

MINUTES OF THE 10TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 15TH APRIL 2021 FROM 10.00 AM - 04:00 PM THROUGH VIDEO CONFERENCE.

The 10th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 15th April, 2021 through video conference, under the Chairmanship of Dr. K. Gopakumar. Shri Balraj Joshi, Expert Member, participated in the discussion on agenda items no. 10.1, 10.2 and 10.3 of the agenda of the 10th EAC (River Valley & Hydro-electric) meeting . The list of Members present in the meeting is at **Annexure**.

Agenda Item No. 10.1

CONFIRMATION OF THE MINUTES OF THE 9th MEETING

The minutes of the 9th EAC (River Valley Hydroelectric Project) meeting held on 25th March 2021 were confirmed.

Agenda Item No. 10.2.

Sirkari-Bhyol Rupsiabagar Hydro Electric Project of 168 MW as Run of River scheme in an area of 30 ha by M/s UJVN LTD in Tehsil Munsiyari, Pithoragarh District (Uttarakhand) – Environmental Clearance (EC) – Reg.

[Proposal No. IA/UK/RIV/130432/2019; F. No. J-12011/12/2015-IA. I]

10.2.1 The proposal is for reconsideration of Environmental Clearance to Sirkari-Bhyol Rupsiabagar Hydro Electric Project of 168 MW as Run of River scheme in an area of 30 ha by M/s UJVN LTD in Tehsil Munsiyari, Pithoragarh District (Uttarakhand).

10.2.2 Observation by EAC in earlier meeting:

1. The proposal was earlier considered by reconstituted EAC in its 7th EAC meeting held on 25.02.2021 and deferred the proposal seeking additional information.
2. Point-wise replies in response to additional details sought (ADS) by EAC in its 7th meeting are as follows:

S. No.	EAC Query	UJVN Reply
(i)	Approved Pre-DPR chapters on hydrology and Power Potential studies be submitted to the Ministry before EAC meeting along with the	Copy of approved Pre-DPR chapters on Hydrology and Power Potential studies have been submitted online and the status of DPR approval/clearances from various directorates is elucidated during

	status of DPR approval.	meeting.
(ii)	Development of HEP from upstream and downstream of the project should be mentioned along the details sketch (FRL, longitudinal distance/free flowing area etc).	Two Hydro-electric Projects viz., Mapang-Bogdiyar (200MW) and Bogdiyar-Sirkari bhyol (146MW), proposed on the upstream of Sirkari Bhyol-Rupsiabagar HEP, have been cancelled by the Government of Uttarakhand & the DPR of the Rupsiyabagar-Kharsiyabara (260 MW), located on downstream is under revision. Thus, presently, Sirkari Bhyol-Rupsiyabagar HEP (120 MW), is the only project in advance stage in Goriganga sub-basin.
(iii)	The methodology and study period of Fish sampling/ Flora and fauna should be submitted.	<ul style="list-style-type: none"> ▪ Methodology adopted for aquatic ecology has been described in section 3.3.3.3 of EIA report. Methodology adopted for fish sampling has been described in section 3.9.6.5 of EIA report. ▪ Primary catch survey was conducted in the main stem of Goriganga and its tributaries in project area viz., Ralam Gad and Pitti gad, during Pre-monsoon, monsoon and post-monsoon, 2018 , with the help of local fishermen using cast net. No species of fishes were recorded in the project area. ▪ Previous studies/references viz., “Studies on Ichthyofaunal Diversity with special reference to Monthly and Seasonal variations of Fish Landings in glacial fed mountainous Goriganga River of Kumaun Himalaya, Uttarakhand, India” (Kumar A., Research Journal of Animal, Veterinary and Fishery Science, Vol. 2(4), 1-12, April 2014), was reviewed. ▪ State Fishery Department was also consulted to get previous fisheries records and their availability in different stretches of Goriganga river located in project area and downstream. The Assistant Director Fisheries, Pithoragarh, vide letter No.185/10-Matsya Niyamawali/2020-21, dated 1.9.2020, certified that there is no fish fauna present in the project zone of SBR HEP. ▪ Fisheries data were also gathered from the ongoing CEIA Study of Goriganga sub-basin being caused by UJVN by engaging WAPCOS, which too,

		reveals that no species of fishes were recorded in the project area and on its u/s.
(iv)	Conservation plan for Schedule I shall be prepared and submitted to the Chief Wildlife Warden for approval	Letter of Approval of Conservation Plan by CWLW, Uttarakhand No, 3017/12-1, Dehradun, dated 31.3.2021 has been submitted.
(v)	The minimum observed flow in the river to be compared with the proposed e-flow. What arrangements are proposed for real time monitoring of the compliance of the e-flow releases.	<p>As per observed discharge data observed at G&D site at Rargiri (near barrage) for Year 2015-16 to 2019-20, the minimum observed discharge is 8.32 cumec in first ten daily of February 2020. This is compatible with the minimum discharge of 8.2 cumec corresponding to 90% dependable year (1987-88) and is also more than the minimum e-flow requirement of 1.83 cumecs computed on the basis of 20% of average flow in four consecutive leanest months in 90% dependable year (1987-88) derived from CWC approved flow series of 37 years (1977-78 to 2014-15).</p> <p>Arrangements proposed for real time monitoring of the e-flow releases:</p> <ul style="list-style-type: none"> • The e-flow during lean season and non-lean, non-monsoon period shall be released through under sluice bay and measured by setting up a calibrated open channel flow meter to be fitted at the end of d/s pier of under sluice and also at two intake structures to measure the discharge entering into intake. • During monsoon period the e-flow shall also be released through other bays where calibrated open channel flow meter to be fitted at the end of d/s training walls and an online monitoring system shall be installed at control room to ensure the e-flow monitoring as per direction of MoEF&CC. • Compliance details, as per EC condition, shall be submitted on regular basis to UEP&PCB and Regional office MoEF&CC.
(vi)	Environment Cost Benefits Analysis should be revised considering cost of negative/positive impacts on all ecological entities in the region rather	<ul style="list-style-type: none"> • The Environment Cost - benefit analysis (ECBA) has been carried out by considering impacts to various environmental entities like physical, ecological and social environment by reducing

	<p>focusing on cost of impacts on human beings</p>	<p>numerous complex physical, ecological and social-economic variables of environment to easy, quantifiable components of costs and benefits.</p> <ul style="list-style-type: none"> • Focus has not been only on cost of impacts on human being but includes impacts due to project., loss of forest land and the vegetal cover over it, of loss of eco-system services due to diversion of forests, loss of animal husbandry productivity, loss of fodder, habitat fragmentation, loss of soil-moisture, loss due to land degradation. • Besides these, the impacts due to increase in fugitive dust particles, impairment of quality of water, increased noise levels during construction, have also been considered in the analysis. • As per revised analysis submitted now, the Total Environment Cost and Total Environment Benefits are Rs 4356.10 lakhs and Rs 22098.69 lakhs respectively, thus the benefits from the project clearly outweighing the cost to environment. Considering the benefits during the useful life of project, the Environment Benefit Cost Ratio has been assessed as 200.03 :1.
(vii)	<p>Air and water analysis results may be re-checked and updated in EIA report.</p>	<ul style="list-style-type: none"> • Baseline data for air quality for three seasons, as enumerated in Table 3.8 through 3.10, has been rechecked and no anomaly/discrepancy has been observed. • Factually, during presentation against contents of slide No.19, it was pointed out how such a low concentration value was measured in case of SO₂. It was clarified that the 24-hourly maximum concentration value was not a measured value, but a predicted value of concentration for the pollutant and the word predicted has not been stated in the title of Table 4.3. The omission has been rectified now. • As regards water quality analysis results in respect of BOD, its values ranged between 0.4 to 0.9mg/l and were less than 2mg/l and satisfy CPCB Water Quality Criteria i.e., Designated- Best Use Criteria

		<p>(DBU) for Class A water.</p> <ul style="list-style-type: none"> In respect of the query raised, during presentation, related to the Effluent Discharge Standard (GSR1265(E), dated 13.10. 2017) it is stated that the effluent discharge through STP shall conform to the Standard, according to which the BOD concentration should not exceed 20 mg/l, the standard set for Metro cities and all state capitals. The concentration not to exceed 30mg/l for areas/regions other than mentioned. Since the project area neither falls under any metro city nor under state capital, the limiting concentration shall be 30mg/l.
(viii)	Certificate from the CWLW that all the components of the project are outside the Askot Wildlife Sanctuary (WLS) or any other WLS.	Certificate from CWLW, Uttarakhand No, 3016/12-1, Dehradun, dated 31.3.2021 has been submitted.
(ix)	Sketches showing the arrangement of the proposed de-silting arrangement of the quarry water to be provided by the PP.	For intercept sediment laden runoff from rock quarry settling tank/sediment trap of dimension 9.3m x 2.7m x 1.8m has been proposed. It shall be constructed by excavation and lining sides and bottom with 10cm thick cement concrete and with one baffle wall and an outlet discharging into connecting drain. Sketch was submitted.
(x)	For the muck disposal arrangement, it should be certified that a proper slope stability analysis of the dumped muck pile has been done and the requisite engineering measures evolved accordingly	Submitted the undertaking.

10.2.3 The EAC during deliberations noted the following:

MoEF&CC vide Letter No. J-12011/12/2015-IA-IIA.I dated 2nd Dec 2015 granted Standard ToR to the proposed project with the Additional ToRs for preparing EIA/EMP report.

The total land requirement is 29.997 ha which is forest land entirely. There is no requirement of private land and thus no R&R issue is involved. There shall be no displacement of any person due to submergence as the pond shall extend to about 405m in the river section falling in forest land. As per EIA report no fish found in project area.

Two Hydro-electric Projects viz., Mapang - Bogdiyar (200MW) and Bogdiyar – Sirkari bhyol (146MW), proposed on the upstream of Sirkari Bhyol - Rupsiabagar HEP, have been cancelled by the Government of Uttarakhand & the DPR of the Rupsiabagar - Kharsiyabara (260 MW), located on downstream is under revision. Thus, presently, Sirkaribhyol - Rupsiabagar HEP (120 MW), is the only project in advance stage in Goriganga sub-basin as presented by PP.

10.2.4 The EAC Members were concerned about Glacier burst events in upper reaches of Ganga, therefore mitigation measures for such type of catastrophic events in Project structure as well as other action plan needs to be analyze. EAC emphasized the need of Glacier study to assess the actual contribution by snow to the hydrological flow of river so that mitigation measures prepare accordingly. EAC after detailed deliberation observed that following details are required for comprehensive assessment of anticipated environmental consequences and sustainability of the project in terms of eco-sensitivity of the region:

- (i) Approval of CWC on Pre-DPR chapter of hydrology.*
- (ii) The study report on the extent of occurrence of glaciers and glacial lakes within the study area and their contribution to the river flow and the risk assessment of Glacier Lake Outburst Floods (GLOfs) in consultation CWC.*
- (iii) Fish sampling methodology, sampling location and area covered during sampling required to be revalidated from scientific references. Fish occurrence and requirement of fish pass needs to be examined in consultation with CIFRI.*
- (iv) The downstream of the project area is a known habitat for cold-water fishes like snow trouts and endemic catfishes, the eflow requirement in the downstream should be revised or the CWC recommended e-flows for trout zoon should be adopted.*
- (v) As the project area is known for conservation significant wildlife such as Musk deer, Snow leopard, Himalayan Black bear etc., the wildlife conservation plan requires revision in terms of dominant wildlife species of the region and a specific conservation plan for the same in the consultation with Expert from State govt and other reputed Central Govt. agencies. Purchase of Vehicles from the budget of the Wildlife Conservation Plan is not allowed.*
- (vi) Sketches showing the arrangement of the proposed de-silting arrangement of the quarrying water should be prepared correctly and be submitted.*

*The project was **deferred** on the above lines.*

Agenda Item No. 10.3

Expansion of Tidong-I Hydroelectric Project (Phase-II) for (Phase I -100MW+Phase II - 50MW) in an area of 42.2557 ha (without increase in area) by M/s Tidong Power Generation Private Limited in village Rispain, Tehsil Moorang, District Kinnaur (Himachal Pradesh) - Environmental Clearance (EC) – Reg.

[Proposal No. IA/HP/RIV/105017/2019; F. No. J- 12011/09/2019 IA-I (R)]

10.3.1 The proposal is for Reconsideration of Environmental Clearance (EC) of Third Unit of 50 MW (Phase-II) For Tidong-I Hydroelectric Project (100MW+50MW) as Run of River scheme in within same area (42.2557 ha) by M/s Tidong Power Generation Private Limited in village Rispain, Tehsil Moorang, District Kinnaur (Himachal Pradesh).

10.3.2 Observations in Earlier EAC:

1. The proposal was earlier considered by reconstituted EAC in its 8th EAC meeting held on 01.03.2021.
2. The project is extension of under construction Tidong I 100 MW which envisages widening of Surge shaft Diameter from 8.0 m to 10.0 m and extension of powerhouse length. Third unit of 50MW will be installed adjacent two under construction two units of 50 MW. This is a run of the river project with diurnal storage. It was observed that during monsoon months, actual discharge in Tidong River is much higher than the design discharge for about 60 days
3. Based on the Techno-economic Study carried out Techno-economic study, it was found that there is possibility of putting additional 50 MW unit adjacent to two units each of 50 MW.
4. The DPR for the 3rd Unit was prepared and submitted to Directorate of Energy (DOE), State Government of Himachal Pradesh.
5. The project was deferred seeking additional information which is reflected in the Minutes of the 8th Meeting. Point-wise replies in response to additional details sought (ADS) by EAC in its 8th meeting are as follows:

S. No.	EAC Query	Reply from Project Authorities
1.	PP shall submit the seriatim compliance all ToR points with brief as per ToR granted by the Ministry dated 27 th November, 2019.	The seriatim compliance of ToR points has been submitted to the Ministry. Annexed as Annexure-I
2.	Detailed of the posts to be engaged by the project proponent for implementation and monitoring of environmental parameters (condition No. XV) have not been specified in EIA report. It should be incorporated in EIA report.	Detailed of the posts to be engaged by the project proponent for implementation and monitoring of environmental parameters are outlined in Table-6.2 of Chapter-6 Environmental Monitoring Programme of EIA Report. The details of posts to be engaged by the project proponent for implementation and monitoring of Environmental parameters is enclosed in Annexure-II.
3.	Lower court gave the verdict on	The present status of Case no. CMP (m) No.1573

	17/05/2017 in favor of the land losers. TPGPL has challenged the court order in High court and have obtained stay on the lower court order. The present status of above case no. CMP (m) No.1573 of 2017 be intimated to MoEF&CC.	of 2017 is that Hon'ble High Court has given the Stay Order. The copy of Stay Order of Hon'ble High Court is enclosed as Annexure-III. We have deposited an amount of Rs. 3,07,28,499.00 in High court registry as per the order for stay and are waiting for cases to come up for hearing.
4.	PP shall submit the compliance of issues raised during public hearing proceedings with specific fund allotted and time lines.	The compliance of issues raised during Public Hearing proceedings with specific fund allotted and timelines for implementation are enclosed as Annexure- IV.
5.	PP shall submit certified compliance report from Ministry's Regional office for existing Environmental Clearance granted vide dated 7 th September, 2007.	Latest Certified compliance report from Ministry's Regional Office for existing Environmental Clearance granted vide dated 7 th September, 2007 is enclosed as Annexure-V.
6.	The project proponent shall submit the time bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the CER activities, committed during public consultation by the project proponent and as discussed by the EAC in term of provisions of the MoEF&CC Office Memorandum No. 22- 65/2017-IA.III dated 30 th September, 2020.	The undertaking for submission the time bound action plan to the concerned Regional Office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the CER activities, committed during Public Consultation by the project proponent and as discussed by the EAC in term of provisions of the MoEF&CC Office Memorandum No. 22-65/2017-IA.III dated 30 th September, 2020 is enclosed as Annexure-VI.
7.	PP Shall submit the details of schedule-I species in 10 km buffer area and wildlife conservation plan with allotted fund.	The details of Schedule-I species in study area and conservation plan along with allotted fund is given in Annexure-VII.
8.	Hydrological discharge need to be updated to examine the availability of water in Monsoon season after abstraction for additional proposed 50 Mw HEP. E-flow discharge	Hydrological discharge and availability of water in Monsoon season after abstraction for additional proposed 50 MW HEP is given in Annexure-VIII. There are no order of NGT, pertaining to release

	should be in accordance with the latest directions of Hon'ble National Tribunal /CC&CIA studies of Sutlej River, whichever is higher.	<p>of Environmental Flows for Sutlej Basin.</p> <p>The recommendations of CC&CIA study for Sutlej Basin for Tidong HEP are enclosed as Annexure-IX.</p> <p>The E-flows as recommended for Tidong HEP as per the recommendations of CC&CIA Study shall be followed.</p>
9.	PP Shall submit brief note on points raised by EAC regarding validity of earlier EC and Justify that there is no violation in the project.	<p>The Environmental Clearance for 100 MW was issued by MoEF&CC vide their letter no. J-12011/35/2007-IA I dated 07.09.2007 is enclosed in Annexure-X and as per Point no.7 the validity of this letter was for 10 years from issue of date of letter for commencement of construction work.</p> <p>The letter of transfer of Environmental Clearance of 100 MW to Tidong Power Generation Private Limited is issued by MoEF&CC vide their letter no. J-12011/09/2019-IA I(R) dated 09.10.2019 is enclosed in Annexure-XI.</p> <p>A brief note regarding validity of earlier EC and Justifying that there is no violation in the project is enclosed in Annexure-XII.</p>

10.3.4 The EAC during deliberations noted the following:

Project was accorded Environmental Clearance (EC) vide Letter No. J-12011/35/2007- IAI on 7th September 2007 by Ministry of Environment and Forests (MoEF).

Forest Clearance was accorded through letter F. No. 9-HPC602/2007-CHA on 18th June 2008 by MoEF (Northern Region Chandigarh) for diversion of 39.0546 ha of forest land for non-forest purpose.

Consent to Establish (CTE) was granted by Himachal Pradesh State Pollution Control Board (HPSPCB) letter No. HPSPCB/Tidong HEP – Kinnaur /10140-47 dated 8th August 2008.

Terms of Reference for third unit of 50MW (Phase-II) for Tidong-I HEP (100MW+50MW), Himachal Pradesh to M/s TPGPL was accorded F. No. J-12011/09/2019-IAI (R) dated 27.11.2019 by MoEF&CC, New Delhi.

10.3.5 Observation of the EAC in the present meeting:

After detailed deliberations on presentation and information submitted by the PP, the EAC observed that Fish Conservation Plan needs revision under supervision expert from State Govt., CIFRI and experts from WII. EAC members also noted that certified Compliance report of Regional office, MoEF&CC on earlier granted EC for 1st Phase Project not submitted by project authorities. Site visit of concerned R.O, MOEF&CC is required to see the status of compliance of EC conditions before considering the expansion.

EAC deferred the proposal for want of following additional information:

- (i) Modified Fish Conservation plan under supervision expert from State Govt., CIFRI and experts from WII.*
- (ii) Statement on CER activity based on Public Hearing.*
- (iii) Plan for beautification at muck disposal site with consent of forest department and local people.*
- (iv) An Undertaking that future schemes of the State government which would need extraction of water from stream, PP will release water into the stream according to the requirement at that time.*
- (v) Preparation of Wildlife conservation plan in consultation with State forest and Wildlife Department and WII.*

*The project was **deferred** on the above lines.*

Agenda Item No. 10.4

Kirthai Stage-I Hydro Electric Project of 390 MW Project as Run of River scheme in an area of 321 ha by M/s J&K Power Development Corporation in Tehsil Padder, Kishtwar District (Jammu & Kashmir) - Environmental Clearance (EC) – Reg.

[Proposal No. IA/JK/RIV/64942/2012; F. No. J-12011/6/2008-IA-I]

10.4.1 The proposal is for reconsideration for grant of Environmental Clearance (EC) Kirthai Stage-I Hydro Electric Project of 390 MW Project as Run of River scheme in an area of 321 ha by M/s J&K Power Development Corporation in Tehsil Padder, Kishtwar District (Jammu & Kashmir). The PP informed that the project is being constructed by NHPC.

10.4.2: Observation in Earlier EAC:

1. The proposal for EC was earlier considered in 16th EAC Meeting held on 27.7.2018.
2. The Scoping/ToR clearance to this project was accorded on 10.6.2013 for a period of 2 years, which expired on 09.06.2015. Presently, the ToR validity for River Valley & HEP projects is 4 years. Thereafter, the Ministry granted extension of validity of ToR for the 5th year, i.e., 09.06.2018.
3. The river course beyond Dulhasti Dam in the downstream up to Salal has already been affected due to cascade development of hydropower projects on Chenab river which has largely disturbed the propagation of fishes.
4. The construction of the projects like present one, has no specific bearing on the migration of fishes as the upstream and downstream courses are having HEPs. However, Bhut nallah shall continue a habitat for the indigenous fish species. To ameliorate the negative effects of the project construction and overall improvement of the environment management plans are formulated based on predicted impact, actual requirement and incorporating suggestions of local people, stakeholders, etc.
5. The project was deferred by the EAC seeking additional information which is reflected in the Minutes of the 16th Meeting held on 27.7.2018.
6. Point-wise replies in response to additional details sought (ADS) by EAC in its 16th meeting are as follows:

S. No.	EAC Query	J&K Power Development Corporation Reply
1.	One season baseline data shall be collected afresh and EIA/EMP report be revised. The resultant pollution loads from all the possible pollution sources be estimated and based on the findings, mitigative measures be suggested including allocation of capital budgets on different heads	<ul style="list-style-type: none"> ▪ One season baseline data has been collected afresh during pre-monsoon, 2019, and incorporated in report under Chapter -3 of EIA report. a) sub-sections 3.5.5.3 for ambient air quality (Table 3.12); b) sub-sections 3.5.6.1 for noise levels (Table 3.15); c) sub- sections 3.6.1 for Physical & Chemical Characteristics of Soil (Table 3.21) d) sub-sections 3.7.3 for Characteristics of Ground/Surface Water (Table 3.24 & Table 3.25) e) sub-sections 3.9.3 through 3.9.5 for biological environment.

		<ul style="list-style-type: none"> ▪ The impacts on various environmental attributes from all project activities during construction and operation were identified and the resultant pollution loads from all the possible pollution sources have been estimated and described in details in Chapter -4 of EIA report. ▪ Based on likely impacts, its severity and duration, mitigative measures along with cost component have been provided in Chapter -10 of EIA report. ▪ The EIA/EMP report has been revised and unified in one volume and submitted.
2.	A few environmental parameters have been described in the EIA/EMP report which the PP intends to take up for environment management. Therefore, commitment be made as to how to reduce the additional pollution load during post-project scenario	<ul style="list-style-type: none"> • The environment management strategies for addressing additional impacts/pollution during construction and post construction have been brought out eloquently under reply to Query No.- 1. Based on the findings, mitigative measures have been suggested. • As brought out in section 10.15.2, the Project Developer (JKPDC), is fully committed to comply with the environmental norms set out by the Center / State/UT Government, which are being closely monitored by the MoEF&CC, New Delhi and the State/UT Pollution Control Board, Forest Department. Any infringement / deviation / violation of the rules contained in various environment and other rules and acts such as Wildlife Protection Act, 1972, Air (Prevention and Control of Pollution) Act, 1981 and Noise Pollution (Regulation & Control) Rule 2000, shall be addressed by the Corporation. • The Project Developer shall comply with the environmental norms and conditions set forth in the Environmental Clearance letter and shall submit compliance to the MoEF&CC periodically.
3.	Environmental matrix provided in the EMP be revisited and revised accordingly	<ul style="list-style-type: none"> • Modified two-dimensional matrix based on Leopold Matrix and Modified Graded Matrix for both construction and operation phase, without

		<p>and with EMP, have now been provided in section 4.13 (Table 4.19 through Table 4.20).</p> <ul style="list-style-type: none"> • In the present study a modified two-dimensional matrix after Leopold et al has been adopted. Eleven key impact project activities have been identified and their impact on ten environmental resources have been considered. • Magnitude of each impact was assigned values in the upper section of each box with a score using a numerical scale with numeral values from 1 to 5, depending on the magnitude of impact with 1 denoting no impact and 5 major impact. • The importance or the significance of impact in the lower section of each box has been assigned numeral values between -2 to 2 with (-) sign signifying beneficial significance. • The matrix study was also conducted by following Modified Graded Matrix for some subsets of project activities and environmental resources as adopted in LM method. The priority values were assigned to each environmental resource on a numerical scale with numeral values from 1 to 10. • As per Modified Leopold Matrix, in the construction phase without considering EMP, the overall score of sums of magnitude score and of sums of score of significance of environment impact are 225 and 85 respectively and in operation phase, these are 96 and 31 respectively. While in construction phase after implementation of EMP, the overall score of sums of magnitude score and of sums of score of significance of environment impact are 155 and 49 respectively and in operation phase these are 55 and 9 respectively.
4.	Deep pools and seasonal migratory path for fish spawning sites, etc. be provided. Information on fish species from secondary sources be collected and included	<ul style="list-style-type: none"> • Fish species data has been updated and reproduced in section 3.9.6 of revised EIA/EMP and is shown in Table 3.83. • It is based on secondary sources (Current status of the fish fauna of the river Chenab undertaken

	in the EIA report	<p>from October 2013 to October,2014 by Department of Zoology, University of J&K, published in Asian Academic Research Journal of Multidisciplinary, Volume-2, Issue-5, October 2015-ISSN:2319-2801) ; EIA report of of Kwar HEP on u/s of Dul Hasti Dam on Chenab in district Kishtwar, and also interactions with locals and Fisheries Department, Kishtwar.</p> <ul style="list-style-type: none"> Existing dams like Salal, Baghliar and Dul Hasti has almost stopped the migration of Mahaseers and Snow Trouts.
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10.4.4 *The EAC after detailed deliberations on the project proposal **recommended** the proposal for the grant of Environmental Clearance to the project subject to compliance of applicable Standard EC along with following specific conditions:*

1. *The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions 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.*
2. *Environment matrix provided in EMP be revised if any data change. Number and period of stocking of Fish be incorporated in EMP.*
3. *Pasture Development Plan be revised in terms of Rate of plantation and their Cost.*
4. *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.*
5. *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.*
6. *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.*

7. *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.*
8. *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.*
9. *Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.*
10. *Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area. Report of the same to be submitted to Ministry and its Regional office.*

Agenda Item No.10.5

Kirthai Stage-II Hydro Electric Project of 930 MW as Run of River scheme in an area of 225.25 ha by M/s J&K Power Development Corporation in Village Kirthai, Tehsil Padder, Kishtwar District (Jammu & Kashmir) - Reconsideration of Environmental Clearance (EC) – Reg.

[Proposal No. IA/JK/RIV/64947/2012; F. No. J-12011/6/2012-IA-I]

10.5.1 The proposal is for grant of Environmental Clearance (EC) of Kirthai Stage-II Hydro Electric Project of 930 MW as Run of River scheme in an area of 225.25 ha by M/s J&K Power Development Corporation in Village Kirthai, Tehsil Padder, Kishtwar District (Jammu & Kashmir)

10.5.2 The proposal was earlier considered in 16th EAC Meeting held on 27.7.2018. The project was deferred by the EAC seeking additional information which is reflected in the Minutes of the 16th Meeting held on 27.7.2018. Point-wise replies in response to additional details sought (ADS) by EAC in its 8th meeting are as follows:

S. No.	EAC Query	J&K Power Development Corporation Reply
1.	One season baseline data shall be collected afresh and EIA/EMP report be revised. The resultant	<ul style="list-style-type: none"> • The EIA/EMP report has been revised and unified in one volume and submitted. • One season baseline data has been collected

	<p>pollution loads from all the possible pollution sources be estimated and based on the findings, mitigative measures be suggested including allocation of capital budgets on different heads</p>	<p>afresh during pre-monsoon, 2019, and incorporated in report under Chapter -3 of EIA report.</p> <ul style="list-style-type: none"> a) sub-sections 3.5.5.3 for ambient air quality (Table 3.12); b) sub-sections 3.5.6.1 for noise levels (Table 3.17); c) sub- sections 3.6.1 for Physical & Chemical Characteristics of Soil (Table 3.23) d) sub - sections 3.7.3 for Characteristics of Ground/Surface Water (Table 3.26 & Table 3.27) e) sub-sections 3.9.3 through 3.9.5 for biological environment. <ul style="list-style-type: none"> • The impacts on various environmental attributes from all project activities during construction and operation were identified and the resultant pollution loads from all the possible pollution sources have been estimated and described in details in Chapter -4 of EIA report. • Based on likely impacts, its severity and duration, mitigative measures along with cost component have been provided in Chapter -10 of EIA report.
2.	<p>Environmental matrix provided in the EMP be revisited and revised accordingly</p>	<ul style="list-style-type: none"> • Modified two-dimensional matrix based on Leopold Matrix and Modified Graded Matrix for both construction and operation phase, without and with EMP, have now been provided in section 4.13 (Table 4.20 through Table 4.21). • In the present study a modified two-dimensional matrix after Leopold et al has been adopted. Eleven key impact project activities have been identified and their impact on ten environmental resources have been considered. • Magnitude of each impact was assigned values in the upper section of each box with a score using a numerical scale with numeral values from 1 to 5, depending on the magnitude of impact with 1 denoting no impact and 5 major impact. • The importance or the significance of impact in

		<p>the lower section of each box has been assigned numeral values between -2 to 2 with (-) sign signifying beneficial significance.</p> <ul style="list-style-type: none"> • The matrix study was also conducted by following Modified Graded Matrix for some subsets of project activities and environmental resources as adopted in LM method. The priority values were assigned to each environmental resource on a numerical scale with numeral values from 1 to 10. • As per Modified Leopold Matrix, in the construction phase without considering EMP, the overall score of sums of magnitude score and of sums of score of significance of environment impact are 230 and 85 respectively and in operation phase, these are 98 and 31 respectively. While in construction phase after implementation of EMP, the overall score of sums of magnitude score and of sums of score of significance of environment impact are 155 and 49 respectively and in operation phase these are 55 and 9 respectively.
3.	<p>Deep pools and seasonal migratory path for fish spawning sites, etc. be provided. Information on fish species from secondary sources be collected and included in the EIA report</p>	<ul style="list-style-type: none"> • Fish species data has been updated and reproduced in section 3.9.6 of revised EIA/EMP and is shown in Table 3.72. • It is based on secondary sources (Current status of the fish fauna of the river Chenab, a study was undertaken from October 2013 to October, by Department of Zoology, University of J&K, published in Asian Academic Research Journal of Multidisciplinary, Volume-2, Issue-5, October 2015-ISSN:2319-2801) ; EIA report of Kwar HEP on u/s of Dul Hasti Dam on Chenab in district Kishtwar, and also interactions with locals and Fisheries Department, Kishtwar. • Existing dams like Salal, Baghliar and Dul Hasti has almost stopped the migration of Mahaseers and Snow Trouts.

10.5.4 *The EAC after deliberations on the project details and information submitted by the PP recommended the proposal for grant of Environmental Clearance to the project subject to compliance of applicable Standard EC conditions with the following additional conditions:*

- 1. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions 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.*
- 2. Environment matrix provided in EMP revised if data change. Number and period of stocking of Fish incorporated in EMP.*
- 3. Pasture Development Plan revised in terms of Rate of plantation and their Cost.*
- 4. 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.*
- 5. Any other clearances from any other organization/department as applicable to the proposed project shall be obtained.*
- 6. 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.*
- 7. 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.*
- 8. 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.*
- 9. 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.*

10. Necessary control measures such as water sprinkling arrangements, etc. and construction of paved roads leading to muck disposal sites shall be taken up on priority to arrest fugitive dust at all the construction sites.

11. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area. Report of the same to be submitted to Ministry and its Regional office.

Agenda Item No.10.6

Uri-I Stage-II Hydroelectric project of 240 MW as Run of River scheme in an area of 102 ha by M/s NHPC Limited in Tehsil Uri, District of Baramulla (Jammu and Kashmir) – Terms of Reference (ToR) - Reg.

[Proposal No. IA/JK/RIV/204853/2021; F. No. J-12011/08/2021-IA-I (R)]

10.6.1 The proposal is for ToR conducting EIA for construction of Uri-I Stage-II Hydroelectric project of 240 MW as Run of River scheme in an area of 102 ha by M/s NHPC Limited in Tehsil Uri, District of Baramulla (Jammu and Kashmir).

10.6.2 The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below

1. The Uri-I Hydroelectric Project, a run off the river scheme, is situated on river Jhelum in Uri Tehsil of Baramulla district in Jammu and Kashmir.
2. It is about 72 km from Srinagar and 362 km from Jammu. The nearest rail head is Udhampur which is 275 km from project. Project location (Coordinates): Lat. 34° 8' 37'' N Long. 74° 11' 14'' E.
3. URI-I Stage-II H.E. Project is the extension of URI-I H.E. Project. Utilizing the gross head of about 250 m between the Full Reservoir Level (FRL) /Full supply level as 1491.0m at Barrage and normal Tail Water Level (TWL) as 1241.0m at TRT outlet.
4. The main components of the project are as follows:
 - a) 4.3.1. Constructed structures (URI-I Power Station) - Uri-I Power station Barrage 95m long and 21.5m high from its deepest foundation level.
 - b) The full supply water level upstream of the barrage is EL 1491.00m and barrage top is at EL 1495.50m. Spillway consisting of 6 bays of 8.0m(width) x 7.5m (height) and 3 No. under sluice bays 8m(width) x 8.25m (height).

- c) A fish way is provided between bay No. 6 and bay No. 7. It is about 150 m long with the inlet at El 1489.0 m and the outlet at El 1475.50 m.
 - d) Head regulator of 34m length, four bays of cut and cover culvert, 44- 66m wide desilting basin with two bays of 300m length. Headrace canal of about 470m length and 12m width and side slopes in 1V:1.5 H. Intake forebay at the downstream end of the canal of 195m. A siphon type surplus escape at a water level of El 1491.30m
 - e) Proposed structures (URI-I Stage-II H.E. Project- 1 No HRT of size 6.5m Horse shoe shape in left bank and parallel in valley side to existing HRT. 1 no. 5 m dia Steel lined pressure tunnels/shafts and further bifurcated to 2 no. 3.25m dia. Steel lined pressure tunnel for auxiliary units. Underground power house cavern of size 91.0 m (L) x 20 m (W) x 40.7 m (H), housing 2 no. main units of 120 MW each. Transformer cavern of size 79 m (L) x 16.5 m (W) x 23.5 m (H) located d/s of power house cavern. 1 no. main TRT of size 6.5m Horse shoe shape having tailrace surge galleries.
5. **Land requirement:** Total land requirement of the project is about 102 ha of which about 85 ha is private land and about 17 ha is forest land (for underground works). Private land required for the project is in possession of NHPC.
 6. There is no submergence due to the project, wildlife sanctuary, tiger reserve, elephant corridor, critically polluted area within to 10 km of the project.
 7. **Project benefit:** The project will generate clean and green power of 120 MW which will help in reduction of GHG emissions from conventional source of energy. It will bring about local area development and will provide employment opportunities locally with contractors.
 8. **Water availability studies:** The average 10-daily water availability flow series from 1994-95 to 2019-20 (26 years) at Uri-I Barrage has been approved by CWC Hydrology (N) Directorate vide their file no. T-11025/1//2021-HYD(N) DTE, dated 15-03-2021. The average annual yield for the series Jun-94 to May-20 is **8080 Mcum** (i.e. 633.7 mm). Uri-I (Stage-II) H. E. project also utilizes diverted (additional) waters available after generation of Kishanganga Power station. The water availability series of Kishanganga PS from 1971 to 2004 has been developed and approved by CWC and the same is used for Uri-I (Stage-II) H. E. project.
 9. **Power Generation:** The 10-daily inflow series was taken from 1975-76 to 2019-20 of Uri-I power station and from 1971-72 to 2019-20 for Kishanganga Power station was taken for power potential study. Only the turbine discharge of Kishanganga Power station has been considered which is being added to Wular Lake and further to Jhelum River.

10. In view of recent NGT order, provision of e-flow as 15% of average of inflow in the lean season, needs to be made in dam/barrage of existing power plant. Accordingly, 15% of average inflow of all the water series in the lean season i.e., during Oct-Jan, has been calculated as 13.05 Cumecs. There is already a provision of 2.5 cumecs downstream discharge through fish ladder of barrage of Uri power station. As such, provision of additional downstream discharge of 10.55 Cumecs as e-flow, has been kept from the barrage of Uri Power station.
11. As Uri-I Stage-II Project is utilizing the surplus water of Uri Power Station, the e-flow discharge is going to have negligible impact on power potential of Uri-I Stage-II Project. The power potential study carried out based on the 10-daily series indicates that an installed capacity of 240 MW comprising 2 nos generating units of 120 MW each would be the best option for Uri-I stage-II HEP. Design energy of the project has been estimated as 662.20 MU.
12. **Inter-State Matters:** The project lies entirely in the UT of J&K and no inter-state issues are involved.
13. **INTERNATIONAL MATTERS** The projects on river Jhelum are covered under Indus Water treaty for which Clearance will be taken after firming up of DPR.
14. **COST ESTIMATE** The preliminary estimated project cost at November 2020 price level has been worked out as Rs. 1930.00 crores
15. **Status of other statutory clearances:**
 - (i) Environment clearance was accorded to Uri-I Project on 27.06.1980 by Department of Science & technology (DST) and additional conditions were given by MoEF&CC on 30.05.1989. Forest clearance for diversion of 54.7 ha land was accorded by MoEF vide letter dated 21.05.1986. For the present extension proposal of for Uri-I St-II HEP, EC process has been started.
 - (ii) Forest proposal is being formulated for diversion of approx. 17 ha forest land required for the project. DPR formulation for Concurrence by CEA is also in process.
16. **Project benefit:** The project will generate clean and green power of 120 MW which will help in reduction of GHG emissions from conventional source of energy. It will bring about local area development and will provide employment opportunities locally with contractors.

10.6.3 Background of the project:

1. NHPC Limited signed a Memorandum of Understanding with the Government of Jammu and Kashmir on 3rd January 2021 for execution of URI-I Stage-II HE Project (240 MW) on Build, Own, Operate & Transfer (BOOT) basis for the period of 40 years on the River Jhelum, in Uri Tehsil of Baramullah district in Jammu and Kashmir.
2. URI-I Stage-II H.E. Project is the extension of URI-I H.E. Project (480MW). Stage-I of URI H.E. Project a purely run –of-the river scheme which was allotted to NHPC Limited and was commissioned in 1997 and since then operating successfully.
3. URI-I Stage –II H.E. Project is planned as per provision kept in the DPR of URI-I H.E Project. In addition to Barrage, the provision of surface water conveyance system for URI-I Stage–II Project from Head regulator to the Intake of HRT has been utilized from URI-I Power Station already constructed. This project also utilizes diverted (additional) waters available after generation of Kishanganga Power station.
4. The general layout of the Project, size and dimensions of various components/ structures have been adopted based upon built in structures of URI-I Power Station.
5. Separate water conveyance structures and separate Power house complex structures are proposed to be constructed for URI-I Stage-II H.E. Project.

10.6.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR to the proposed project along with the following additional ToR:

- (i) *Three season (Pre-monsoon, Monsoon and winter season) baseline data of all the environmental attributes including biological environment as mentioned in the Standard ToR shall be collected for preparation of EIA/EMP report.*
- (ii) *Requisite studies like simulation study for the E-flow shall also be undertaken.*
- (iii) *The project involves diversion of 17 ha of forestland. Forest clearance shall be obtained as per the prevailing norms of Forest (Conservation) Act, 1980. Application to obtain prior approval of Central Government under the Forest (Conservation) Act, 1980 for diversion of forestland required should be submitted as soon as the actual extent of forestland required for the project is known, and in any case, within six months of issuance of this letter'*
- (iv) *CAT plan, Dam break analysis, Disaster Management Plan and Fisheries Management Plan be prepared along with other EMPs and incorporated in the EIA/EMP report*
- (v) *All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/EMP report in the relevant chapter.*
- (vi) *An undertaking as part of the EIA report from Project proponent, owning the contents (information and data) of the EIA report with the declaration about the contents of the EIA report pertaining to a project have not been copied from other EIA reports.*

- (vii) Consolidated EIA/EMP report is to be submitted as per the generic structure (Appendix III & IIIA) given in the EIA Notification, 2006.*
- (viii) Conservation plan for the Scheduled I species, if any, in the project study area shall be prepared and submitted to the Competent Authority for approval.*
- (ix) Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted*
- (x) Environmental matrix during construction and operational phase needs to be submitted.*
- (xi) Both capital and recurring expenditure under EMP shall be submitted.*
- (xii) The salient features to be intimated to the Indus water commission.*
- (xiii) Environmental Cost benefit analysis shall be done.*

The meeting ended with vote of thanks to the Chair.

Annexure - A**ATTENDANCE LIST**

Sr. No	Name & Address	Role	Attendance
1	Dr. K. Gopakumar	Chairman	P
2	Dr. N. Lakshman	Member	P
3	Dr. Mukesh Sharma	Member	A
4	Dr. B. K. Panigrahi	Member	A
5	Dr. Chandrahas Deshpande	Member	A
6	Dr. A. K. Malhotra	Member	P
7	Dr. Uday Kumar R.Y.	Member	P
8	Dr. Narayan Shenoy K	Member	A
9	Shri Balraj Joshi	Member	P
10	Shri Sharvan Kumar	Member (Representative of CEA)	P
11	Shri A. K. Singh	Representative of CWC	P
12	Dr. J. A. Johnson	Representative of WII	P
13	Dr. A. K. Sahoo	Representative of CIFRI	P
14	Dr. Vijay Kumar	Representative of Ministry of Earth Sciences	P
15	Shri Yogendra Pal Singh	Member Secretary	P

APPROVAL OF THE CHAIRMAN

From: "Yogendra Pal Singh" <yogendra78@nic.in>
To: kgopa@iisc.ac.in
Sent: Tuesday, May 4, 2021 9:53:51 AM
Subject: Fwd: Draft MOM of 10th EAC (Hydro) meeting held on 15.04.2021- reg.

Dear Sir,

The observations/suggestions have been incorporated in the draft MOM of 10th EAC meeting. The Corrected draft is attached herewith for approval please.

From: "Yogendra Pal Singh" <yogendra78@nic.in>
To: kgopa@iisc.ac.in
Cc: lnand@rocketmail.com, mukesh@iitk.ac.in, "bijayaketan panigrahi" <bijayaketan.panigrahi@gmail.com>, "chandrahas despande" <chandrahas.despande@welingkar.org>, dchandrahas@gmail.com, udaykumarry@yahoo.com, director@mnit.ac.in, "kn shenoy" <kn.shenoy@manipal.edu>, balrajjoshi@hotmail.com, balrajjoshi@gmail.com, dirhpa3@gmail.com, "Amrendra Kumar Singh" <ceenvtmgmt@nic.in>, jaj@wil.gov.in, "amiya saho" <amiya.sahoo@icar.gov.in>, "Dr. Vijay Kumar" <vijay.kumar66@nic.in>, ajitkumarmalhotra463@gmail.com, "Munna Kumar Shah" <munna.shah@gov.in>, "Sourabh Kumar" <sourabh.9@govcontractor.in>
Sent: Monday, May 3, 2021 4:11:42 PM
Subject: Fwd: Draft MOM of 10th EAC (Hydro) meeting held on 15.04.2021- reg.

The observations/suggestions have been incorporated in the draft MOM of 10th EAC meeting. The Corrected draft is attached herewith for approval please.

From: kgopa@iisc.ac.in
To: amiya7@gmail.com, "Yogendra Pal Singh" <yogendra78@nic.in>
Cc: lnand@rocketmail.com, mukesh@iitk.ac.in, "bijayaketan panigrahi" <bijayaketan.panigrahi@gmail.com>, "chandrahas despande" <chandrahas.despande@welingkar.org>, dchandrahas@gmail.com, udaykumarry@yahoo.com, director@mnit.ac.in, "kn shenoy" <kn.shenoy@manipal.edu>, balrajjoshi@hotmail.com, balrajjoshi@gmail.com, dirhpa3@gmail.com, "Amrendra Kumar Singh" <ceenvtmgmt@nic.in>, jaj@wil.gov.in, "amiya saho" <amiya.sahoo@icar.gov.in>, "Dr. Vijay Kumar" <vijay.kumar66@nic.in>, ajitkumarmalhotra463@gmail.com, "Munna Kumar Shah" <munna.shah@gov.in>, "Sourabh Kumar" <sourabh.9@govcontractor.in>
Sent: Monday, May 3, 2021 11:39:28 AM
Subject: Re: Draft MOM of 10th EAC (Hydro) meeting held on 15.04.2021- reg.

Dear Sir

Kindly include all the suggestions from our experts in the final draft.

With warm regards
Prof. K.Gopakumar, FIEEE, FNAE
DESE, Indian Institute of Science
Bangalore-560012, INDIA