Minutes of the 74th Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects constituted under the provisions of EIA Notification 2006, held on 5-6th May, 2014 at Van Vigyan Bhawan, R. K. Puram, New Delhi.

The 74th Meeting of the Expert Appraisal Committee (EAC) for River Valley and Hydropower Projects was held during 5th – 6th May, 2014 at Van Vigyan Bhawan, R. K. Puram, New Delhi. The meeting was chaired by Shri Alok Perti, Chairman. Shri P. K. Chaudhuri, Dr. S. Sathya Kumar, Dr. K. D. Joshi and member from NBA could not attend the meeting due to pre-occupation. The list of EAC Members and officials/consultants associated with various projects and who attended the meeting is at **Appendix**.

The following Agenda items were taken-up in that order for discussions:-

1st Day (5.5.2014)

1. **Agenda Item No.1 :** Welcome by Chairman and Confirmation of Minutes of the 73rd EAC Meeting held on 26– 27th March, 2014.

A. The minutes of the meeting of the 73rd EAC Meeting held on 26 – 27th March, 2014, was already circulated and with the approval of Chairman was uploaded in Ministry's portal. The same was confirmed with the following amendments:

Agenda Item No. 2.12 **Nalo HEP in Upper Subansiri District, Arunachal Pradesh being implemented by M/s. Indus Hydro Power (India) Private Limited- For Scoping and ToR approval for change in the installed capacity from 360 MW to 635 MW.**

(i) Sl. No. 10 to under recommendation be read as "EAC observed that three season base line data to be collected afresh, if it is more than 3 years old, for 635 MW capacity".

(ii) Last para under recommendation to be read as " MoEF may issue ToR on the conditions given above. However, once the CEA has finally decided on the capacity, the project proponent shall sign a MoA for revised capacity".

B. It was also decided that Shri H. S. Kingra, Member will, henceforth, function as Vice-Chairman of the EAC.

Thereafter, main agenda items were taken up for discussion.

2. **Agenda Item No.2 :** Consideration of Project proposals for Scoping and Environmental Clearance.

The following project proposals were considered:

Agenda Item No. 2.1 Mawphu H.E Project (85 MW), Stage-II, Meghalaya by M/s North Eastern Electric Power Corporation Ltd.- For consideration of TOR.

The project proponent made a detailed presentation on the project. It was noted that the Mawphu Hydro Electric Project-Stage-II (85 MW) is proposed on river Umiew in Mawphu village in East Khasi Hills District of Meghalaya. This is a run-of-river type scheme. The proposed dam is located at a river bed level of 499.50 m, 1.25 km downstream of the surface powerhouse of proposed Mawphu HEP (85 MW). The diversion site is located at Latitude 25º19'27"N, Longitude 91º38'08"E.

The nearest villages to the dam site are Mawphu village (on the Left Bank) and Thieddieng village (on the Right Bank). The project site is approachable from Shillong by road (via Shillong–Mawsynram State Highway) for a distance of 58.00 km up to Mawsynram and further 11.00 km up-to Thieddieng village. From Thieddieng village both dam and power house sites are approachable by foot track. The nearest rail head and Airport is located at Guwahati (100 km from Shillong).

The Mawphu HE Project (Stage-II) initially envisaged construction of a 41.55 m high concrete gravity dam with 150 m length at top, across the River Umiew. The proposed dam had a submergence area of 10.625 ha at FRL 540 m and a live storage of 1.12 MCM between FRL and MDDL. A surface powerhouse is propose with 2 unit of 42.5 MW each, operating under a rated head of 300 m and 45 m long tail race channel to carry the power house releases back to the river.

The project was considered in the 65th Meeting of the Expert Appraisal Committee (EAC) for River Valley and Hydroelectric Projects held on 22nd -23rd March, 2013 and EAC raised various issues and additional information. The project proponent

has submitted a revised PFR and Form-I for reconsideration of Scoping/TOR Clearance. The project developer has submitted the following:

- The dam site has been shifted downstream of Umduna HEP by a distance of 3.17 km from the original site. A clear free stretch of 1.97 km is available in the new layout with respect to the upstream HEP (Umduna HEP) FRL has reduced from 540 m to 470 m and capacity has reduced from 85 MW to 75 MW.
- Rainfall in hilly catchments have large spatial variations. Catchment of Mawphu HEP is very near to Mawsynram, which receives the highest rainfall in India. Hence the lower catchment near Mawsynram receive very high rainfall of the order of 6100 mm. The rainfall in the upper portions of the catchment goes on reducing. The catchment, rainfall of Mawphu HEP (Stage-II) has been worked out based on 12 years Tropical Rainfall Measurement Mission (TRMM) data for the period 1998-2009, which gives very accurate estimate of the rainfall. Average annual rainfall for the project catchment using TRMM data worked out by CWC comes to 4415 mm and the same has been adopted in the studies.
- Water availability studies for the project have been carried out considering the observed hydro-meteorological data for all the sites in the basin. Before using the data for the studies, gaps in the data have been filled and consistency checks for checking the accuracy and consistency of the data.
- The observed discharge data at Umduna HEP dam site is available for a very limited period (Dec 2005 to March 2009) and gives average annual runoff of 7309 mm, which appears to be very high as compared to the catchment rainfall. Hence, this data is not considered reliable. Long term observed discharge data at GSWSS at Mawphlang for the period (Jan 1979 to Dec 1987) having average annual runoff of 2921 mm, has therefore been considered for developing the 10-daily discharge series at the Mawphu II dam site.
- Water availability studies for the project have been examined and approved by Hydrology unit of CWC vide letter no. U.O NO. 4/161/2013 – Hyd (NE)/104-05 dated 11.03.14
- Release of Environmental Flows have been considered as below:
  - ✓ **Monsoon season** : 30% of average flows during June to September corresponding to 90% dependable year

- ✓ **Lean Season** : 20 % of average flows during December to March corresponding to 90% dependable year
- ✓ **Non-Monsoon & Non-lean-Season**: 25 % of average flows during October, November, April and May corresponding to 90% dependable year

The project proponents informed that the application of stage-I Forestry Clearance has been applied on 28.04.2014 to the Divisional Forest Officer, East Khasi Hills District, Meghalaya and a copy of the same was also submitted during the presentation.

Response to various issues raised by SANDRP were placed before the EAC during the presentation. The clarifications given are described in the following paragraphs:

- The Pre-Feasibility Report for 75 MW along with revised Form-I was uploaded on MoEF website. Only, survey and investigation works for preparation of DPR have been done. At site, no construction work has been started.

- The earlier PFR was based on 1:50,000 scale survey of India topo-sheets and the land requirement was tentative. The modified PFR has been prepared based on detailed survey carried out and the land requirement is worked out for the proposed scheme.

- The cost of the project has been worked out with respect to bill of quantities for modified scheme. The cost of Rs. 10.5 Cr/MW is in line with the normal estimated cost for hydro projects in North-Eastern region. Further, though the first year tariff is Rs. 6.46 per unit, the tariff will come down in subsequent years and levellised tariff is Rs. 5.54 per unit.

EAC observed that Hydro and solar are two natural resources and both have to be developed simultaneously to meet the demand.

The EAC recommended the TOR clearance for the project with the following additional issues to be covered in the CEIA study:

- Downstream impact assessment for river Umiew up-to its confluence with river Surma should be studied
- Environmental flows assessment should be done through BBM methodology.
- Impact of changed sediment flow in the downstream during different periods and at different locations should be studied
- Social and Environment Impacts of construction of coffer dams and diversion tunnel
- Impact of mining of materials for the project
- Social, hydrological, geological impacts of tunnelling and blasting
- Impact of peaking operation and back water impacts during flood season.
- Impact of the project construction on the disaster potential of the area.
- Impact of project operation on the disaster potential of the area.
- Detailed analysis about the existence of wetlands, watercourses and other water bodies
- Cumulative impact assessment of the upstream projects (Umduna and Umjaut HEP) should be studied.
- Bio-diversity study is to be conducted through a reputed institute published in the website of MoEF.
- Environmental flow release of 20%, 25% and 30% during lean, non-lean & non-monsoon and monsoon seasons to be followed.

However, ToR would be issued by MoEF on formal submission of copy of Forests Clearance application to the Ministry and response to observations made by EAC during 73rd EAC meeting.

Agenda Item No. 2.2 Upper Krishna Project Stage-III on Krishna River, Karnataka by M/s Krishna Bhagya Jala Nigam Ltd. – For consideration of TOR.

The project proponent made a detailed presentation on the project. It was noted that the Upper Krishna Stage-I projects were cleared by the Planning Commission vide letter No.2(10) /89-I & CAD Dtd.24.9.1990 for implementation of following components:

- Construction of Almatti Dam up-to a height of 512.2 m with gross storage of 1193.84 MCM and live storage of 361 MCM

- Construction of 105 Km Almatti left bank canal to irrigate a Culturable Command Area (CCA) of 0.17 Lakh ha.
- Head works of 5 Nos foreshore lift irrigation schemes from Almatti reservoir from foundation level to FRL 512.2 m as indicated below-
    - Chimmalagi LIS and ALBC common head
    - Almatti Right Bank Canal LIS
    - Baluti LIS
    - Herkal LIS left & right
    - Head work from Narayanpur reservoir for LIS near Navali
- Construction of Narayanpur Dam upto FRL 492.252 m with a gross storage of 1071.50 MCM and live storage of 868.8 MCM.
- Construction of 78 Km Narayanpur left bank canal.
- Construction of 76 Km Shahpur Branch canal.
- Construction of 172 Indi Branch canal.
- Construction of 73 Km Jewargi Branch canal.
- Construction of 49 Km Mudbal branch canal with distribution system.

The canal system was envisaged to irrigate an area of 4.08 Lakh ha. The stage-I of the project has been completed.

The Upper Krishna Stage-II projects were cleared by the Planning Commission vide No.2(10) /99-WR Dt. 13.12.2000 for implementation of the following components;

- Narayanpur Right Bank Canal having a length of 95 Km for a CCA of 84,000 ha.
- Foreshore Lift Schemes from Almatti reservoir :-
    a) Mulwad Lift Canal 106 Km long covers 30,850 ha. CCA
    b) Almatti Right Bank Canal 121 Km long covers 16,100 ha. CCA
    c) Almatti Left Bank Canal extension from 77.64 Km to 105 Km covers 4,035 ha of CCA.
- Foreshore Lift Schemes from Narayanpur reservoir :-
    a) Rampur Lift Canal 37 Km long covers 20,235 ha of CCA.
- Indi Lift Scheme from NLBC (97 Km) for a CCA of 41900 ha.
- Raising the height Almatti dam (Masonry dam in right flank and earthen dam in left flank) upto R.L. of 528.756 m and upto R.L. of 529.250 m in river portion.

- Installation of radial gates of height of 10.584 m (against 3.2 m high gates approved under stage-I of the project) so as to achieve an FRL of 519.6 m. The crest level of the spillway as constructed is at EL 509.016 m as against EL 509.0 m cleared in the revised estimate approved on 24.9.1990 under Upper Krishna Stage –I.

The Stage-II of the project is nearing completion. Upper Krishna Project Stage-I and II envisaged utilization of 173 TMC of water to irrigate an area of 6, 22,023 Ha. The details are given as below:

Reservoir	**Area in ha**		
	Stage I	**Stage II**	**Total**
Almatti	16200	50985	67185
Narayanpur	408703	146135	554838
Total	**424903**	**197120**	**622023**

The proposed Upper Krishna Project – Stage-III envisages raising of FRL of Almatti dam from RL- 519.60 m to RL- 524.256 m in order to store and make use of additional water allocated to Upper Krishna Project by Government of Karnataka i.e. 130 TMC of water for irrigating 5,30,475 Ha under Stage-III. The project comprises of the following:

- Raising of crest gates from RL 519.60 M to RL 524.256 M (Fixing of the cut open portions to store the water in the reservoir from RL 519.60 M to 524.256M) to make use of additional water allocated to Upper Krishna Project by Government of Karnataka i.e. 130 TMC of water for irrigating 5,30,475 Ha under Stage-III.
- R & R for land acquisition, rehabilitation and resettlement of 22 villages and remaining part of Bagalkot Town which are likely to be submerged in backwaters of Almatti Reservoir.
- Three lift schemes from the foreshore of Almatti reservoir.
- Six schemes consisting of extension of existing canals (flow/lift) from Narayanpur Reservoir in Stage III schemes.

The proposed project will create an additional ayacut of about 5,30,475 Ha in 20 talukas in 7 districts of Karnataka. The existing rain fed agricultural land shall be

brought under irrigation in the command. The irrigation intensity is envisaged as 115%. The area to be brought under Irrigation in Stage-III schemes and the Districts and Taluk benefited are given as below:

No.	Schemes	Ayacut (ha)	Name of the District and Taluk	
			District	Taluk
Almatti				
1	Mulwad	227966	Bijapur	Bijapur, Muddebihal, B.Bagewadi,
2	Chimmalgi	87067	Bijapur	Bijapur, Muddebihal, B.Bagewadi, Sindagi and Indi
3	Koppal	48436	Koppal	Kushtagi, Koppal and Yelaburga
			Bagalkot	Badami and Hungund
			Gadag	Ron
4	Herkal	15344	Bagalkot	Bagalkot and Bilgi
	Total	**378813**		
Narayanpura				
1	NRBC Extension	61747	Raichur	Raichur and Devadurga
2	Indi LIS	20690	Bijapur	Sindagi and Indi
3	Rampur LIS	13923	Raichur	Lingsugur, Devadurga and Manvi
4	Mallabad	33730	Gulbarga	Jewargi,
			Yadgir	Shorapur, and Shahpur
5	Bhima Flank	21572	Yadgir	Shahpur
	Total	**151662**		
	Grand Total	**530475**		

The proposed Schemes under Stage-III will have water consumption of 625.68 mm which corresponds to 62,568 MCM (0.2209 TMC) per 1000 hectare of irrigated area (Equivalent to 4,526.28 Ha/TMC). This is based on the overall irrigation efficiency of 0.50 (50%).

Due to rising of FRL by 4.656 m, the additional land going to be submerged is 30,875 ha and 22 villages are to be rehabilitated. The total land going to be

submerged in the backwaters of the Almatti Reservoir is 74,742.15 ha. Out of 74,742.15 ha, 43,867.15 ha have already been acquired up-to FRL-519.60m. The total number of villages coming under submersion is 158 villages. Out of 158 villages, 136 villages have already been rehabilitated in Stage-I & II of UKP and remaining 22 villages are to be rehabilitated in Stage-III of UKP.

The total land to be acquired for the project is about 58,375 ha. The major proportion of land to be acquired is private land (57810.92 ha). About 564.08 ha of forest land is also to be acquired, which is coming under reservoir submergence. The land acquisition details for UKP-III are given as below:

S. No	Project Name	Forest Land (ha)	Revenue & Private Land (ha)	Total (ha)
1.	Dam & Reservoir	564.08	30310.92	**30875**
2.	Canal network, colony, roads, etc.	-	17500.00	**17500**
3.	Resettlement and Rehabilitation	-	10000.00	**10000**
	Total	**564.08**	**57810.92**	**58375**

Thus, total land requirement for the project is 58,375 ha out of which 57810.92 ha is private land and 564.08 ha is forest land.

During deliberations, EAC discussed the project background and legal status and issues pertaining to the two awards of Krishna Water Distribution Tribunal. The details as provided by Government of Karnataka are given as below:

- The Krishna Water Dispute tribunal –I (Bachawat Tribunal) constituted as per the inter State Water Disputes Act 1956- on 10th April 1969 gave its first report on 24th December, 1973 and further report containing the final order of the Tribunal on 27th May 1976. The Tribunal evolved two schemes namely, Scheme “A” and Scheme “B”.

Allocations to party States as per Scheme “A” are as follows:

State	Allocation (TMC)	Return Flow(TMC)	Total(TMC)
Maharashtra	560	25	585
Karnataka	700	34	734
Andhra Pradesh	800	11	811
Total	**2060**	**70**	**2130**

- Under Scheme "B", the water available above 2060 TMC, was proposed for distribution on percentage basis i.e. Maharashtra 25%, Karnataka 50% and Andhra Pradesh 25%. However, Scheme "B" was not made part of the final decision of the Tribunal.

- The Hon'ble Supreme Court in its order dated 25.04.2000 vide para 94 stated that construction of Almatti Dam with FRL of 524.256 m may not be feasible or permissible at this stage looking to the allocation of gross quantity of water to Karnataka state as per scheme A on the basis of 75% dependable availability of water per each water year as decided upon by the Tribunal. Any increase of the height beyond FRL 519 m may depend upon further allotment of water to Karnataka state by any subsequent decision of the Tribunal as and when constituted, as that would depend upon the implementation of proposed scheme "B" which up till now has not been elevated to the status of a binding decision of any water Disputes Tribunal.

- Supreme Court in its order Dated 25.04.2000 vide Para 173 has stated that the Almatti Dam and its upper limit can be placed at FRL 519 subject however, to clearances from the appropriate authority or authorities as required under the law. The raising the ultimate height at Almatti could be gone in to by the Tribunal upon assessment of the situation as placed by the riparian states and upon assessment of the apprehension of submergence and the apprehension of loss of kharif crop as well. The Supreme Court directed to look in to the matter if and when occasion arises as regards the allocation of water in the river Krishna basin totally uninfluenced by the observations made by the earlier Tribunal's view by reason of long lapse of time and availability of modern technology.

- Supreme Court in its order had stated that as and when action is initiated upon judgment, the tribunal or the authority appointed in consequence thereof, for the

purposes shall expedite the matter and ensure that the water and the public money is not wasted in the uncalled- for, avoidable and imaginary litigation. It is not disputed that in the absence of the reservoir system under Scheme- B as formulated by the Tribunal, a lot of water of the Krishna is wasted and permitted to submerge in the Bay of Bengal.

- Subsequently, as per the above, the States of Karnataka, Maharashtra and Andhra Pradesh through their respective letters of complaint requested the Central Government for constitution of a New water Disputes Tribunal to adjudicate the disputes arising in the river Krishna and the river basin. The state of Karnataka in its compliant raised an issue under specific matter of dispute "Whether the complainant state of Karnataka is entitled to raise the height of Almatti dam from FRL 519.60M to FRL 524.256M to enable it to utilize a part of its allocated share in the surplus waters?" The State of Maharashtra questioned the height of Almatti Dam on the basis of alleged submergence of its territory due to backwater effect. The state of Andhra Pradesh questioned the height of Almatti Dam on the basis that, it would be adversely affected due to shortage of flows during kharif season.

- On 2.4.2004 the Central Government constituted the Krishna Water Disputes Tribunal –II with Shri Justice Brijesh Kumar, Judge of the Supreme Court of India as Chairman and Shri S P Srivastava, Judge of the High court of Allahabad and Shri Justice D K Seth, Judge of High Court of Calcutta as Members.

After completion of Evidence by parties and submitting arguments and counter arguments, the Tribunal provided its report containing the Final orders on 30.12.2010.

- As per the award of the KWDT-II allocation of 2130 TMC (including return flows) made by KWDT-1 at 75% dependability is not disturbed.
- 177 TMC is allocated to Karnataka in surplus water. It can utilize 911 TMC in an average year and 799 TMC in 65% dependable year.
- Height of Almatti Dam can be raised to 524.256 m. 303 TMC can be utilized in an average year and 198 TMC can be utilized in 65% dependable year under UKP.The KWDT-II in its further report dated 29.11.2013 vide pg No. 415 Sl No 8.2(b) has awarded that Karnataka shall not utilize more than 194 TMC in a 65% dependable water year and not more than 303 TMC in an average year

from Upper Krishna Project which included allocation of 130 TMC for UKP Stage –III with reservoir level of Almatti Dam at 524.256M.

In light of the above, UKP Stage-III is proposed. UKP Stage–III envisages raising of FRL of Almatti dam from RL- 519.60 m to RL- 524.256 m in order to store and make use of additional water allocated to Upper Krishna Project by the KWDT-II i.e. 130 TMC of water for irrigating 5,30,475 Ha under Stage-III.

The EAC also heard the Principal Secretary, WRD of Government of Karnataka who informed that there is no embargo/ order of any court to restrict study on the project for considering its expansion.

Considering the above, the EAC recommended the award of TOR clearance for the project, with the following additional issues to be covered in the CEIA study:

- Disaster vulnerability of the area on various aspects like landslides, earthquakes and floods.
- Impacts of mining of materials for the project
- Impacts of backwater effects of the reservoir in flood season
- A table of 10 daily water discharges in 75% dependable year showing the intercepted discharge at the dam, the environmental and other flow releases downstream of the dam and spills shall be included in the EIA report
- Bio-diversity study to be conducted by a suitable institute as per OM of MoEF dated 28.05.2013
- Realistic assessment of requirement of labour during the construction phase of the project should be done and local labour should be preferred.
- The MoEF shall mention that the ToR clearance is given to only facilitate survey, investigation & data collection only as requested by Government of Karnataka. This ToR clearance will be subject to any court order/ direction in the matter.

Agenda Item No. 2.3 Lohit Basin Study in Arunachal Pradesh by M/s. WAPCOS Ltd- for discussions on Final Report.

The project has been deferred to next meeting on the request of consultant

Agenda Item No. 2.4 Pango H.E.P (96 MW) in the state of Arunachal Pradesh by M/s Meenakshi Siang Valley Power Pvt. Ltd. – For consideration ToR.

The project proponent made a detailed presentation of the project. It was noted that the project envisages construction of about 20 m high barrage across Sirapateng River (a tributary of Siang River near Migging village in Upper Siang District of Arunachal Pradesh to generate 96 MW of hydropower. This is a run-of-the-river scheme. Total land requirement is estimated as 40 ha including submergence area and the entire land is considered as forest land. Land ownership will be explored during detailed EIA study. Total catchment area at barrage site is 840 Sq.km. A surface power house is proposed on the right bank of the river with 3 units of 32 MW each. Total estimated project cost is about Rs. 834.8Crores (as per PFR).

The project site is approachable from Along-Migging-Tuting road at a distance of about 291 Kms from Along and 289 Km from Yingkiong, district head quarter of Upper Siang District. The nearest rail head is located at Nagoan (Assam) and nearest airport is at Leelabari North Lakhimpur (Assam).All the project components are located on the right bank of the Sirapateng river. The barrage site is proposed at a Latitude of 28^0 52′50" N and Longitude of 94^0 36'10″E.

There is no upstream project on Sirapateng river, however, immediate downstream Mirak HEP (141 MW) is planned, which has not been allotted yet for development. Based on the levels available for Mirak HEP, there is only 140 m of free flowing stretch between FRL of Mirak and TWL of Pango HEP. EAC observed that as and when Mirak will be allotted for development and they approach MoEF for scoping clearance it will be ensured that a minimum of 1 Km of free flowing river stretch is maintained.

EAC also observed that project does not fall within 10 Km of National Park or Wildlife Sanctuary, however, it is within buffer zone of Dibang Dihang Biosphere reserve.

Details of hydrology of Pango HEP were presented. Water availability series for Pango HEP project has been developed based on the 10 daily approved discharge

series at Jidu HE project site for the period 1978-79 to 2008-09. The 10-daily discharge series for the period 1978-79 to 2008-09 at Jidu HEP diversion site has been approved by CWC vide letter no. 2/ARP/64/CEA/2013-PAC/5269-71 dated 5.9.2013. The Catchment area characteristics for the Pango HE project catchment are almost similar to that of Jidu HEP catchment. Therefore, the 10-daily discharge series of Jidu HEP site has been transferred to Pango HE Project diversion site on catchment area proportion basis. EAC observed that Discharge in 90% (2004-05) and 50% dependable years (1986-87) are 1810 MCM and 2340 MCM respectively and corresponding to average annual rainfall over the catchment works out to be 2150 mm and 2785 mm in 90% and 50% dependable year. This appears to be on higher side. EAC further observed that catchment of Jidu and Pango is not similar in terms of snow contribution, which has not been taken into account, however, these issues will be reviewed in detail by CWC during the process of approval of hydrology.

The net head available for the project is estimated at 130 m after accounting for all losses at different components. The energy potential in 90% dependable year has been calculated and the capacity has been fixed at 96 MW. The project with a proposed installation of 96 MW (3 x32 MW) would afford an annual energy generation of 652.61GWh in a 90% dependable year.

The project is proposed to be completed in a time frame of about 5 years including 1 year for infrastructure works. The project is considered to be economically viable and its early execution is expected for providing much needed power benefits to Arunachal Pradesh.

EAC observed that project falls in Siang basin for which a cumulative impact assessment study has been completed recently. Some of the project parameters are different from the project parameters discussed in the CIA study, such as HRT length is reduced to 4 Km and land requirement has also been reduced to 40 ha from 70 ha. The Developer explained that data for CIA study was furnished during early 2013 and report was finalized during 2013. A detailed PFR of Pango HEP was finalized after completion of that study and effort has been made to optimize the project parameters wherever possible.

After the elaborated discussions, EAC recommended the project for scoping clearance with the following conditions:

i. A table of 10 daily water discharges in 90% dependable year showing the intercepted discharge at the barrage, the environmental and other flow releases downstream of the barrage and spill are to be provided in hydrology section of EIA.

ii. Muck disposal sites should be selected at least 30 m away from the bank corresponding to HFL of river/stream and shall be shown including location, quantity of muck to be deposited off vis -à-vis the total area for dumping in a clear map.

iii. Environmental flow release would be 20% of average of four months of lean period and 25% of flows during non-lean/ non-monsoon period corresponding to 90% Dependable year. The cumulative flow releases including spillage during monsoon period should be about 30% of the cumulative inflows during the monsoon period corresponding to 90% dependable year. This release will be subject to final recommendations of CIA study as and when accepted.

iv. Biodiversity study, which is a component of EIA study, is to be carried-out by associating a reputed organization as recommended by WII, Dehradun or by ICFRE, Dehradun. The list of Institutes is available on MoEF portal.

v. FC application form has to be submitted soon to appropriate authority and not later than 6 months from the date of issue of the TOR for this project. IA Division of MoEF shall be informed when such Application is submitted.

vi. Compensation for acquisition of the land, R & R plan and other applicable benefits shall be in line with the new “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act 2013” which is in force from 1.1.2014.

vii. Recommendation of the CIA study would be binding for compliance for this project once the same is accepted by MoEF.

Agenda Item No. 2.5 Subansiri Upper HEP (2000 MW) in Upper Subansiri District of Arunachal Pradesh by M/s. KSK Upper

Subansiri Hydro Pvt Ltd - For Extension of the Validity of TOR.

The Project proponent requested the Ministry for the extension of TOR validity for an additional period of one year in respect of Subansiri Upper HEP (2000 MW) in Arunachal Pradesh informing that EIA/EMP report could not be completed in time pending finalization of Reservoir Routing study report. The Ministry had granted TOR clearance to this project on 28.4.2011 with two years validity and later extension of TOR validity for 1 year up-to 27.4.2014 was granted. In this regard, the project proponent further presented the case and informed the following:

- The reservoir routing study report has been re-submitted after incorporating the comments of CWC relating to 10m flood cushion and regulated discharge from the dam, and the same is under examination at CWC.
- After acceptance of the reservoir routing study report, the proponent plans to complete the property & socio-economic survey and conclude EIA/EMP report by January 2015.
- Thereafter the proponent plans to conduct public hearing by March/April 2015.
- There has been no change in project parameters and thus no change in the scope of TOR already granted.
- The above activities would be completed in the next one year period and the proponent expects to submit final EIA/EMP within this time period.

Considering the above, EAC recommends extension of validity period for one more year (second and final extension) i.e. up to 27.4.2015 as total 4 years validity is permitted. EAC however, informed that this is the last extension and no further extension would be considered

Agenda Item No. 2.6 Dibang Multipurpose Project in Arunachal Pradesh by NHPC – For reconsideration of Environment Clearance.

The project proponent made a detailed presentation on the project. The Dibang Multipurpose Project (3000 MW) is proposed on River Dibang in Arunachal Pradesh. The project has been conceived with dual objectives i.e. flood moderation and electricity generation. The project involves two Districts of Arunachal Pradesh viz.

Lower Dibang Valley and Dibang Valley Districts. All the project components are located in Lower Dibang Valley District while reservoir will fall in both the Districts. Power house has been proposed on right bank, 250 m downstream of the dam axis. The key features of the project, as per TEC, are as under:

Location of Dam Site	1.5 km upstream of confluence of Ashu Pani with Dibang at Muni village
Catchment area	11276 sq km
PMF	26230 cumecs
Full reservoir level	EL 545 m
Area under submergence	40.09 km^2
Diversion tunnel	3 Nos., 12 m dia., horseshoe shaped
Dam	288 m high concrete gravity dam
Head Race Tunnel	6 Nos., 9 m dia., horseshoe shaped
Pressure Shaft	6 Nos., 7.5 m dia., circular
Power House	Underground / 3000 MW
Tail Race Tunnel	6 Nos., 9 m dia., horseshoe shaped
Annual Energy Generation	11330 MU
Project cost	Rs. 15886.39 crores (at Nov. 2007 PL)
Construction period	9 years from CCEA approval

Concurrence of CEA was obtained on 23.1.2008. PIB Clearance was obtained on 28.1.2008. During earlier presentation NHPC explained the following:

- Project was accorded Site Clearance Stage-I & Stage II in January 2004 and December 2004, respectively as per EIA Notification, 1994. Accordingly, the EIA study was undertaken and EIA & EMP reports prepared. Further, NHPC submitted the application along with EIA & EMP reports to Arunachal Pradesh State Pollution Control Board (APSPCB) for initiating Public Hearing in February 2007. Public hearing for Lower Dibang Valley District only was held on 29.01.2008, after its postponement for several times, and the same for another district i.e. Dibang Valley District, could not be conducted due to public agitation.

- Environmental clearance proposal was submitted by NHPC along with EIA & EMP reports and public hearing report of One District (i.e. Lower Dibang Valley District)

to MoEF on 26.12.2008 for accord of environmental clearance. Subsequently, MoEF vide letter dated 30.1.2009, intimated that extension of time for submission of project proposal under EIA Notification, 1994 has expired on 13.09.2008. Hence, the proposal for Environmental Clearance needs to be submitted as per the provision of revised EIA Notification, 2006. Accordingly, NHPC submitted proposal to MoEF on 27.5.2009 to MOEF for approval of TOR as per EIA Notification 2006. MoEF accorded clearance for pre-construction activities and approved the TOR for EIA study on 17.8.2009. The EIA & EMP reports, prepared earlier, were revised by NHPC as per the approved TOR and submitted to Arunachal Pradesh State Pollution Control Board (APSPCB) for initiating the fresh public hearing process in both the districts (i.e. Lower Dibang Valley and Dibang Valley) on 26.8.2010 and also submitted the above documents to MoEF on 3.9.2010 for initiating the process of public consultation. APSPCB tried to conduct the public hearings in October 2011, but the same was again postponed due to adverse law and order condition.

- NHPC, then pursued the matter with State Government, MoP and MoEF for conducting the public hearings through APSPCB. Finally, APSPCB successfully conducted the public hearings for Lower Dibang Valley on 11.3.2013 at Roing and for Dibang Valley District on 13.3.2013 at New Anaya. In both meetings, large number of people participated. EIA & EMP reports along with proceedings of public hearings were submitted to MoEF on 27.5.2013 for consideration and accord of environmental clearance.

- The project was earlier considered in the 68th EAC meeting held in 23rd September 2013 and various issues were raised. Subsequently, project was re-considered in the 73rd EAC meeting on 26th March 2014, where in the response of project proponents to the issues raised in 68th EAC meeting were discussed.

After critically examining the reply to various responses, the following emerged:

- The cost of private land in R&R plan to be revised in line with "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act, 2013".

- Impact of peaking operation of Dibang Project on Dibru-Saikhova National Park to be assessed.
- Representations have been received by MoEF from an NGO Kalpavriksh. Copies of the same were handed over to NHPC and was asked to give a point-wise reply to the same.
- In the 1.2 km diverted stretch, a quantum of 15 cumec water towards maintaining E-flow may be released.

The project proponent made the following responses to the above:

- The Revised R&R Plan as per the norms of The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act, 2013 has been prepared. As per this plan, the cost of compensation of land has been increased from Rs. 197.73 crore to Rs. 300.94 crore i.e. by Rs. 103.21 crore and cost of R&R Plan has been increased from 79.07 crore to Rs. 96.53 crore i.e. by Rs. 17.46 crore.

- The impact of peaking operation of Dibang Project on Dibru-Saikhowa National Park has been assessed using HEC RAS 4.1.0. Dibru-Saikhowa National Park is situated on the left bank of the river Brahmaputra in the extreme east of Assam. Brahmaputra River is mainly formed by confluence of three rivers namely Siang River, Dibang River and Lohit River. Dibru-Saikhowa National Park is located about 75 km downstream of Dibang dam site.

- During monsoon season, due to availability of high discharge in the rivers, Dibang Multipurpose Project shall operate through most part of the day to produce the power and thus there will not be much flow variation downstream of the project due to regulation for power generation. During lean season months, i.e. from November to February, when river discharges reduce considerably, the project may operate at peaking capacity for 3-3.5 hours two times in a day. Project will release 15 cumec as environmental flows from dam in stretch between dam and TRT outlet which shall be further supplemented by release of water by the operation of at least one turbine at 80% load continuously throughout the year. It was informed that fluctuation in the water level at upstream of Dibang-Lohit confluence due to

peaking operation will be about 17 cm which is almost negligible considering the size of the river.

The point-wise reply to the two representations submitted by Kalpavriksh was submitted to MoEF and EAC members and the same was also presented before EAC during the meeting.

After detailed deliberations, the EAC asked NHPC to provide the following additional information:

- Impact of flood moderation due to Dibang Multipurpose Project be assessed through a detailed modelling study,
- Top-flow width, depth and velocity of flow in the 1.2 km stretch between dam and TRT outlet corresponding to 15 cumec flow.
- Top-flow width, depth and velocity of the flow in the lean season during peaking scenario between TRT outlet and confluence of Dibang river with Lohit river,
- Cumulative impact of peaking operation of Lower Siang HEP, Dibang Multipurpose Project and Lower Demwe HEP on Dibru-Saikhowa National Park to be assessed through modelling.

The project will be considered on receipt of the response to the above.

Agenda Item No. 2.7 Rego Hydro Electric Project (82.8 MW) in West Siang District of Arunachal Pradesh by M/s Greenko Rego Hydro Projects Pvt. Ltd.- For consideration of ToR.

The project proponent made a detailed presentation. It was noted that this project was earlier allotted to Tuff Energy and Scoping Clearance for this project was accorded vide MoEF letter No. J.12011/46/2008-IA dated January 14, 2009. Later proponent had surrendered the project to state government and it was re-allotted to Greenko Energies. The Memorandum of Agreement was executed between Government of Arunachal Pradesh and M/s Greenko Energies Pvt. Ltd. for developing Rego Hydro Electric Project on Yargyap Chu River in West Siang District of Arunachal Pradesh on 25-09-2012. An SPV was incorporated by name of Greenko Rego Hydro Projects Pvt. Ltd on 24-03-2014 for implementing the project.

Rego HEP is located on river Yargyap Chu in West Siang District of Arunachal Pradesh. It envisages construction of an intake and an underground powerhouse on the left bank of Yargyap Chu near Rego village. Kangtangshiri is upstream of Rego and Rapum is downstream of Rego HEP. The nearest town is Mechuka, which is around 32 km from Indo-China international border, in West Siang District of Arunachal Pradesh. The access to the project site is through Along-Mechuka road maintained by BRO. Along, the district headquarters of West Siang is well connected with the railhead at Shilapathar by National Highway 52. Dibrugarh, which is the nearest airport for Rego HEP, is around 377 km from Mechuka via river ferry.

The project proponent explained that during the feasibility study, Rego HEP has been proposed to develop as tailrace development scheme of Kangtangshri HEP. The project area is in deep gorge with steep slopes and because of this typical topography there is no possibility of generating enough storage for the project. Construction of diversion structure just 500 m downstream of Kangtangshiri tail race will not give any added advantage to the Rego project. Hence, whatever storage available for the upstream project will be utilized for this project also. It was further discussed that Rego has 1.13 Km long HRT; and together with Kangtangshiri river length affected is just about 3 Km. Contribution of intermediate catchment of Kangtangshiri will remain in river in the absence of diversion structure at Rego. Deletion of diversion structure has its advantages from environmental considerations – i.e. no submergence of land, reduction in land requirement of the project, lesser muck generation, deletion of one additional obstruction in the flow of river thus allowing unobstructed movement of aquatic life in the reach. Keeping the technical and environmental viability of the tail race scheme, an approval has been obtained from Department of Power, GoAP vide letter no. PWRS/E- 1681/2008/Vol-III/4217-18 dated 2.8.2013 for the tailrace scheme with FRL&TWL of EL 1805 m & EL 1685 m respectively.

The land required for the project has been estimated as 27.31 ha. No displacement of villages/ local population in the project area is foreseen due to project construction.

The hydrology for Rego HE Project is same as that of Kangtangshiri HE Project. Therefore the approved water availability series at Kangtangshiri Diversion

Site has been adopted for Rego HEP. The tail water from Kangtangshiri powerhouse is collected in a tail race pond. The intake for Rego HE Project is proposed from this tailrace pond, thus avoiding any hydraulic structure across the river. Since there is no hydraulic structure across the river for Rego HE Project, the catchment area for Rego HE Project is same as that of Kangtangshiri HE Project. The CWC approved inflow series at Kangtangshiri intake has been utilized as it is for Rego HE Project.

EAC enquired about the status of the project based on one observation received, which stated that in the annual report of Greenko for the year 2013, which is published on their website, Rego HEP is listed as under construction project. The developer explained as per the company policy, they classify the projects in two categories only - one is operational projects and second is projects under construction. All projects which are commissioned are considered as operational projects. Projects which are in various stages like investigation stage, DPR stage, Clearance stage etc are considered as projects under construction. The EAC suggested that the projects which are under investigation should be shown separately under different heads to avoid any confusion.

After the elaborated discussions, EAC recommended the project for scoping clearance with the following conditions:

i. Impact of HEPs planned/situated at upstream and downstream projects shall be taken into account in EIA/EMP. Downstream impact assessment study shall be conducted appropriately by project proponent.

ii. A table of 10 daily water discharges in 90% dependable year showing the intercepted discharge at the dam, the environmental and other flow releases downstream of the barrage and spill are to be provided in hydrology section of EIA. As this is a tailrace development scheme of Kangtangshri HEP; stretch considered should be from diversion of Kangtangshri HEP up to tail water discharge of Rego HEP.

iii. Muck disposal sites should be selected at least 30 m away from the bank corresponding to HFL of river/stream and shall be shown including location , quantity of muck to be deposited off vis -à-vis the total area for dumping in a clear map.

iv. As there is no separate diversion site for Rego HEP, environmental flow release would be same as is recommended for Kangtangshri during appraisal of Kangtangshri HEP for environment clearance. This release will be subject to final recommendations of CIA study as and when accepted.

v. Biodiversity study, which is a component of EIA study, is to be carried-out by associating a reputed organization as recommended by WII, Dehradun or by ICFRE, Dehradun. The list of Institutes is available on MoEF portal.

vi. FC application form has to be submitted soon to appropriate authority and not later than 6 months from the date of issue of the TOR for this project. IA Division of MoEF shall be informed when such Application is submitted.

vii. Compensation for acquisition of the land, R & R plan and other applicable benefits shall be in line with the new "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act 2013" which is in force from 1.1.2014.

viii. Recommendation of CIA study shall be bindings on the project one the same is accepted by MoEF.

ix. There should be ensured release of environmental flow from the upstream projects as recommended by EAC.

Agenda Item No. 2.8 Kiru (660MW) Hydroelectric Project in District Kishtwar of Jammu & Kashmir by M/s Chenab Valley Power Projects(P) Ltd.- For consideration of Environmental Clearance.

The project proponent made a detailed presentation on the project. The EAC noted that the Chenab Valley Power Projects (P) Ltd. (CVPP) is a Joint Venture Company with share holding of NHPC Ltd (49% share), JKSPDC Ltd (49% share) and PTC (India) Ltd (2% share). The company has been entrusted with execution of Pakal Dul HEP (1000 MW), Kiru HEP (660 MW) and Kwar HEP (560 MW) projects in Jammu & Kashmir in Chenab Basin on BOOM basis.

It was noted that the Kiru HEP (660 MW) project is proposed on river Chenab near village- Kiru in District Kishtwar of J&K State and is about 40 Km from Kishtwar

on Kishtwar-Paddar Road to generate 660 MW of hydropower. The project envisages construction of a 123 m high & 193 m long concrete gravity dam above the river bed across river Chenab at village Kiru with four intakes, four pressure shafts, an underground powerhouse of 4 units of 165 MW each. The damming of river will lead to formation of an impoundment covering an area of 1.03 Km^2 extending up-to about 6.5 km upstream of dam.

The catchment area up-to diversion site (dam) is 10225 Km^2. The average annual rainfall is 838 mm at Benzwar G&D site (near Dul dam) and 1000 mm for entire Chenab basin with average annual yield of 12558 Mcum. The Design Flood (PMF) of 7450 cumec at diversion site had been adopted in DPR and the same has been updated to 10196 cumec and approved by CWC during scrutiny process. The main components of the project, as envisaged in DPR, are as under:

- The proposed site for the construction of dam is located near village Kiru, in District Kishtwar. The average river bed level at the dam site is about EL 1394 m. Corresponding to an FRL of 1515 m, the gross storage of the reservoir is 41.50 Mcum and area under submergence shall be 1.03 Km^2 .
- A 135 m high (above deepest foundation) and 193 m long (at top) Concrete gravity dam.
- U/s & D/s coffer dams (rock fill with central clay core).
- 1 no. 9.0 m dia. and 700 m long horse shoe shaped diversion tunnel.
- Reservoir with gross storage of 41.50 M.cum at FRL & 10.50 M.cum at MDDL and having submergence area of 1.03 Km^2.
- 4 nos. intakes with gated structure & 4 nos. 5.7 m dia and length varying from 316 m to 322 m long, underground circular steel lined pressure shafts/penstocks.
- 4 nos. 7.0 m dia horse shoe shaped concrete line TRT of lengths varying from165 m to 190 m.
- An underground powerhouse is proposed on the left bank of the river near village Kiru with 4 units of 165 MW each
- With an installed capacity of 660 MW, the annual energy generation in 90% dependable year shall be 2301.81 MU.
- The total cost of project is estimated to be Rs. 4068.13Crores at Jan'2012 PL.

The Scoping/TOR clearance for Kiru HEP (600 MW) was granted on 9.9.2008 in favour of NHPC. The EIA studies have been undertaken as per the Terms of Reference approved by Expert Appraisal Committee (EAC) of Ministry of Environment & Forests, Government of India. Field surveys and investigations for EIA studies were carried out in the year 2011 during March-April (summer), July (Monsoon), September (Post monsoon) and December (winter). The socio-economic survey was re-conducted during March – April 2013. Based on water availability series during preparation of DPR, installed capacity of the project has increased from 600 MW to 660 MW; for which DPR was prepared and submitted to CEA. Draft EIA and EMP reports prepared were of 660 MW and reports along with Executive Summary, were submitted to J&K State Pollution Control Board (SPCB) by CVPP in August 2013. Public Hearing was conducted by J&K SPCB on 30.10.2013 at village Kiru and the detailed report on proceedings of public hearing was submitted by J&K SPCB vide letter dated 11.12.2013 to MOEF. Final EIA & EMP reports along with proceedings of public hearing have been submitted to MoEF on 29th March 2014 for consideration of Environmental Clearance for the Kiru Project.

The committee observed that Scoping/TOR clearance was accorded on 9.9.2008 and was valid till 08.09.2012. Neither CVPP nor NHPC has approached MoEF for fresh scoping on completion of 4 year scoping period. Further, capacity of project was enhanced from 600 MW (at the time of Scoping/TOR clearance) to 660 MW for which draft EIA EMP reports were prepared, Public Hearing was conducted and final report submitted to MoEF for appraisal. Revised scoping clearance for change in installed capacity was also not obtained.

The CVPP explained that during the process of approval of DPR, CEA has fixed the installed capacity as 624 MW instead of 660 MW and following changes have taken place:

S. No.	Updation in parameter	Change in Design (from DPR)
1.	Water availability series.	i. Average Annual Yield updated from 12558 Mcum to 12918 Mcum.
		ii. Installed capacity optimized from 660 MW to 624 MW.

		iii. Average Annual Energy Generation in 90% dependable year updated from 2301.81 MU to 2365.47 MU.
2.	Design Discharge per unit modified from 154.9 cumec to 146.2 cumec.	i. Diameter of Penstock modified from 5.7m to 5.5m
		ii. Size of intake modified from 5.7m x 5.7m to 5.5m x 5.5m
3.	Design Flood Discharge modified from 7450 cumec to 10196 cumec.	Change in Gate sizes/spillway layout.
4.	Diversion Flood updated from 998 cumec to 1033 cumec.	Upstream Coffer Dam height increased by 2.0 m.

Regarding the forest clearance, the project proponent explained that proposal for diversion of 82.05 ha forest land has been approved by J&K State Forest Advisory Committee in its 78th meeting held on 22.08.2013. The government sanction for use of forest land for non-forestry purpose shall be issued by J&K State Government after the submission of requisite amount by CVPP. The demand letter to this effect has also been issued by Forest Department on 12.02.2014 and the process for payment has already been initiated.

The committee also enquired about the free flowing river stretch and provision of environment flow. A longitudinal profile of Chenab river was presented which showed that about 1 Km of free flow river stretch is available with upstream Kirthai-II project. However, on downstream with Kwar HEP proposed by CVPP, free flow stretch is about 400 m only. Regarding the environment flow, it was informed that as this is a dam toe project and about 500 m of river stretch will be affected from the edge of plunge pool to tail water discharge point. A provision of 9 cumec of environment flow, which is about 12% of lean season average discharge, has been made in the DPR to be continuously released throughout the year.

The committee observed that as the downstream project is also with CVPP, they need to explore the option of reducing the FRL of downstream project to ensure about 1 Km of free flow river stretch between these two projects. Further the provision of environment flow is not adequate and developer needs to undertake a study to assess the adequacy of the environment flow requirement even if the affected stretch is about 500 m only.

After detailed discussion on the project, the committee concluded the discussion with following observations:

- As the final capacity approved by CWC is 624 MW, a fresh TOR for 624 MW will be issued. As the data collected is just about 3 years old at the time of consideration of project by EAC; same baseline data may be used for updating EIA/EMP study. However, consultant should update the data at least with one season field data collection.

- On updating the data and preparation of revised EIA/EMP study for 624 MW capacity, a fresh Public Hearing needs to be conducted for updated report and within the validity of scoping clearance. It was also noted that Public Hearing was conducted in 2013, after the expiry of ToR validity period.

- Free flow river stretch of about 1 Km should be maintained between FRL and TWL of downstream and upstream projects. For this, project parameters may have to be altered/ modified.

- Environmental flow release would be 20% of average of four months of lean period and 25% of flows during non-lean/non-monsoon period corresponding to 90% Dependable year. The cumulative flow releases including spillage during monsoon period should be about 30% of the cumulative inflows during the monsoon period corresponding to 90% dependable year. Environment flow should be decided based on scientific study, keeping in view the requirement throughout the year and final capacity decided based on the environment flow provisions. Option of a dam toe turbine can also be explored. The Ministry, may however, take an appropriate view on the environmental flow as the project/ river comes under Indus water treaty.

- The transfer of Scoping/TOR clearance from M/s. NHPC Ltd to M/s. Chenab Valley Power Projects (P) Ltd should be submitted to MoEF and necessary permission/NOC for the same may be obtained, if required.

- An Index sheet to be added in the EIA report showing compliance of all ToR conditions indicating pages (numbers) where compliance are available.

- It may be required to apply for a fresh ToR by the Developer as ToR validity has expired.

Agenda Item No. 2.9 **Kwar (560MW) Hydroelectric Project in District Kishtwar of Jammu & Kashmir by M/s Chenab Valley Power Projects (P) Ltd.- For consideration of Environmental Clearance.**

It was explained that Chenab Valley Power Projects (P) Ltd. (CVPP) is a Joint Venture Company with share holding of NHPC Ltd (49% share), JKSPDC Ltd (49% share) and PTC (India) Ltd (2% share). The company has been entrusted with execution of PakalDul HE Project (1000 MW), Kiru HE Project (660MW) and Kwar HE Project (560MW) in Chenab Basin on BOOM basis.

Kwar H.E. Project is proposed on river Chenab near village- Padyarna in district Kishtwar of J&K State and is about 30 Km from Kishtwar on Kishtwar-Paddar Road. The nearest rail head is at Udhampur (210 Km) and nearest airport is at Jammu (270 Km). The project site can be reached from Jammu through National Highway-1A upto Batote, through NH-1B from Batote to Kishtwar and further from Kishtwar on Kishtwar-Paddar road.

The project envisages construction of a 109 m high concrete gravity dam above the river bed across river Chenab at village Padyarna with four intakes, four pressure shafts, an underground powerhouse of 4 units of 140 MW each. The damming of river will lead to formation of an impoundment covering an area of 0.8 Km^2 extending upto about 6.7 km upstream of dam.

The catchment area upto diversion site (dam) is 10325 Km^2. Average annual rainfall is 838mm at Benzwar G&D site (near Dul dam) and 1000mm for entire Chenab basin with average annual yield of 12681 Mcum. The Design Flood (PMF) of 7600 cumec at diversion site has been adopted in DPR.

Main components of the project, as envisaged in DPR, are as under:

- A 109 m high (above deepest foundation), 195 m long (at top) Concrete gravity dam.

- U/s & D/s coffer dams (rock fill with central clay core).

- 1 no. 9.5 m dia. horse shoe shaped diversion tunnel of length of 685m.

- Reservoir with gross storage of 27.167 M.cum at FRL& 9.16 M.cum at MDDL and having reservoir area at FRL 0.8 Km^2.

- 4 nos. Power Dam Intakes with gate arrangement.

- 4 nos. 5.65 m internal dia underground circular steel lined penstocks/pressure shafts with vertical length varying from 54 m to 93 m and total length (excluding vertical) varying from 108 m to 182 m.

- An underground power house of cavern size 140.00 m x 23.30 m x 50.0 m to accommodate 4 units of 140 MW each.

- 2 nos. 9.50 m diahorse shoe shaped concrete line TRT's of lengths 2676 m and 2883 m.

- The average river bed level at dam site is about EL 1290 m. Corresponding to an FRL of 1385.0 m, the gross storage of the reservoir is 27.167 Mcum and area under submergence is 0.8 Km^2.

- Underground powerhouse is proposed on the right bank of the river near village Padyarna.

- The water from the reservoir would be taken to powerhouse through pressure shafts/ penstocks and discharged through tail race tunnels (TRT) back into the river course.

- With an installed capacity of 560 MW, the annual energy generation in 90% dependable year shall be 1976.84 MU.

- The total cost of project is estimated to be Rs. 4375.50 Crores at Jan'2012 PL.

The scoping clearance for Kwar H.E. Project (520 MW) along with TOR for EIA and EMP studies was granted by MoEF in favour of NHPC on 17.03.2010. The EIA studies have been undertaken as per the Terms of Reference approved by Expert Appraisal Committee (EAC) of Ministry of Environment & Forests, Government of

India.Field surveys and investigations for EIA studies were carried out in the year 2010-11 during March-April (summer), July (Monsoon), September (Post monsoon) and December (winter). The socio-economic survey was re-conducted during March – April 2013.

Based on updation of water availability series during preparation of DPR, installed capacity of the project has increased from 520 MW to 560 MW; for which DPR was prepared and submitted to CEA. Draft EIA and EMP reports prepared were of 560 MW and reports along with Executive Summary, were submitted to J&K State Pollution Control Board (SPCB) by CVPP in August 2013. Public Hearing was conducted by J&KSPCB on 28th October 2013 at village Padyarna and the detailed report on proceedings of public hearing was submitted by J&KSPCB vide letter dated 11.12.2013 to MOEF. Final EIA&EMP reports along with proceedings of public hearing have been submitted to MoEF on 15th March 2014 for consideration of Environmental Clearance for the Kwar Project.

EAC observed that Scoping Clearance was accorded on 17.03.2010 and was valid till 16.03.2014. Public Hearing and submission of final report for appraisal was done within the validity of scoping clearance. Installed Capacity of project was enhanced from 520 MW (at the time of Scoping Clearance) to 560 MW for which draft EIAEMP reports were prepared, Public Hearing conducted and final report submitted to MoEF for appraisal. Revised scoping clearance for change in installed capacity was not obtained.

CVPP further explained that the following data/parameters have been updated by CEA/CWC during the scrutiny process:

S. No.	Updation of parameter	Updation (After DPR submission)
1.	Water availability series.	Average Annual Yield updated from 12681 Mcum. to 13044 Mcum.
3.	Design Flood Discharge updated from 7600 cumec to 10534 cumec.	Modification in Gate sizes/spillway layout.
4.	Diversion Flood updated from 1020 cumec to 1041 cumec.	Increase in upstream Coffer Dam height.

Regarding the forest clearance, proponent explained that proposal for diversion of 29.75 ha forest land has been approved by J&K State Forest Advisory Committee in its 81st meeting held on 09.12.2013. The government sanction for use of forest land for non-forestry purpose shall be issued by J&K State Government after the submission of requisite amount by CVPP. The demand letter to this effect has also been issued by Forest Department on 25.02.2014 and the process for payment has already been initiated.

EAC also enquired about the free flowing river stretch and provision of environment flow. A longitudinal profile of Chenab river was presented which showed that about 760 m of free flow river stretch is available with downstream Dulhasti HEP, which is a commissioned project. However, on upstream, with Kiru HEP proposed by CVPP, free flow stretch is about 400m only. Regarding the environment flow, it was informed that as this is a dam toe project and about 2.6 Km of river stretch will be affected from the edge of plunge pool to tail water discharge point. A provision of 9.5cumec of environment flow, which is about 12% of lean season average discharge, has been made in the DPR to be continuously released throughout the year.

EAC observed that as the upstream project is also with CVPP, they need to explore the option of reducing the FRL of Kwar HEP to ensure about 1 Km of free flow river stretch between these two projects. Further the provision of environment flow is not adequate and developer needs to undertake a study to assess the adequacy of the environment flow requirement for the affected stretch of about 2.6 Km.

EAC concluded the discussions with the following recommendations/ observations:

- The final approved capacity of the project is 560 MW, for which Public Hearing is conducted and final EIAEMP reports prepared and submitted to MoEF within the validity of scoping clearance. As such, a fresh Public hearing may not be needed in this case. However, project proponent shall submit if there has been any variation in project parameter such as dam height, submergence area etc. as capacity has been enhanced to 560 MW.

- Free flow river stretch of about 1 Km should be maintained between FRL and TWL of downstream and upstream projects and Environment flow should be decided based on scientific study, keeping in view the requirement throughout the year. Till such time, 20%, 25% and 30% norms during lean, non-lean & non-monsoon& monsoon seasons to be followed by the Developer. The Ministry, may however, take an appropriate view on the environmental flow as the project/ river comes under Indus water treaty.

- Provision of free flow stretch and environment flow requirement may lead to change of installed capacity and revision of EIAEMP report. This needs to be explained accordingly.

- A fresh TOR will be issued to complete the above work and prepare the EIAEMP report for the final approved installed capacity within the validity of scoping clearance. As the data collected is just about 3 years old at the time of consideration of project by EAC; same baseline data may be used for updating EIAEMP study.

- The project proponent may have to apply for a fresh scoping clearance for revised capacity of 560 MW accordingly.

Agenda Item No. 2.10 Talong Londa HEP (225 MW) in Arunachal Pradesh by M/s. GMR Pvt. Ltd - For Extension of validity of ToR.

The TOR for Talong HEP (225 MW) in East Kameng District of Arunachal Pradesh was accorded on 10.8.2010 and 2 years initial validity period ended on 9.8.2012. The MoEF subsequently granted 1 year extension for TOR which again ended on 9.8.2013. Thereafter, the Ministry granted further extension for 1 year i.e from 9.8.2013 to 9.8.2014 to facilitate submission of EIA/EMP reports.

The project proponent submitted a request for extension of the validity of TOR for 1 more year with reasons that there is delay in conducting Public Hearing by Arunachal Pradesh State Pollution Control Board (APSPCB). The delay is reportedly

due to model code of conduct in Arunachal Pradesh because of General Elections in the country.

The EAC noted that the extension of the TOR validity is up-to 9.8.2014 and there is no convincing reasons to consider the case for extension of the validity of TOR for the project at this stage. There is sufficient time to hold Public Hearing by APSPCB before August, 2014. Therefore, the committee did not consider the case fit for extension of the validity of TOR at this juncture for Talong HEP (225 MW) in East Kameng District of Arunachal Pradesh.

Appendix

List of EAC members and Project Proponents who attended 74th Meeting of Expert Appraisal Committee for River Valley & Hydro Electric Power Projects held on 5– 6th May, 2014 in New Delhi

A. Members of EAC

1.	Shri Alok Perthi	-	Chairman
2.	Dr. Vijay Kumar	-	Member
3.	Shri Hardip Singh Kingra	-	Member
4.	Shri N. N. Rai	-	Member
5.	Shri B. B. Barman	-	Member Secretary & Director, MoEF
6.	Dr. P. V. Subba Rao	-	MoEF

B. Mawphu HE Project (85 MW), Stage-II, Meghalaya by M/s North Eastern Electric Power Corporation Ltd.- For consideration of TOR.

1.	Shri G. D. Singh	-	President
2.	Shri P. C. Pankaj	-	CMD
3.	Shri U. Moral	-	Director
4.	Shri N. K. Mao	-	General Manager
5.	Shri D. S. Rai	-	HOP
6.	Shri K. Deb	-	Senior Manager
7.	Shri S. C. Sud	-	Consultant
8.	Shri M. K. Gupta	-	Sr. DGM
9.	Dr. Aman Sharma	-	General Manager

C. Upper Krishna Project Stage-III on Krishna River, Karnataka by M/s Krishna Bhagya Jala Nigam Ltd. – For consideration of TOR.

1.	Shri C. Anantharamu	-	Chief Engineer
2.	Shri Naresh H. C.	-	Technical Assistant
3.	Dr. Aman Sharma	-	General Manager
4.	Shri Rakesh Kumar	-	Engineer

D. Lohit Basin Study in Arunachal Pradesh by M/s. WAPCOS Ltd- for discussions on Final Report.

Deferred

E. Pango H.E.P (96 MW) in the state of Arunachal Pradesh by M/s Meenakshi Siang Valley Power Pvt. Ltd. – For consideration ToR.

1. Shri B. Srinivas	-	Director
2. Shri P. V. Prasad	-	General Manager
3. Shri Ravinder Bhatia	-	Director, RS Technologies
4. Shri S. K. Kathuria	-	Consultant

F. Subansiri Upper HEP (2000 MW) in Upper Subansiri District of Arunachal Pradesh by M/s. KSK Upper Subansiri Hydro Pvt Ltd. For Extension of the Validity of TOR.

1. Shri S. K. Dutta	-	Add. Vice President
2. Shri M. Balakrishna	-	Sr. General Manager
3. Dr. Acharyulu	-	Manager
4. Shri Tarakesh Swain	-	Assistant Manager
5. Shri C. S. Krishna	-	Dir. General Manager

G. Dibang Multipurpose Project in Arunachal Pradesh by NHPC – For reconsideration of Environment Clearance.

1. Dr. Shahid Ali Khan	-	Chief (Environment)
2. Mrs. Manjusha Mishra	-	Manager
3. Shri V. K. Maini	-	General Manager
4. Shri A. K. Sarkar	-	Executive Director
5. Shri Rahul Shrivastava	-	Environment Officer
6. Dr. Aman Sharma	-	General Manager
7. Dr. Ajay Kumar Jha	-	Assistant Manager
8. Shri Y. K. Chaubey	-	Chief Engineer
9. Shri Rajeev Baboota	-	Chief Engineer

H. Rego Hydro Electric Project (82.8 MW) in West Siang District of Arunachal Pradesh by M/s Greenko Rego Hydro Projects Pvt. Ltd.- For consideration of ToR.

1. Shri Gopi Krishna Nikku	-	Manager
2. Shri R. Ganesh Babu	-	Sr. Manager
3. Shri P. V. Padmanabham	-	Consultant
4. Shri Tarun Rajvanshi	-	Env. Engineer
5. Shri Jitendra Chaubey	-	Managing Consultant
6. Shri Arun Bhaskar	-	Director
7. Shri Ravinder Bhati	-	Director
8. Shri Praveen Kumar	-	Principal Engineer

I. Kiru (660MW) Hydroelectric Project in District Kishtwar of Jammu & Kashmir by M/s Chenab Valley Power Projects(P) Ltd.- For consideration of Environmental Clearance.

&

J. Kwar (560MW) Hydroelectric Project in District Kishtwar of Jammu & Kashmir by M/s Chenab Valley Power Projects (P) Ltd.- For consideration of Environmental Clearance..

1.	Shir Navin Singh	-	Managing Director
2.	Shri Rajeev Sachedeva	-	General Manager
3.	Shri Vineet Goyal	-	Manager
4.	Shri Naseer Ahmad Dhar	-	General Manager
5.	Shri Ghulam Mohd. Bhatt	-	General Manager
6.	Shri Keshav Deshmukh	-	Chief Engineer
7.	Shri A. Dasgupta	-	Chief
8.	Dr. Anil K. Raina	-	Professor, University of Jammu
9.	Shri P. K. Gupta	-	General Manager
10.	Shri Rajeev Baboota	-	Chief Engineer
11.	Mrs. Manjusha Mishra	-	Manager
12.	Shri T. J. Bhattacharya	-	Consultant
13.	Shri Akash Seth	-	Environment Officer
14.	Shri Naseer Ahmad	-	Environment Officer
15.	Dr. Ravi Sharma	-	Assistant Manager
16.	Shri Lovkesh Ahuja	-	Assistant Engineer
17.	Shri Arun Bhaskar	-	Director
18.	Shri Ravinder Bhatia	-	Director

K. Talong Londa HEP in Arunachal Pradesh by M/s. GMR Pvt. Ltd. For Extension of validity of ToR.

1.	Shri Prabir Deshmukh	-	Associate Manager
2.	Shri Tarun Mahajan	-	Executive

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North Eastern Electric Power Corporation Ltd.
(A Govt. of India Enterprise)
Office Of The General Manager(C) (Investigation Division)-II
(Assam, Meghalaya & Manipur)
Head of Project
Mawphu H. E. Project- Stage-II (75MW)
Mawsynram - 793113. Mobile No.9436256821.

NO. NEEPCO/HOP/Mawphu/T-27/2014-15/ 1306 dtd. 06.05.2014

To,

The Director (Impact Assessment)
River Valley Projects,
Ministry of Environment and Forests,
Paryavaran Bhawan,
CGO Complex, Lodhi Road
New Delhi –110003

Sub : TOR Clearance Of Mawphu H.E. Project (75 MW) Stage-II.

Sir,

With reference to the above, enclosed please find herewith the response to issues raised during 65th EAC meeting held in March 2013, Application for stage-I Forestry Clearance submitted to Divisional Forest Officer, East Khasi Hills District, Meghalaya, Response to comments of SANDRP on Mawphu Hydro Elecric Project, Stage –II an Additional TORs to be covered in the CEIA Report at Annexure –I, II, III & IV respectively.

This is for favour of your kind information please.

Yours faithfully,

D.S.Rai 06/05/2014

(D.S. Rai)
GM(CIVIL) & Head Of Project,
Mawphu H.E. Project, Stage-II,
NEEPCO Ltd, Mawsynram,
Meghalaya, PIN – 793113
Camp:- New Delhi.

KRISHNA BHAGYA JALA NIGAM LIMITED
(A Govt of Karnataka Undertaking)
Office of the Chief Engineer,
KBJNL, Dam Zone, Almatti. 586201,
Bljapur Dist, Karnataka.
Camp: New Delhi.

No:KBJNL/CEA/AE- 2 /Stage-III/MoEF/EIA/ 2014-15/ **Date:06.05.2014**

To,

Mr. B.B. Burman,
Director (EIA)& Member Secretary(EAC)
Ministry of Environment and Forests
Government of India
Paryavaran Bhawan
CGO Complex, Lodhi Road
New-Delhi-110003

Sub: Prior Environmental Clearance of Upper Krishna Project – Stage III on Krishna River, Karnataka.

Sir,

With reference to the above, application for Prior Environmental Clearance and approval of TOR for the purpose of conducting EIA study of Upper Krishna Stage –III on Krishna River, Karnataka was considered and deliberated in the 74th EAC meeting held on 05.05.2014.

During deliberations, it was asked by the committee to provide additional information on rising of the FRL of Almatti Dam from RL 519.60 m to 524.256 m. In light of the above, it is to submit as under.

1. The Krishna Water Dispute tribunal –I (Bachawat Tribunal) constituted as per the inter State Water Disputes Act 1956- on 10th April 1969 gave its first report on 24th December, 1973 and further report containing the final order of the Tribunal on 27th May 1976. The Tribunal evolved two schemes namely, Scheme "A" and Scheme "B".

Allocations to party States as per Scheme "A" are as follows:

State	Allocation (TMC)	Return Flow(TMC)	Total(TMC)
Maharastra	560	25	585