

MINUTES OF THE 11TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 06TH MAY, 2021 FROM 10.00AM- 01:00PM THROUGH VIDEO CONFERENCE.

The 11th 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 06th May, 2021 through video conference, under the Chairmanship of Dr. K. Gopakumar. The list of Members present in the meeting is at **Annexure**.

Agenda No. 11.1

CONFIRMATION OF THE MINUTES OF THE 10th MEETING

During the meeting the Member Secretary informed that following details have been mentioned incorrectly and shall be treated as deleted in Agenda Item no 10.4.1 “.....The PP informed that the project is being constructed by NHPC.....”

The same may be read as “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).”

With this correction the minutes of the 10th EAC (River Valley Hydroelectric Project) meeting held on 15th April, 2021 were confirmed.

Agenda No. 11.2.

Kutehr Hydro Electric Project of 240 MW as Run of River scheme in an area of 85.36ha by M/s JSW Energy Ltd in Village Machhettar, Tehsil Bharmour, Chamba District (Himachal Pradesh) – Amendment/Extension in validity of Environmental Clearance (EC) – Reg.

[Proposal No. IA/HP/RIV/210157/2021; F. No. J-12011/67/2007-IA. I]

11.2.1 The proposal is for extension in validity of Environmental Clearance granted by MOEF vide letter no. J-12011/67/2007-IA-I dated 5th July, 2011 to Kutehr Hydro Electric Project of 240 MW as Run of River scheme in an area of 85.36 ha by M/s JSW Energy Ltd. in Village Machhettar, Tehsil Bharmour, Chamba District (Himachal Pradesh).

11.2.2 The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below observation by EAC in earlier meeting:

- i. Project envisages construction of a 23 m high barrage across Ravi River in Chamba District of Himachal Pradesh to generate 240 MW of hydropower. This is Run-of-the-River scheme.
- ii. The total land requirement for the project is 85.36 ha out of which 79.18 ha was forest land which had been reduced to 61.40, as recommended by the State Forests Department for Forests diversion. About 6.18 ha is private land.
- iii. An underground powerhouse is proposed on the left bank of the river near village Suhaga with 3 units of 80 MW each, ten (10) villages consisting of 30 families are likely to be affected due to this project. No village will be submerged.
- iv. No National Park/Sanctuary/ Biosphere Reserve/Historical monument exists in the vicinity of the project area.
- v. The total cost of the project was about Rs. 1798.13 Crores.
- vi. The Kutehr HEP, one of the Hydel Projects targeted to be completed by the 12th Five Year Plan, was conceived as cascade project between Chamera III (downstream) and Bajoli Holi (upstream) on River Ravi by HP Government based on a DPR prepared by HPSEB and was allotted to JSW Energy Limited through an International bidding in July 2007. PIA was signed with the Government of Himachal Pradesh on 01.03.2008.
- vii. Terms of reference (TOR) for preparation of EIA/EMP report were accorded by the MOEF dated 30.05.2008.
- viii. All investigations e.g. exploratory drilling, drifting and topographical survey were completed and revised DPR of Kutehr HEP incorporating the mandatory provision of 15 % riparian discharge (as per Hydro Power Policy, 2006 of HP Govt.) was submitted to CEA on 05.06.2009.
- ix. Public Hearing was conducted by HP State Pollution Control Board on April 16 & 17, 2010 in Chamba District, Himachal Pradesh. Detailed Project Report (DPR) of Kutehr HEP was concurred by CEA for installed capacity of 240 MW on 31.08.2010.
- x. Implementation agreement was signed with Government of Himachal Pradesh on 04.03.2011 for Implementation of Kutehr Hydroelectric Project (240 MW).
- xi. Environment Clearance (EC) was granted by MOEF vide letter no J-12011/67/2007-IA-I dated 5th July, 2011 to Kutehr Hydroelectric Project which is valid for a period of 10 years from the date of issue of this letter for commencement of construction work.

11.2.3 The EAC during deliberations noted the following

The proposal is for extension in validity of EC dated 5th July, 2011 since as per EIA Notification, 2006, the period of validity of EC is 10 years and extendable for 3 years incase PP applies within the expiry date of EC. PP has submitted an application no. IA/HP/RIV/210157/2021 dated 24th April, 2021 i.e. within its validity period of EC.

PP has requested for extension in validity of EC due to following reasons:

- Implementation Agreement signed on 04.03.2011, the Zero date of the project was to be achieved within 03.03.2013. Work could not commence

by 03.03.2013 for want of clearances like acquisition of private land, lease of Forest Land and approval of felling of trees on the project alignment.

- The construction of Kutehr Hydro Electric Project was started and formally inaugurated by Hon'ble Chief Minister of Himachal Shri Jai Ram Thakur Ji on 29.10.2019.
- All the Civil Works, Hydro Mechanical Works and Electro Mechanical Works have been awarded and presently the Project is under initial stage of construction. Parallely, PP are in advance stage of finalization of PPA with one of the Northern Indian State Discom. Also, PP are in discussion with few Banks and Financial Institutions for tieing up of the required debt for the Project. They expect to achieve the financial closure in due course of time.
- Because of COVID -19 Pandemic, the economic condition of the whole country has been adversely impacted and JSW Energy Ltd is no exception. The construction activities of the Project were stopped w.e.f. 23.03.2020 due to curfew and lockdown announced by the Centre/ State Government/District Administration. Construction activities were re-started in phases since June 2020 end.
- The Zero Date for the commencement of construction work of Project has been redefined as 29.10.2019 by the Government of Himachal Pradesh vide Second Supplementary Implementation Agreement signed on 27.01.2021 between JSWEKL and GOHP and Scheduled Commercial Operation Date is Sixty Months from Zero Date.

Project Planning has been distributed into 5 Lots, and current status of work done are as follows:

- a) Out of 14km HRT work 5km HRT work has been completed.23% of the work allocated in Lot 1 and 17% of the work allocated in Lot 2 has been completed. Barrage excavation (Left bank) has been completed to the tune of 1,40,660 cum out total 1,58,696 cum (89%).
- b) Intake Excavation & Cut-n-Cover Excavation has been completed. Concreting of upstream keys has been completed. Apron floor concreting work is in progress. Till date concrete of left Half of Barrage 6115 cum out of 67137 cum has been completed.
- c) Feeder Tunnel #1 excavation was started on 08.09.2020. Till date 95m has been achieved out of 593m. Feeder Tunnel #2 excavation was started on 03.11.2020. Till date 54m has been achieved out of 639m. Silt Flushing Tunnel was started on 12.03.2021. Till date 18.5m has been achieved out of 532.13m.
- d) HRT Excavation: Face-1 (44m) excavation was completed on 18.03.2020. Face-2 excavation was completed to the tune of 505.5 m out of its total length of 1353.5 m. Excavation of Link Tunnel-2 was completed on 18.08.2020. Link Tunnel-1 was completed on 30.09.2020. Central gullet

- of DC-1 and DC-2 were completed to the tune of 275.5 m/290 m and 290 m/290 m respectively. Stage II Excavation (Side Slashing) of DC-2 is in progress.
- e) Excavation for Adit-2 was completed on 29.11.2020. HRT Excavation: Face-3 and Face-4 were started on 30.11.2020 HRT Excavation. Face-3 excavation has been completed to the tune of 170.5 m out of its total length of 1351.8 m. Face-4 excavation has been completed to the tune of 177.5 m out of its total length of 195 m.
 - f) Excavation for Adit-3 was completed on 07.12.2020. HRT Excavation: Face-5 and Face-6 were started on 08.12.2020. HRT Excavation: Face-5 excavation has been completed to the tune of 173 m out of its total length of 1737 m. Face-6 excavation has been completed to the tune of 174.5 m out of its total length of 2149 m.
 - g) Excavation for Adit-4 was completed on 07.07.2020. HRT Excavation: Face-7 was started on 07.07.2020 and progress till date is 459.5 m out of 2148 m. Face-8 was also started on 09.07.2020 and completed 354.5 m out of 1027m.
 - h) Excavation for Adit-5 was completed on 08.11.2020. HRT Excavation: Face-10 was also started on 09.11.2020 and completed 181.0 m out of 1515m. HRT Excavation: Face-9 3 was started on 09.11.2020 and progress till date is 118.0 m out of 1028 m.
 - i) At Road to ADIT-6 and Surge Shaft, 878 M have been completed out of 1362 M Concreting done at Approach road to Adit-6 in the Month of March 2021: 640.5 cum
 - j) At Power House location, after completion of extensive slope protection measures, MAT Portal works was completed. Excavation of MAT have also been completed (239.2 m). Now Adit to Collection Gallery and Adit to Pressure Shaft Bottom being started and has been excavated 22.5m/161.03m and 24m/180.87m respectively Adit to Power House crown was started on 27th Feb 2021 from CACT and 72.46 m has been completed on 31st March, 2021.
 - k) In order to mitigate delay in Cable tunnel due to extensive slope protection required, a bye pass tunnel (43.52 m) connecting MAT and CACT was planned which was completed on 30th December,2020. The excavation of CACT has started on 30.12.2020 and 150.47 m has been completed on 26th March, 2021.

Further, during deliberations, EAC desired certain information to be submitted by PP for further clarification. Point-wise replies were submitted by the PP vide letter dated 6th May, 2021 are as follows:

S. No.	EAC Query	Reply of Project Proponent
1	Natural Calamities happened in the last ten (10) years and its Impact (road... etc.)	They have approached Chamba DDMA for the required information and the same shall be sent once the same is received from them.
2	Extreme rainfall events happened in last 10 years.	<p>Available monthly rainfall data of 2011 - 2020 received from Divisional Forest Officer, Bharmour Forest Division, shows that there is no increase in monthly rainfall as compared to DPR (rainfall Data as of 2007 monthly rainfall data). However, we are in the process of getting the peak daily rainfall data from IMD for the project site for the last 10 years to see if any extreme rainfall event has occurred or not in the last 10 years.</p> <p>The data/details collected from The Divisional Forest Officer, Bharmour Forest Division, has been submitted.</p>
3	Any Deviation from Approved DPR (List of all the deviations)	It is to confirm that no technical parameters like FRL (1706.75m), MDDL (1700.00), TWL (1397m), length, size and shape of HRT (14.602 km long, 6.2 m diameter, Circular) and rated capacity of the machine (80 MW) has been changed from the approved DPR parameters, concurred by CEA. Also, there is no change in the diameter (6.2m), shape (circular) and length (14.6 km) of Head Race Tunnel from DPR.
4	Optimization of the Layout with respect to Civil activities	<p>During the detailed engineering studies, carried out by AFRY India (previously AF Consult India Pvt. Ltd), the optimization has been carried out wherever technically possible. The followings are the major design optimization made in the project:</p> <p>a) Optimization of powerhouse cavern from 90 m (L)X 19 m (W) x 44 m (H) to 90 m x 19m x 40.9 m</p> <p>b) Optimization of Transformer cavern from 90 m (L)x 16 m (W) x 25.8 m (H) to 83.5 mx15 m x 25 m</p> <p>c) Barrage Piers were also optimized to create</p>

		<p>a space for a gated Auxiliary Spillway (3.25 m wide) for passing the floating trash and log coming into the reservoir, which will be an operational advantage. This does not change anything like the size and number of radial gates, width of approach and width of stilling basin. There is no change in length of Barrage Structure.</p> <p>d) Also, by design/cost optimization in barrage, a fish ladder in the barrage layout has been incorporated as mandated by the Ministry in their EC clearance and along with also, ensuring the passing of full provision of the mandatory discharge all the year round through MS pipe across the Barrage.</p>
5	Catchment Area Treatment Plan (CAT Plan) - Status of Implementation	<p>They have deposited total CAT plan amount of Rs. 45 Crores have been deposited with CAMPA on 19.11.2012 and the plan is being implemented by the State Forest Department. Copy of letter no. JSW/Kutehr HEP/52/12-13/1341 dated 19.11.2012 has been submitted.</p> <p>An amount of Rs. 21.72 Crores has been utilized in implementing the CAT Plan of Kutehr HEP upto 30.09.2019 by the Forest Department has been submitted</p> <p>They have requested the State Forest Department vide our letter no. JSWEKL/Kutehr HEP/CAT Plan/61/20-211 4498 dated 08.04.2021 to provide the Physical & Financial progress achieved in this regard upto 31.03.2021.</p>

Ministry vide its S.O 221 (E) dated 18th January, 2021 issued the notification regarding validity of Environment Clearance. It is stated that:

“Notwithstanding anything contained in this notification, the period from 1st April, 2020 to the 31st March, 2021 shall not be considered for the purpose of calculation of the period of validity of Prior Environmental Clearances granted under the provisions of this notification in view of outbreak of Corona Virus (Covid-19) and subsequent

lockdowns (total or partial) declared for its control, however, all activities undertaken during this period in respect of the Environmental Clearance granted shall be treated as valid"

Based on this notification, additional one year has to be added in validity of EC as financial year of April-2020 to March-2021 has to be excluded in the overall calculation of validity. Therefore, EC is valid upto 4th July, 2022. Now, since PP has applied the proposal for extension in EC and considering extendable period is 3 years as per EIA Notification, 2006 and its amendments therein, the EC may be extended till 4th July, 2025.

11.2.5 *The EAC after deliberations observed that project has been delayed due to various reasons as stated by Project Proponent. Currently, the project is in construction stage as submitted by PP. Further considering Ministry's notification dated 18th January, 2021, the instant EC is extendable till 4th July 2025 since one financial year is excluded. In view of this, EAC recommends the proposal for extension in validity of EC dated 5th July, 2011 to Kutehr Hydro Electric Project of 240 MW as Run of River scheme in an area of 85.36 ha by M/s JSW Energy Ltd in Village Machhettar, Tehsil Bharmour, Chamba District (Himachal Pradesh) till 4th July, 2025, under the provisions of EIA Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the following additional terms & conditions / specific conditions for environmental safeguards:*

- *PP shall submit progress of work and detailed plan for completion of the project within certain timeline to Ministry's Regional Office within six months.*
- *PP shall comply all EC conditions which has to be done during construction of the project within certain timeline.*
- *Progressive reclamation of muck disposal site should be conducted and plant for reclamation shall be submitted to Ministry's Regional Office within six months.*
- *PP shall deposit the Wildlife Conservation Plan and allotted fund (for schedule - 1 species) to Divisional Forest Office.*
- *PP shall submit the status of commitment during Public Hearing with allotted fund and timeline to Ministry's Regional Office within six months.*
- *PP shall submit Disaster Management Plan for catastrophic events such as landslide, floods, glacial lake outburst (if any) to Ministry's Regional Office within six months.*

Agenda Item No. 11.3

Enhancement of Capacity of Karcham Wangtoo Hydro Electric Project from 1000 MW to 1091 MW at village Karcham, Tehsil Nichar, District Kinnaur, (Himachal Pradesh) by M/s JSW Hydro Energy Limited – Amendment in Environmental Clearance (EC) – reg.

[Proposal No. IA/HP/RIV/208630/2021; F. No. J-12011/47/2005-IA.I]

11.3.1 The proposal is for amendment in Environmental Clearance to Karcham Wangtoo Hydro Electric Project for enhancement of the capacity 1000 MW to 1091 MW at village karcham, Tehsil Nichar, District Kinnaur, (Himachal Pradesh) by M/s JSW Hydro Energy Limited under the provisions of the para 7 (ii) of the EIA Notification, 2006 as amended.

11.3.2 The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below Observation by EAC in earlier meeting:

1. Karcham Wangtoo Hydropower project is located on Satluj river; dam is located near village Karcham and Powerhouse is located at village Wangtoo, Tehsil Nichar, district Kinnaur of Himachal Pradesh. The project area lies between 31°30'N to 31°32'N and 78°0'E to 78°17'E.
2. The main project components are:
 - i. Concrete gravity dam of 88m high (from deepest foundation level), 43 m from river bed level with top elevation at 1813 m and FRL at 1810m creating a submergence area of 58.8 ha with about 4.4 Km long reservoir at FRL.
 - ii. Circular concrete lined head race tunnel having a total length of 17.198 km and finished tunnel dia of 10.48 m.
 - iii. Surge shaft of 27 m dia and 184 m height.
 - iv. Four pressure shafts of 4.75 m dia. and 290.5 m length each.
 - v. Power house is located on the right bank of river Sutlej having dimensions of 21 m (W), 49 m (H) and 143 m (L), housing four vertical axis francis turbines of 250 MW each (with 20% overload).
 - vi. Circular tail race tunnel of 10.48 m diameter and 909 m long to carry the turbine discharge to the river Sutlej.
3. It is noted that Environmental Clearance (EC) granted to project vide letter J-12011/47/2005 dated 9th November, 2005 by Ministry of Environment & Forests (MOEF) for 1000 MW installed capacity to Karcham Wangtoo Hydro Electric Project. Diversion of 167.42 ha of forest land was granted on 21/11/2002.
4. DPR was concurred by CEA for 1000 MW IC and TEC was issued on 31/03/2003.
5. Public hearing was conducted on 9th November, 2004.

6. Project was commissioned in year 2011 by Jaypee Karcham Hydro Corporation Limited and is under operation since then.
7. The catchment area of river Sutlej at Karcham diversion dam site is 48,755sq.km including a snow bound catchment of 38,760sq.km. Out of 48,755 sq.km about 36,900 sq.km falls in Tibet territory and 11,855 sq.km in India.
8. The Study Area falls within three sub-divisions of Kinnaur district, viz. Sangla, Nichar and Kalpa. It is bound by the area 15 km upstream of Karcham on the Sutlej; 9 km upstream on the Baspa; 5 km downstream of Wangtoo on the Sutlej, and 5 km on each side of the Sutlej and Baspa.
9. The completed approved project cost is Rs. 6743.6911 crores.
10. Karcham Wangtoo HEP installed and commissioned in 2011 by Jaypee Karcham Hydro Corporation Limited, is a run of the river project constructed on the river Sutlej in Himachal Pradesh. The project was taken over and being operated by JSW Hydro Energy Limited since September 2015.
11. PP has submitted an online application dated 10th April, 2021 requesting the Ministry for an amendment in EC for enhancement of capacity from 1000 MW to 1091 MW under para 7(ii) a of EIA Notification 2006 with amendments.
12. **Detailed reasons for amendment in ToR/EC:**
 - Project Proponent (Jaypee Karcham Hydro Corporation Limited) because of very high silt in the river Satluj water, had designed and installed the generating units with 20% continuous overload capability (instead of standard requirement of 10% overload) over the rated capacity of 250 MW each, without comprising any safety aspects required for various structure/ components of the Project and thus each generating unit can generate up to 300 MW, with maximum generation of 1200 MW for the project.
 - CEA vide letter dated 18.03.2011 had intimated Govt. of Himachal Pradesh that the generating units and transformers procured for project have been designed for 300 MW normal conditions output which is 20% more than the rated output of the machines for which the TEC was accorded by CEA and further requested for comments on the same.
 - Govt. of HP vide letter dated 26.11.2011 had informed CEA that the HP Govt. has “No objection” for the installation of 300 MW turbines in place of 250 MW subject to CEA satisfying itself on the safety aspect.
 - In order to study/verify the deviations, a Technical Committee was constituted by Govt. of HP on 09.09.2013. The Committee, after conducting site visits and collecting various details, in its report concluded that the continuous power generation of 1200 MW may stress the civil structures beyond the permissible limits. This may endanger the project safety. Therefore, detailed technical analysis/studies along with the physical verification of the structures would need to be undertaken in this regard, by the expert organization.
 - Dept. of Water Resources Development & Management, IIT Roorkee was appointed by Jaypee to evaluate safety aspects of the project components for

20% overload operation and concluded in their detailed report submitted in June 2015 that all project components are considered adequate for 20% overload operation.

- GoHP has observed that the report by IIT Roorkee has been prepared on the basis of inputs supplied by Project Proponent and the most important aspect of safety of HRT in continuous overloading conditions has not been examined in details. Therefore, GoHP ordered to operate karcham HEP at 1000 MW only.
- In May 2016, based on the recommendations of CEA & CWC, GoHP ordered Company, Himachal Baspa Power Company Ltd, a subsidiary of JSW Energy Ltd subsequently name changed to JSW Hydro Energy Limited (JSWHEL), to operate karcham HEP at 1000 MW and directed to apply for capacity enhancement beyond 1000 MW.
- In April 2018, JSWHEL had submitted a proposal to CEA for uprating the installed capacity of the Karcham HEP from 1000 MW to 1091 MW along with 10% overloading on continuous basis.
- An expert committee was constituted under the chairmanship of retired chairman of CWC with 2 technical experts to look into this aspect in May'2019; which has held several meetings, presentations and physical inspection of Civil and Electro-Mechanical components.
- Recommendation of the Committee in December 2019: Project may be considered for uprating for 1091 MW with 10% continuous overload provided uprating may be carried out in steps i.e. for the 1st year this may be done with 50% capacity with 10% continuous overload and after observing the various operating features and details if favourable for the 2nd year onwards for 1091 MW with 10% continuous overload capacity.
- CEA vide its letter dated 29/04/2021, has agreed to uprate the capacity of Karcham Wangtoo HE Project from existing 1000 MW to 1091 MW in two stages i.e. 1045 MW (with 10% continuous overload) in the first stage and then to 1091 MW (with 10% continuous overload) in the second stage. It was, however, decided by the Authority that after initial uprating to 1045 MW (with 10% continuous overload) in the first stage, the performance of the project and various operating parameters would be observed for at least two monsoon seasons. After this, CEA may concur for further uprating of the capacity to 1091 MW with 10% continuous overload capacity on submission of satisfactory report by the Developer.
- PP submitted following details for enhancement of capacity from 1000 MW to 1091 MW:
 - (i) Would not require any additional civil or hydro mechanical work as there no change in project parameters/components – submergence, FRL, TWL, dam, HRT, surge shaft, powerhouse, turbines, tailrace; therefore, no muck generation or any other construction phase impacts.
 - (ii) No land requirement either private, government or forest therefore no impacts on people or forest land.
 - (iii) Project will remain unchanged expect for additional operational load during monsoon, which would result in increased discharge through

HRT, to be utilized after releasing environment flow as per the prevailing norms.

- (iv) Safety of the components have already been assessed through various studies, analysed by experts and approved by CEA.
- (v) Project is in full compliance to environmental monitoring requirement, submitting 6 monthly monitoring reports on time and have valid consent to operate.
- (vi) Project has fully complied with all the EC conditions, have implemented EMP (CAT, Fisheries, Compensatory afforestation....), continuously maintaining more than 50% local (Himachali) employees and is regularly carrying out local area development activities under CSR.

13. Comparison of Salient Features – Original i.e. at the time of EC issued in 2005 and as approved in original DPR with that of proposed revised is given below in table format

Sr. No. & Particular	Original (at the time of EC)	Revised (as proposed for revision of EC)
Location		
i. State	Himachal Pradesh	No change
ii. District	Kinnaur	No change
iii. River	Satluj	No change
Diversion Dam		
i. Type	Concrete Gravity	No change
ii. Top of dam	EL 1813.00m	No change
iii. Height from deepest foundation level	98 m	No change
iv. Total length at top	177.80 m	No change
v. No. of blocks	12	No change
vi. Min. river bed level at dam axis	El. 1770.00m	No change
vii. Deepest foundation level	El. 1715.00m	No change
viii. Maximum pond level	El. 1810.00 m	No change
ix. Minimum pond level	El. 1799.00 m	No change
x. Live storage capacity	544.97 Ha-m	No change
Sedimentation Chambers		
i. Nos. of chambers	4 (Four)	No change

ii. Particle size to be excluded	0.2 mm and above	No change
iii. Size of each chamber	505m X 16M X 28m	No change
Head Race Tunnel		
i. Size & Type	10.48m dia circular	No change
ii. Length	17.2km	No change
iii. Velocity through tunnel	4.83 m/sec	5.25 m / sec (for 1091 MW)
iv. Design Discharge	417 cumecs	453 Cumecs (for 1091 MW)
v. Slope	1: 150	No change
Surge Shaft		
i. Type	Restricted Orifice	No change
iii. Bottom elevation	El 1667.95 m	No change
iv. Top elevation	El 1852.00 m	No change
vii. Top	Open to sky	No change
Pressure Shafts		
i. No. and type	4 steel lined	No change
ii. Diameter	4.75 m	No change
iii. Length of penstock	290.5 m each	No change
iv. Type of steel for penstock liners	ASTM A-517 Grade-F	No change
Power Station		
i. Type	Underground	No change
ii. Installed capacity	1000 MW (4 x 250 MW)	No change
iii. Size of machine hall	143 m (L)x 21.0 m (W) x 49.0 m (H)	No change
iv. Size of transformer hall	143m (L)x15.5 m (W)x25 m (H)	No change
vii. Size & Length of cable tunnel	528.71m	No change
Electro-Mechanical Equipment		

i. No. and Type	4 Francis Turbines	No change
ii. Rating	250 MW	300MW
iv. Design Head	275.93 m	269.0 m
v. Design Discharge	104.25 Cumecs	113.575 Cumecs
vi. Speed	214.30 rpm	No change
Tail Race Tunnel		
i. Size & Type	10.48m dia, Circular	No change
ii. Length	909.m	No change
iii. Invert level of tailrace tunnel at outfall	1505.00m	No change
iv. Normal water level in river Satluj	1508.00 m	No change

14.The latest 6 monthly compliance report was submitted on 21.12.2020. Copy of the same is enclosed here with for your ready reference.

11.3.3 The EAC during deliberations noted the following:

- i. Project was accorded Environmental Clearance (EC) vide Letter No. J-12011/47/2005- IA.I on 9th November, 2005 to Jaypee Karcham Hydro Corporation Limited by Ministry of Environment and Forests (MoEF) under the provisions of EIA Notification, 1994.
- ii. The public hearing for the project was conducted 9th November, 2004.
- iii. Forest Clearance vide no. FP/HP/HYD/514/2002 had been issued on dated 21.11.2002
- iv. As per EC (2005), total land required for the project was 155.2910 ha, out of which forest land was 136.2833 ha. There were no archaeological sites/monuments in the project area. Public Hearing was conducted on 9th November, 2004 at village Karcham district Kinnaur. The capital cost of the project is Rs. 5392 Crores.
- v. Project was commissioned in year 2011 by Jaypee Karcham Hydro Corporation Limited and is under operation since then.
- vi. Ministry vide letter dated 21st March, 2016 transferred the EC from M/s Jaypee Karcham Hydro Corporation Limited to M/s Himachal Baspa Power Company Limited. Subsequently, vide letter dated 19th June, 2019 EC was transferred from M/s Himachal Baspa Power Company Limited to M/s JSW Hydro Energy Limited.

- vii. CEA vide its letter dated 29/04/2021, has agreed to uprate the capacity of Karcham Wangtoo HE Project from existing 1000 MW to 1091 MW in two stages i.e. 1045 MW (with 10% continuous overload) in the first stage and then to 1091 MW (with 10% continuous overload) in the second stage.

11.3.4 Observation of the EAC in the present meeting:

After detailed deliberations on presentation and information submitted by the PP, the EAC observed that some changes might have done in design parameters during execution of the project. Representative from CEA was not satisfied about the No changes provided by Project Proponent. EAC members also noted that certified Compliance report of Regional office, MoEF&CC on earlier granted EC (2005) 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 enhancement.

EAC deferred the proposal for want of following additional information:

- (i) Permission required form state electricity board for enhancing the capacity from 1000 MW to 1091 MW.*
- (ii) Damage assessment on fishes if such velocity of water flown into the downstream.*
- (iii) Certified compliance report of Regional office, MoEF&CC should be submitted as soon as possible.*
- (iv) An Undertaking which states that EC conditions has been complied, there will be no impact on environment after enhancement of the project capacity.*
- (v) Current status of Wildlife species and how project establishment will affect wildlife species in the region.*
- (vi) Comparative list of salient features of the project proposed at the time of EC vis-à-vis salient features actually executed at site.*
- (vii) Clarify that forest land mentioned in EC letter is 136.2833 ha. Details presented by PP mentioned that Forest land is 167.42 ha. As per the details present on Parivesh website, Forest Clearance and amendment taken from time to time is 174.0182 ha.*
- (viii) Last 15 years data of catastrophic events in 10 km region, whether construction of dam has caused or likely to cause in such events future specifically landslide.*

The EAC also recommended to the MoEF&CC to examine the applicability of para 7 (ii) of the EIA Notification, 2006, as the present proposal is for EC for expansion of existing project for which EC was granted under the provisions of the EIA Notification, 1994.

The project was deferred on the above lines.

Agenda Item No. 11.4

Niare Hydro Electric Project (870 MW), a Run of River scheme in an area of 429.585 ha by M/s Andra Power Private Limited near Village Orak District Upper Subansiri, Arunachal Pradesh – Reconsideration for Terms of Reference (ToR) – Reg.

[Proposal No. IA/AR/RIV/202902/2021; F. No. J-12011/07/2021-IA-I (R)]

11.4.1 The proposal is for reconsideration for grant of Terms of Reference (ToR) Niare Hydro Electric Project (870 MW), a Run of River scheme in an area of 429.585 ha by M/s Andra Power Private Limited near Village Orak District Upper Subansiri, Arunachal Pradesh.

11.4.2 Observation in Earlier EAC:

1. The proposal for EC was earlier considered in 9th EAC Meeting held on 25th March, 2021.
2. The project was deferred by the EAC seeking additional information which is reflected in the Minutes of the 9th EAC Meeting held on 25th March, 2021.
3. Point-wise replies in response to additional details sought (ADS) by EAC in its 16th meeting are as follows:

S. No.	EAC Query	Andra Power Private Limited Reply
1.	A longitudinal section of the river showing the proposed dam with the upstream and downstream proposed developments along with the head and tail water levels may be submitted to ascertain the free-flowing stretch in accordance with the MoEF&CC guidelines	<ul style="list-style-type: none">• As required by approved Subansiri Basin study, they are maintaining minimum 1 Km of free stretch with upstream and downstream projects. Upstream Oju HEP is proposed with an TWL of 1300m and they have revised FRL of Niare HEP, which was discussed in EAC meeting, from 1280m to 1277m giving us a 1 Km of free-flowing river stretch. On downstream side, TWL of Niare HEP is 1052m, FRL of Naba HEP (1070 MW) is kept at 1028m to get a free flowing river stretch of about 1.3 Km.• L-section of Subansiri River has been plotted and it has been presented in front of EAC members.
2.	A longitudinal section of dam up to 50 meter above FRL covering both the bank of River	<ul style="list-style-type: none">• As required, the section shows the dam structure from the deepest foundation level of 160.43m, top of dam 1279m and up to

	<p>along with the Dam structure showing FRL and MWL</p>	<p>50m above FRL i.e. 1327m covering both the banks.</p> <ul style="list-style-type: none"> • Longitudinal section (front elevation) of the dam has been prepared and it has been presented in front of EAC members.
<p>3.</p>	<p>The details of any catastrophic (landslides, earthquakes etc.) event in the area be obtained from concerned department.</p>	<ul style="list-style-type: none"> • Efforts have been made to collect the data on the past catastrophic events in the Subansiri basin in particular and Arunachal Pradesh in general; from the concerned government departments. • National Centre of Seismology provides the data on past earthquake events of various magnitude, which shows that from 2005 till 2018, various earthquake events recorded in Arunachal Pradesh is in the range of 3-5 (ML) local magnitude. • Such data collection is done extensively during DPR preparation and used in project formulation and project design which gets reviewed and approved by different directorates under CEA. It is pertinent to mention that study of design Earthquake Parameters, is part of the standard TOR and a site specific study of earthquake parameters is carried out along with DPR preparation which goes for approval by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi. • Regarding the data on past flood events, they have already applied to obtain CWC discharge data, which will be used in working out water availability and design flood based on historical data. As soon as data is available, hydrology and power potential sections will be sent for CWC/CEA review and approval. • No major permanent landslide sites are marked in the basin, however, during survey and investigation all the potential land slide sites in the project area will be physically identified and data will be used in EIA/EMP report and project design.

11.4.3 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 alongwith 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**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	P
5	Dr. Chandrahas Deshpande	Member	P
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	A
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	A
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: Sunday, May 23, 2021 9:50:32 AM
Subject: Re: MOM of the 11TH EAC (R.V. & H.E.)

Thanks Sir.

From: kgopa@iisc.ac.in
To: "Yogendra Pal Singh" <yogendra78@nic.in>
Cc: "Munna Kumar Shah" <munna.shah@gov.in>
Sent: Saturday, May 22, 2021 8:14:11 PM
Subject: Re: MOM of the 11TH EAC (R.V. & H.E.)

Dear Dr.Yogendra

I approve this. Now we have included the experts' comments and suggestions.

With warm regards

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

From: Yogendra Pal Singh <yogendra78@nic.in>
Sent: Thursday, May 20, 2021 4:21 PM
To: Gopakumar K <kgopa@iisc.ac.in>
Cc: Munna Kumar Shah <munna.shah@gov.in>
Subject: Re: MOM of the 11TH EAC (R.V. & H.E.)

External Email

Dear Sir,

The draft MOM of 11th EAC (R.V. & H.E.P.) after incorporating the comments from EAC members, is attached herewith for approval please.