Machilophus xanthogenys</i>	R	LC	IV	-
42	Passeriformes	Paridae	Eurasian Great Tit	<i>Parus major</i>	R	LC	IV	-
43	Passeriformes	Paridae	Rufous-naped Tit	<i>Periparus rufonuchalis</i>	R	LC	IV	-
44	Passeriformes	Passeridae	House Sparrow	<i>Passer domesticus</i>	R	LC	IV	-
45	Passeriformes	Pycnonotidae	Black Bulbul	<i>Hypsipetes leucocephalus</i>	R	LC	IV	-
46	Passeriformes	Pycnonotidae	Red vented Bulbul	<i>Pycnonotus cafer</i>	R	LC	IV	-
47	Passeriformes	Pycnonotidae	Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	R	LC	IV	-
48	Passeriformes	Sturnidae	Jungle Myna	<i>Acridotheres fuscus</i>	R	LC	IV	-
49	Passeriformes	Sturnidae	Common Myna	<i>Acridotheres tristis</i>	R	LC	IV	-
50	Passeriformes	Sylviidae	Grey-sided Bush-warbler	<i>Cettia brunnifrons</i>	R	LC	IV	-
51	Passeriformes	Turdinae	White-capped Water Redstart	<i>Chaimarrornis leucocephalus</i>	SV	LC	IV	-
52	Passeriformes	Zosteropidae	Oriental White Eye	<i>Zosterops palpebrosus</i>	R	LC	IV	-
53	Passeriformes	Turdidae	Grey-winged Blackbird	<i>Turdus baulboul</i>	R	LC	IV	-
54	Pelecaniformes	Ardeidae	Cattle Egret	<i>Bubulcus ibis</i>	R	LC	IV	-
55	Pelecaniformes	Phalacrocoracidae	Little Cormorant	<i>Phalacrocorax niger</i>	R	LC	IV	-
56	Piciformes	Ramphastidae	Blue throated barbet	<i>Psilopogon asiaticus</i>	R	LC	IV	-
57	Psittaciformes	Psittaculidae	Plum Headed Parakeet	<i>Psittacula cyanocephala</i>	R	LC	IV	II
58	Psittaciformes	Psittaculidae	Rose Ring Parakeet	<i>Psittacula krameri</i>	R	LC	IV	-
59	Strigiformes	Strigidae	Asian Banded Owllet	<i>Glaucidium cuculoides</i>	R	LC	IV	II
60	Strigiformes	Strigidae	Tawny Owl*	<i>Strix aluco</i>	R	LC	IV	II

IUCN Ver 2021-3 -International Union for Conservation of Nature and Natural resources; IWPA-Indian Wildlife (Protection) Act, 1972; CITES-The Convention on International Trade in Endangered Species of Wild Fauna and Flora; LC: Least Concern

R-Breeding Resident, R/WV-Resident/Winter Visitor, SV-Summer Visitor, WV-Winter Visitor;

*Tawny Owl and Green-tailed Sunbird are referred from secondary literature. Tawny owl is reported in study report of "Cumulative Impact Study of Hydropower Projects on River Yamuna, Tons and Tributaries." Carried out by Salim Ali Centre for Ornithology and Natural History, Coimbatore, Tamil Nadu.

ANNEXURE III

List of Butterflies Sighted in the study area with their conservation status

S. No.	Family	Name of Species	Common Name	Conservation status	
				IUCN 2021-3	WPA 1972 Schedule
Butterflies & Moths					
1	Nymphalidae	<i>Colias croceus</i>	Clouded yellow butterfly	-	-
2	Nymphalidae	<i>Euploea core</i>	Common crow	LC	-
3	Nymphalidae	<i>Phalanta phalantha</i>	Common leopard	LC	-
4	Nymphalidae	<i>Ypthima baldus</i>	Himalayan Common Five-ring	-	-
5	Nymphalidae	<i>Pieris canidia</i>	Indian cabbage white	-	-
6	Nymphalidae	<i>Cynthia</i> sp.	Painted ladies	-	-
7	Nymphalidae	<i>Neptis</i> sp.	Sailer	-	-
8	Nymphalidae	<i>Tirumala limniace</i>	Blue tiger	-	-
9	Nymphalidae	<i>Junonia orithya</i>	Blue Pansy	LC	-
10	Papilionidae	<i>Papilio demoleus</i>	Swallowtail butterfly	-	-
11	Pieridae	<i>Pareronia valeria</i>	Common wanderer	-	-
12	Pieridae	<i>Gonepteryx rhamni nepalensis</i>	Common brimstone	-	-
13	Pieridae	<i>Eurema hecabe</i>	Common grass yellow	-	-
14	Pieridae	<i>Cepora nerissa</i>	Common gull	-	II
15	Pieridae	<i>Eurema brigitta</i>	Small grass yellow	LC	-
16	Largidae	<i>Physopelta schlanbuschil</i>	Moth	-	-
17	Noctuidae	<i>Spodoptera litura</i>	Moth	-	-
Insects					
18	Acrididae	<i>Orthera glaucum</i>	Dragon fly	-	-
19	Acrididae	<i>Oxya velox</i>	Dragon fly	-	-
20	Acrididae	<i>Tylotropidius didymus</i>	Grasshopper	-	-
21	Acrididae	<i>Aulacoborthrus leutipus</i>	Stick insects	-	-
22	Coccinellidae	<i>Coccinella septempunctata</i>	Beetle	-	-
23	Coreidae	<i>Anoplocnemis phasiana</i>	Bugs	-	-
24	Gryllidae	<i>Gryllodes melanocephalus</i>	Cricket	-	-
25	Libellulidae	<i>Trithemis festiva</i>	Dragon fly	LC	-
26	Mantidae	<i>Mantid</i> sp.	Praying mantis	-	-
27	Meloidae	<i>Mylabris cichorii</i>	Beetle	-	-
28	Scarabaeidae	<i>Gymnopleurus cyaneus</i>	Beetle	-	-
29	Tabanidae	<i>Hybomitra</i> sp.	Horse Flies	-	-
30	Tenebrionidae	<i>Opatrum depressum</i>	Beetle	-	-
31	Vespidae	<i>Ropalidia ferruginea</i>	Bee	-	-

IUCN Ver 2021-3 -International Union for Conservation of Nature and Natural resources; IWPA-Indian Wildlife (Protection) Act, 1972

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ANNEXURE IV

Herpetofauna reported from the Study Area with their conservation status

S. No.	Order	Family	Name of Species	Common Name	Conservation status	
					IUCN 2021-3	WPA 1972
Class: Amphibia						
1	Squamata	Colubridae	<i>Ptyas mucosa</i>	Rat Snake	LC	II
2	Squamata	Elapidae	<i>Bungarus caeruleus</i>	The Common Krait	LC	IV
3	Squamata	Elapidae	<i>Naja naja</i>	Spectacled Cobra	LC	II
4	Squamata	Typhlopidae	<i>Typhlops diardii</i>	Diard's blind snake	LC	IV
5	Squamata	Viperidae	<i>Vipera russelli</i>	Russell's viper	LC	II
6	Squamata	Pythonidae	<i>Python molurus</i>	Python	NT	I
7	Squamata	Colubridae	<i>Lycodon aulicus</i>	Common wolf snake	LC	IV
8	Squamata	Viperidae	<i>Gloydius himalayanus</i>	Himalayan pit viper	LC	IV
9	Squamata	Agamidae	<i>Agama tuberculata</i>	Common lizard	LC	-
10	Squamata	Agamidae	<i>Calotes versicolor</i>	The oriental garden lizard	LC	-
11	Squamata	Gekkonidae	<i>Hemidactylus brookii</i>	Common house gecko	LC	-
12	Squamata	Varanidae	<i>Varanus bengalensis</i>	Indian Monitor lizard	NT	I
Class: Amphibia						
13	Anura	Ranidae	<i>Amolops formosus</i>	Stream frog	LC	-

IUCN Ver 2021-3 -International Union for Conservation of Nature and Natural resources; IWPA-Indian Wildlife (Protection) Act, 1972; NT- Near Threatened; LC - Least Concern

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ANNEXURE V

Cost for Implementing Environmental Management Plan & CER Activities

Sl. No	Component of EMP	Capital Cost (Rs. In lakh)	Recurring Cost (Rs. In lakh)						Total Cost (Rs. In lakh)
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
1	Biodiversity Conservation & Wildlife Management Plan	108.5	16.6	16.6	16.6	16.6	16.6	16.5	208.00
2	Fisheries Conservation and Management Plan	1157.0	32.41	32.41	32.41	32.41	32.41	32.4	1351.44
3	Muck Dumping and Management Plan	0.0	40.0	40.0	40.0	40.0	20.0	5.13	185.13
4	Public Health Delivery System	65.0	34.0	34.0	34.0	29.0	29.0	29.0	254.00
5	Landscaping, Restoration of Quarry and Construction Sites	0.0	0.0	0.0	0.0	38.5	38.5	5.0	82.00
6	Sanitation and Solid Waste Management Plan	95.0	18.72	18.72	18.72	18.72	18.72	33.72	222.32
7	Energy Conservation Measures	63.0	20.0	20.0	19.0	18.0	18.0	18.0	176.00
8	Labour Management Plan	50.0	11.0	11.0	11.0	11.0	11.0	6.0	111.00
9	Pollution Mitigation Measures	25.0	10.0	10.0	10.0	10.0	10.0	10.0	85.00
10	Environmental Monitoring Program	2.0	8.8	8.8	8.8	8.8	8.8	26.4	72.40
11	Rehabilitation and Resettlement Plan	23308.5	17.0	17.0	17.0	17.0	16.0	16.0	23408.50
12	Green Belt Development Plan	0.0	29.5	29.5	29.48	5.0	5.0	5.0	103.48
13	Reservoir Rim Treatment	351.41	0.0	0.0	0.0	0.0	0.0	0.0	351.41
14	Disaster Management Plan	80.0	20.0	20.0	20.0	20.0	20.0	20.0	200.00
15	CER Budget @ 0.5% of Rs.5747.17 crore (project cost)	0.0	479.0	479.0	479.0	479.0	479.0	480.0	2875.00
	Total	25305.41	737.03	737.03	736.01	744.03	723.02	703.15	29685.68

ANNEXURE VI

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Independent multi-disciplinary Expert Committee with respect to Lakhwar Multi-Purpose Project (300 MW) in Uttarakhand, as per the direction of NGT order Dated 20.01.2022

Undersigned as nominated expert member of an independent expert committee constituted by Hon'ble National Green Tribunal vide order dated 20/01/2022 in response to Appeal No. 35/2021 in the matter of Manoj Kumar Mishra & Anr. Vs Union of India & Ors. Undersigned has thoroughly studied all the reports provided by UJVN Limited and conducting detailed site visit on the seismological aspects of the project. Based on the reports and site visit following is the recommended.

Issue on Seismology:

Disaster management plan is also faulty as it does not take into consideration the location of the project with respect to the seismic activity.

The Lakhwar dam-site is located in seismic zone IV as per seismic zoning map of India as incorporated in Indian Standard "Criteria for Earthquake Resistant Design of Structures IS:1893 (Part-I) 2002: General Provisions and Buildings". The probable intensity of earthquake in zone IV corresponds to earthquake of Intensity VIII on MSK64 scale. However, IS code recommends that a detailed site-specific investigations are needed for estimating the design earthquake parameters.

The seismic hazard assessment at the Lakhwar dam-site has been carried out by Department of Earthquake Engineering, Indian Institute of Technology, Roorkee to obtain site-specific earthquake parameters. Both probabilistic and deterministic approaches were followed for the seismic hazard assessment as per the guidelines prescribed by National Committee on Seismic Design Parameters (NCSDP). The study recommended site-specific design earthquake parameters of 0.47g and 0.27g for horizontal ground motions for maximum credible earthquake (MCE) and design basis earthquake (DBE), respectively. For vertical ground motions, the parameters are 0.31g for MCE and 0.18g for DBE.

IIT, Roorkee also carried out microearthquake investigation in and around the Lakhwar project site as per the recommendations of NCSDP. A five-station network was deployed during Feb-April 2016 and earthquake data was collected up to Dec 2016. The study found very low-level seismic activity within 40 km of dam-site and seismicity is scattered in the

range 40-80 km. Both the reports were submitted to NCSDP for clearance. Subsequently, NCSDP cleared the parameters and report in 2018.

The site-specific design earthquake parameters and micro-earthquake study reports carried out by IIT, Roorkee in and around the Lakhwar project were shared by the UJVN Limited. The dam-site is also visited on April 4, 2022. The reports were thoroughly studied. Undersigned has gone through all the latest research papers related to seismicity in this area. It is concluded that not much seismicity is noticed in and around the dam-site in the last 150 years. It is opined that the site-specific earthquake design parameters considered are found to be reasonable looking into the historical seismicity records available in the literature in and around the dam-site.

Recommendation: Based on the above it is recommended that the Lakhwar project may be monitored closely with a permanent network of at least 5 seismological observatories installed in and around the project site. Every big river valley project is doing the same. One set of Broadband Seismographs and Strong Motion Accelerographs each may be installed in each of the observatory. This will help in monitoring micro-seismicity in the vicinity of the dam and identification of active faults.



(Dr. Sumer Chopra)

Institute of Seismological Research
Department of Science and Technology
Gandhinagar (Gujarat)

पर्यावरण प्रबंधन प्रभाग
 Environment Management Division
 विस्तार निदेशालय
 Directorate of Extension
 भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
 Indian Council of Forestry Research and Education
 (पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार की एक स्वायत्त परिषद्)
 - (An Autonomous Body of Ministry of Environment, Forests & Climate Change, Govt. of India)
 पो 0 ओ 0 न्यू फॉरेस्ट, देहरादून - 248 006
 P.O New Forest, Dehradun- 248006 (Uttarakhand)

F. No. 1-72/2012-ADG (EM)/CEIA/UJVNL DDN/ICFRE- Vol-IV /82

Dated: 10.12.2020

To,

Dr. S. Kerketa, Director (IA)
 Impact Assessment (IA) Division
 Ministry of Environment, Forest and Climate Change,
 Indira Paryavaran Bhawan, Jor Bagh Road, Aliganj, New Delhi- 110001.

Subject: Submission of Proposal on Cumulative Environmental Impact Assessment (CEIA) Study of Hydroelectric Projects in Yamuna River Basin including part of Himachal Pradesh up to Paonta Sahib in Sirmour district-reg.

Ref.: i) Director IA-I, MoEF&CC GoI office letter No. J-11013/21/2019-IA-I dated 24.06.2019
 ii) Minutes of 22nd meeting of EAC of MoEF&CC, New Delhi held on 27.02.2019

Sir,

In compliance to the Minutes of the Meeting of the Expert Appraisal Committee (River Valley and Hydro) of MoEF&CC GoI during its 22nd meeting held on 27.02.2019 and your office letter dated 24.06.2019 vide which ICFRE, Dehradun was requested to submit a proposal detailing revised scope of work, Terms of Reference, time frame, cost estimates, deliverables for additional study of hydroelectric projects in Yamuna River Basin falling in Himachal Pradesh.

In this regard, a proposal has been prepared in association with partner institutions, viz. Department of Hydro and Renewable Energy, IIT Roorkee, ICAR-DCFR, Bhimtal and SACON, Coimbatore. Two hard copy of the said proposal are enclosed for consideration and further needful at your end.

Thanking you,

Yours faithfully,

(Signature)
(Dr. A.N Singh) 10.12.20

सहायक महानिदेशक (ई० एम०)

Asstt. Director General (EM)

Encl.: As above.

जानकारी हेतु प्रतिलिपि:

Copy for information to-

1. All Partner Institutions of the study.
2. PS to the DDG (Ext.), ICFRE for kind information to DDG (Ext.) please.

o/c
(Signature)

Minutes of the 22nd Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects held on 27.02.2019 at Teesta Meeting Hall, 1st Floor, Vayu Block, Indira Paryavaran Bhavan, Jor Bagh Road, New Delhi-3.

The 22nd meeting of the re-constituted EAC for River Valley & Hydroelectric Projects was held on 27.02.2019 with the Chairmanship of Dr. Sharad Kumar Jain in the Ministry of Environment, Forest & Climate Change at Teesta Meeting Hall, 1st Floor, Vayu Wing, Indira Paryavaran Bhavan, Jor Bagh Road, New Delhi-3. The following members were present.

- | | | | |
|----|--------------------------|---|-------------------------------------|
| 1. | Dr. Sharad Kumar Jain | - | Chairman |
| 2. | Shri N.N. Rai | - | Representative of CWC |
| 3. | Dr. A.K. Sahoo | - | Representative of Director of CIFRI |
| 4. | Dr. D.M. More | - | Member |
| 5. | Shri Chetan Pandit | - | Member |
| 6. | Dr. (Mrs.) Poonam Kumria | - | Member |
| 7. | Dr. S.R. Yadav | - | Member |
| 8. | Dr. S. Kerketta | - | Member Secretary |

Shri Sharvan Kumar, Dr. J.A. Johnson, Dr. Vijay Kumar, Dr. J.P. Shukla, Prof. R.K. Kohli, Dr. T.P. Singh and Dr. Govind Chakrapani could not present due to pre-occupation. The deliberations held and the decisions taken are as under:

Item No. 22.0 Confirmation of the minutes of 21st EAC meeting.

The Minutes of the 21st EAC (River Valley & Hydroelectric Projects) meeting held on 27.11.2018 were confirmed.

Item No. 22.1 Cumulative Impact Assessment and Carrying Capacity Study (CIA & CCS) of Teesta River Basin. Presentation of draft report before the EAC for recommendation of the Study.

The Consultant, M/s WAPCOS, Gurgaon made a presentation on the study and *inter-alia*, provided the following:

Teesta River Basin study in West Bengal portion has been initiated at the instance of Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India while according prior Environmental Clearance to Teesta Low Dam - V hydroelectric project. Draft Report of Teesta Basin for West Bengal portion was appraised in 92nd EAC meeting held on 28th and 29th March, 2016. Draft Final Report of Teesta Basin for West Bengal portion was appraised in the 96th EAC meeting on 11th and 12th August, 2016.

Table-1: List of hydroelectric projects in Teesta River Basin

S. No.	Project Name	Proposed IC (MW)	Current Status
1	Teesta HEP Stage-VI	500	Under Construction
2	Teesta Intermediate HEP	84	Scoping Clearance accorded by MoEF & CC in October, 2013
3	Teesta Low Dam -I and II HEP	81	Scoping Clearance accorded by MoEF & CC in December, 2013
4	Teesta Low Dam -III HEP	132	Commissioned

5	Teesta Low Dam -IV HEP	160	Commissioned
6	Teesta Low Dam -V HEP	80	Scoping Clearance accorded by MoEF & CC in May, 2013
7	Jorthang Loop HEP	96	Commissioned
	Total	1133	

Table-2: List of hydroelectric projects covered in Ramam River Basin

S. No.	Name of Project	IC (MW)	Status
1.	Rammam Stage-I HEP	48	Project handed over to NHPC Ltd. by WBSEDCL
2.	Rammam Intermediate Small HEP	12	Project handed over to NHPC Ltd. by WBSEDCL
3.	Rammam Stage-II HEP	51	Project under operation by WBSEDCL
4.	Rammam Stage-III HEP	120	Under construction by NTPC Ltd.
	Total	231	

The Teesta sub-basin in West Bengal covers an area of 3,225 km² which comprises of hilly terrain of Darjeeling district (approximately 1,121 km²) and plains of Jalpaiguri district (2,104 km²). The study was carried out in Teesta river and its tributaries flowing in the hilly terrain of West Bengal. Monitoring samplings were located at 15 sites of Teesta, Rangit and Riyang Khola rivers. All the samplings were carried out on monthly interval from April, 2014 to March, 2015. The detailed presentation on the findings of terrestrial ecology, aquatic ecology, fauna and avifauna has been revealed. The design flow series for the various hydroelectric projects on Teesta River along with its tributaries were also presented.

The details of free stretch between various projects with and without Teesta Low Dam V HEP is given in Table-3 and 4, respectively.

Table-3: Details of length of free flow of river with Teesta Low Dam V HEP

S. No.	Projects	Length of free flow of river (km)
A.	River Teesta	
1.	TWL of Teesta VI HEP & FRL Teesta Intermediate HEP	1.40
2.	TWL of Teesta intermediate HEP and FRL of Teesta Low Dam III HEP	6.00
3.	TWL of Low Dam III HEP and FRL of Teesta IV Low Dam HEP	4.47
4.	TWL of Teesta IV Low Dam HEP and FRL of Teesta V Low Dam HEP	1.10
5.	TWL of Teesta Low Dam V HEP and FRL of Teesta Barrage	15.0
B.	River Great Rangit	
6.	TWL of Jorthang Loop HEP & FRL of Teesta Low dam (I&II) HEP	1.124
7.	TWL of TLDP (I & II) HEP & Confluence of Bari Rangit & Teesta River	3.0
C.	River Rammam	

S. No.	Projects	Length of free flow of river (km)
8.	TWL of Rammam-I HEP & FRL of Rammam Intermediate HEP	1.0
8.	TWL of Rammam Intermediate HEP and Trench Weir of Rammam-II HEP	1.0
10.	TWL of Rammam-II HEP & FRL of Rammam-III HEP	1.60
11.	TWL of Rammam-III to confluence with Great Rangit River	6.70

Table-4: Details of length of free flow of river without Teesta Low Dam V HEP

S. No.	Projects	Length of free flow of river (km)
A.	River Teesta	
1.	TWL of Teesta VI HEP & FRL Teesta Intermediate HEP	1.40
2.	TWL of Teesta intermediate HEP and FRL of Teesta Low Dam III HEP	6.00
3.	TWL of Low Dam III HEP and FRL of Teesta IV Low Dam HEP	4.47
4.	TWL of Teesta IV Low Dam HEP and FRL of Teesta Barrage	20.77
B.	River Great Rangit	
5.	TWL of Jorthang Loop HEP & FRL of Teesta low Dam - I&II HEP	1.124
6.	TWL of Teesta low Dam - I & II HEP & Confluence of Bari Rangit & Teesta River	3.0
C.	River Rammam	
7.	TWL of Rammam-I HEP & FRL of Rammam Intermediate HEP	1.0
8.	TWL of Rammam Intermediate HEP and Trench Weir of Rammam-II HEP	1.0
9.	TWL of Rammam-II HEP & FRL of Rammam-III HEP	1.60
10.	TWL of Rammam-III to confluence with Great Rangit River	6.70

The EAC after detailed deliberations and considering all the facts of the project as presented by the Consultant, **deferred the proposal** and sought some additional information as below:

1. Detailed report on phytodiversity (algae, Lichens, bryophytes Pteridophytes, gymnosperms & angiosperms) endemism, RET species, species from CITES list based on primary and secondary data has to be provided as it is an important data for conservation and sustainability in future. Biodiversity has to be looked carefully in any EIA report.
2. The present RBS has to be linked with the Teesta RBS in Sikkim which has already been completed long before. It was suggested that the last project on Teesta river in the state of Sikkim shall be configured with the first project on Teesta river in West Bengal for the aspects of Environmental Flow releases, Free Flow stretch and other parameters.
3. The total number of hydroelectric projects (operational, under construction and proposed) to be considered in the RBS shall be finalized and frozen in consultation with the state government. No other HEPs shall be considered once the RBS is finalized.

Item No. 22.2 Cumulative Impact Assessment and Carrying Capacity Study (CIA & CCS) of Yamuna River Basin in Uttarakhand. Presentation of draft report before the EAC for recommendation of the Study

The Consultant, M/s ICFRE, Dehradun made a presentation on the study and *inter-alia*, provided the following:

The draft study report on 'Cumulative Environmental Impact Assessment (CEIA) & Carrying Capacity Study (CCS) of hydroelectric projects in Yamuna, Tons and its Tributaries in Uttarakhand was presented by Indian Council of Forestry Research and Education (ICFRE), Dehradun along with its partner institutions viz. Alternate Hydro Energy Center (AHEC), Indian Institute of Technology (IIT) Roorkee; ICAR-Directorate of Coldwater Fisheries (DCFR), Bhimtal and Salim Ali Center for Ornithology and Natural History (SACON), Coimbatore.

The study was conducted during 2013-2014 and was submitted to UJVNL in the year 2015. It was presented before the State Environmental Appraisal Committee of MoEF&CC, Uttarakhand during 2016. The final report was submitted incorporating the comments made by SEAC.

A total of 46 hydroelectric projects were considered for the CIA study, of which 09 HEPs are commissioned, 06 HEPs are under construction, 31 HEPs are under development. There are only 12 projects on main Yamuna River and 09 projects on Tons river a major tributary of river Yamuna. Other HEPs are distributed in 13 tributaries of River Yamuna and Tons. There are 29 small hydroelectric projects of less than 25 MW capacity and 17 large projects of above 25 MW capacities. The various components such as profile of study area; hydropower interventions in Yamuna river basin; longitudinal sections of the Yamuna river and major tributaries; affected (diverted/submerged) length of Yamuna river and its tributaries; Land Use / Land Cover changes; water availability- hydrographs, flow duration curves; Environmental Flow Requirements (EFR); water sharing, flashiness and diurnal variation & water quality, sedimentation; riparian distance to be maintained between two cascade projects; terrestrial and aquatic floral & faunal diversity; social, economic and cultural status of Project Affected Villages (PAVs) and Project affected Families (PAFs); cumulative impact assessment based on valued ecosystem component analysis; and recommendations, environmental action plan and suggestions were discussed and deliberated at length in EAC.

Following are the suggestions/comments of the EAC:

1. No river cross sections have been used for quantification of E-flow. E-flow study should be carried out by using data of river cross sections d/s of projects or other suitable locations and after carrying out simulation analysis. Further, depth requirement for umbrella fish species should be taken for lean, non-monsoon non-lean & monsoon seasons separately. 25 cm is too less depth of water for E-flow estimation considering umbrella fish species viz., Trout and Mahseer. The recommended Environmental Flow Rate (EFR) is required to be relooked based on the actual river cross sections, water depth requirement specific to the umbrella fish species and other downstream uses. In addition, the lower stretch of the Yamuna River is having high fish abundance, catch and the river being flat compared to middle and upper stretch of Yamuna River, would require different EFR for hydroelectric projects falling in these stretches. EFR recommendations should be based on analysis of actual data.

2. Plankton/Benthic diversity should be grouped based on zonal, Periphyton group must be included in the site of trout zones. Depth & velocity requirement for Tor sp. must be revised seasonally.
3. Report on phytodiversity (algae, Lichens, bryophytes Pteridophytes, gymnosperms & angiosperms) endemism, RET species, species from CITES list based on primary and secondary data needs to be provided.
4. Criteria for estimation of riparian distance to be maintained between projects in cascade shall be relooked by considering all relevant parameters in addition to water quality.
5. The recommendations should be specific in nature and linked with presented data and the impacts assessed.
6. Recommendations regarding hydroelectric projects proposed to be considered/ dropped should be firmly supported with scientific data like extent of threat to habitat, migration routes, breeding sites, and other parameters etc. as per the provisions of prevailing regulations in the country. The HEPs proposed to be considered/ dropped based on their proximity to Protected Areas and ESZ should also be relooked as per above criteria.
7. Proper linking be made between data, observations *vis-a-vis* recommendations. The Environmental Action Plan should be specific and aimed at mitigation of the adverse impacts due to hydroelectric projects.
8. EAC noted that the river basin study should not be limited to a particular state, it has to consider the complete basin or sub-basin. Thus, the hydroelectric projects located in the state of Himachal Pradesh in the Yamuna river basin should be included in the CIA & CC study. Hence, all the hydroelectric projects in Yamuna river basin up to Paonta Sahib in Sirmour district of Himachal Pradesh should be included in the study.
9. To that end, a proposal detailing revised scope of work, Terms of Reference, time frame, cost estimates, deliverables is required to be invited for completing the study in Yamuna river basin as above.
10. The total number of hydroelectric projects (operational, under construction and proposed) to be considered in the RBS shall be finalized and frozen in consultation with both the state governments. No other HEPs shall be considered once the RBS has been finalized.

Item No. 22.3 Eastern Rajasthan Canal Project (ERCP) at Sawai Madhopur, Rajasthan by M/s ACE WR Zone Jaipur, Rajasthan- reg. Fresh ToR File No. J-12011/23/2018-IA.I(R) & Proposal No. IA/RJ/RIV/80561/2018

In the 19th meeting of the re-constituted Expert Appraisal Committee for River Valley & Hydroelectric Projects, held on 26.10.2018, a Sub-committee was constituted (vide Ministry letter No. J-12011/23/2018-IA-I(R) dated 20.01.2019) as follows:

- | | | | |
|----|--------------------|---|------------------|
| 1. | Dr. S.K. Jain | - | Chairman |
| 2. | Shri Sharvan Kumar | - | Member |
| 3. | Shri N.N. Rai | - | Member |
| 4. | Dr. J.A. Johnson | - | Member |
| 5. | Dr. S.R. Yadav | - | Member |
| 6. | Dr. D.M. More | - | Member |
| 7. | Dr. S. Kerketta | - | Member Secretary |

The following are the ToR of the Sub-Committee: