

MINUTES OF THE 58th MEETING OF EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDRO POWER PROJECTS

The 58th Meeting of the Expert Appraisal Committee for River Valley and Hydro Power Projects (EAC) was held on 1st -2nd June, 2012 in SCOPE Convention Centre, Opp. Jawahar Lal Stadium, Lodhi Road, New Delhi. The meeting was chaired by Shri Rakesh Nath. Dr. B. P. Das and Dr. Praveen Mathur could not attend the meeting due to preoccupation. The list of EAC Members and Officials from various Projects who attended the meeting is enclosed at Annexure-1.

After welcoming the Members, the following Agenda items were taken up for discussion-

1st June, 2012

1. Agenda Item No. 1: Welcome by Chairman and Confirmation of Minutes of 57th Meeting held on 27-28th April, 2012.

There were no comments from the members hence, the minutes were confirmed.

2. Consideration of Project Proposals for Scoping and Environment Clearance

The following project proposals were considered-

- 2.1 Pale Parmar Nalla Project under the Tillari Hydropower Project Phase-II on Pale Parmar Nalla in Kolhapur District of Maharashtra by Water Resource Development Department, Government of Maharashtra - for TORs.**
- 2.2 Bhandora Nala Project under the Tillari Hydropower Project Phase-II on Bhandora Nala in Kolhapur District of Maharashtra by Water Resource Development Department, Government of Maharashtra - for TORs.**
- 2.3 Bandra Nala Project under the Tillari Hydropower Project Phase-II on Bandra Nala in Kolhapur District of Maharashtra by Water Resource Development Department, Government of Maharashtra - for TORs.**

To augment generation capacity of the existing Tillari 60 MW Hydro Electric Power Project (THEP Stage-I) on Tillari River at Hewale village in Kolhapur District of Maharashtra, Government of Maharashtra (GoM)

proposes to build three new dams on Pale Parmar Nalah, Bhandora Nalah and Bandra Nalah which join Tillari river. The project is in high rainfall-zone of Western Ghats experiencing annual rainfall from 2410-3175 mm in 1986. All these Nallahs have flow only during monsoon.

The existing Tillari Main Dam has a gross water storage capacity of 113.28 Mcum (4 TMC). From this Dam, the water is diverted through an open 15 km long Power Canal having designed discharge capacity of 7.90 Cumecs. This Canal drops water into Fore-bay Dam at Kodali having a gross storage capacity of 2.124 Mcum (0.075 TMC). From this dam, the water goes to an underground power house through Head Race Tunnel for peaking power generation. The water through the tail race tunnel from power house is discharged into Kharari Nalla below Sahyadris in Konkan region and is stored in Terwan Medhe Pick-up Weir. This Weir is a part of Tillari Inter-State Irrigation Project in Sindhudurg District of Maharashtra for irrigation in Maharashtra and Goa States. From Terwan Medhe Pick-up Weir, water goes to Tillari Right Bank Canal (TRBC) of Tillari Interstate Irrigation Project which is inter-linked with the Left Bank Canal of the Tillari Inter-State Project through a Link Canal of 15.0 km. The irrigable command area of Terwan Medhe Pick-up Weir is only 827 ha falling between TRBC and Tillari River and ends at the Link Canal.

Due to limited storages in Tillari Main Dam, presently THEP- Stage I is being operated only for 6 hours daily. The power plant is generating about 132 MUnits of power annually at a load factor of 25%, though it has potential for substantially higher power generation capacity, if adequate water is available. Therefore, GoM now proposes to expand Tillary HEP Stage-I for generating full 60 MW by increasing water availability by constructing three dams on Pala, Bhandora and Bandara Nallahs and on Tillari River. These were planned originally however, were not constructed due to financial constraints and it was decided to take up later. These 3 new storages Dams will collectively have a gross storage capacity of 53.67 Mm³. Accordingly, the Power Canal was designed with 7.90 Cumecs capacity, for accommodating discharge from the THEP Stage-I and II both. Hence, modernization or widening of Power Canal is not required for implementation of the present proposed THEP- Stage II. This would enable GoM to operate for 10 hours daily and generate an additional 91.29 MUnits power annually; thus generating a total of about 223.29 MUnits of hydropower annually.

This project falls in Maharashtra and Karnataka States. Altogether, about 642.07 ha land is required for this project which includes 484.20 ha from Kolhapur district of Maharashtra and 157.87 ha from Belgaum district of Karnataka State. Out of the total land requirement, 547.98 ha is forest land of which 427.96 ha falls in Maharashtra and 120.02 ha in from Karnataka. About 80.31 ha privately owned lands comprising of 42.46 ha from Maharashtra and

37.85 ha from Karnataka will be required. The entire private land required from Karnataka is agricultural land while the private lands of Maharashtra includes 16.0 ha plantations area, 15.46 ha agricultural land and 11.0 ha is fallow land. About 13.78 ha barren land belonging to Govt. of Maharashtra will also be required for this project. About 20 tribal families residing in huts in the forest land of Karnataka will be submerged;

The present THEP Stage-II therefore only involves construction of 3 earthen dams and the linking canals/ tunnel for releasing storages of these dams into the Power Canal by gravity.

Pale Parmar Nalla Project:

The Dam on Pale Parmar Nalla will be in Karnatak and Maharashtra States both. In Karnataka State, it will be in Village Dhamne of Belgaum Taluka and in Maharashtra State, it will be in Kalasgade village of Chandgad Taluka. This shall be an earthen dam of 35.56m height and 1.2 m length having gross storage of 15.46 Mm³ yielding from its 9.33 sq. km catchment area. The FRL and MDDL will be 749.0m and 736m respectively. Water of this dam will be discharged into the Power Canal by gravity, by constructing a Linking Canal between the dam and Power Canal. Pale Parmar Nalla storages are anticipated to facilitate additional hydropower generation to the tune of about 24.06 MUnits, annually; and provide assured irrigation facility in the command area of Terwan Medhe Pick-up Weir, throughout the year.

About 203.99 ha land is required for this project which includes 77.12 ha from Maharashtra and 126.87 ha from Karnataka. This project involves 190.4 ha forest land; of which 70.38 ha is from Maharashtra and 120.02 ha from Karnataka. This part of Karnataka Forest belongs to Dhamne (S) Bellur, Dist-Belgam which is entirely surrounded by Maharashtra State forming a small Island of Karnataka forest in Maharashtra State. About 11.13 ha private agricultural lands which include 4.28 ha from Maharashtra and 6.85 ha from Karnataka will be required. About 2.46 ha barren land belonging to Govt. of Maharashtra will also be required. The project will affect 39 families and about 20 tribal families residing in huts in the forest land of Karnataka will come under submergence. Compensatory Afforestation process is in advanced stages in both the States. The estimated Cost of this project is Rs. 98.89 Crores.

Storage Dam across Bhandora Nalla

The Dam on Bhandora Nalla will be earthen dam of 40 m height and 882 m length and will have a gross water storage capacity of 25.81 Mm³ yielding from its 14.15 sq. km catchment area. The FRL & MDDL for this project are 763 m and 747 m respectively. Water stored in the reservoir of this dam will be transferred by gravity into the existing reservoir of Tillari Main Dam

through a 1.97 km long interlinking underground tunnel of 2.5 m dia. Thereafter, the total water of Tillari Main Dam and Bhandora Nalla will be conveyed to Power house through the existing Power Canal. Bhandora Nalla Storage water is anticipated to facilitate additional hydropower generation to the tune of about 51.27 MUnits annually; and provide assured irrigation facility in the command area of Terwan Medhe Pick-up Weir, throughout the year.

This project also falls in Maharashtra and Karnataka States. About 286.08 ha land is required for this project which includes 255.08 ha land from Maharashtra and 31.0 ha from Karnataka. The land required from Maharashtra includes 232.58 ha forest land, 11.18 ha private agricultural lands and 11.32 ha barren land belonging to Govt. of Maharashtra. Entire 31.0 ha land required from Karnataka is private agricultural land and no forest land from Karnataka State is required for this project. The private land proposed for acquisition is owned by about 47 project affected families. No human settlements, houses, farm-sheds, cattle sheds or any religious structures exist in the proposed dam seat and submergence area. Estimated Cost of this project is about Rs. 91.40 Crores.

Storage Dam across Bandra Nala

The Dam on Bandra Nala falls in Kodali Village of Chandgad taluka of Kolhapur district in Maharashtra State and will also be earthen dam of 40.7 m height and 514m length and will have a gross water storage capacity of 12.9 Mm³ yielding from its 4.35 sq. km catchment area. The FRL & MDDL for this project are 747m and 732m respectively. Water from this dam will be discharged into the Power Canal by gravity, by constructing a Linking Canal. About 152.0 ha land is required for this project, of which 125.0 ha is forest land and 27.0 ha is private land. The entire area of this project falls in Maharashtra. The private land comprises of 16.0 ha plantations area having Australian Babul and Eucalyptus plantations; and about 11.0 ha area interlocked within the forest areas and left as fallows. No human settlement is affected due to this project also. It is anticipated to generate an additional power of 15.97 MUnits annually and provide assured irrigation facility in the command area of Terwan Medhe Pick-up Weir, throughout the year. Estimated cost of this project is about Rs. 85.41 Crores.

The Committee appreciated the good quality maps provided by the Consultant which helped in understanding the project clearly. After critically examining all the issues, the Committee recommended Scoping Clearance for pre-construction activities and approved draft TOR for preparation of EIA/EMP report along with the following additional TORs-

- (i) Since all three projects are components of Tillari Stage II project, an integrated project having three separate components may be prepared. Accordingly, a revised composite Form-I mentioning 3 independent subsidiary storages as a Single Project under the name of Tillari Hydro Electric Project – Stage II (THEP-II) may be submitted.
- (ii) Consider this THEP as an exclusively Hydroelectric Project from the water utilization point of view.
- (iii) Provide detailed Land use pattern of land required for each project separately. Land Use Classification should be based on the type of land and not as per the land ownership.
- (iv) Since the project is in the Western Ghats in the border area of Maharashtra-Karnataka-Goa State which is Ecologically Sensitive therefore, Item-III for Environmental Sensitivity of Form-I, the answer should be 'Yes' instead of 'No'. A revised form should be submitted.
- (v) Muck dumping sites should be located at least 30 m away from the HFL/ banks of Nallahs.
- (vi) Instead of taking so many samples for Ambient Air Quality Monitoring, representative samples at atleast 5 sites may be taken in the whole area encompassing three projects. Undertake at least in 5 locations covering the proposed project location.
- (vii) Faunal Surveys should be undertaken by means of conducting direct and indirect observations. Secondary data also may be included in the EIA Report.
- (viii) Wildlife in the submergence area should also be enumerated/ recorded by laying 'Line Transects'.
- (ix) Latest technology like automatic Night Cameras should be used to record nocturnal fauna in project area.
- (x) For Floral Surveys undertake Taxonomic Studies in comparatively bigger areas than as proposed in ToR. In Taxonomic studies through 'Quadrats'/ 'Line Transects' methods, all species occurring outside the selected quadrats will not be covered; hence larger areas should be considered.

- (xi) Ensure adequate water availability in downstream areas of Bandra, Pale Parmar and Bhandora Nallas for sustenance of Aquatic life i.e. aquatic flora and fauna; and from environmental and ecological point of view, as per the norms of MoEF for minimum environmental flow in lean season, monsoon season and other months.
- (xii) A Videography of the project area up to 10km upstream and downstreams of the project components may be carried out presented before the EAC while considering project for EC. Videography should clearly capture river course, nallas, existing dams, canals, powerhouse, affected villages, environmental monitoring sites etc. depicting the ground realities of the project area in all seasons.

2.4 Chinki Multipurpose Project on Narmada River in Narsingpur District, Madhya Pradesh by Narmada Valley Development Authority, Government of Madhya Pradesh – For TORs.

The Narmada Valley Development Authority proposes to develop a multi purposes project namely Chinki Multipurpose Project on Narmada river in Narsinghpur District of Madhya Pradesh having a component of irrigation for 89,029 ha of gross command area (GCA) and culturable command area (CCA) of 73,979 ha in Narsinghpur and Raisen Districts along 15 MW (3x5 MW) of hydro power generation. The FRL of the project is 348 m and TWL is 321 m. About 4.5 m free flowing river stretch is available. There are presently 6 on-going projects on Narmada or its tributary namely Jobat on Hathni River, Man on Man River, Upper Beda on Beda River, Maheshwar, Omkareshwar and Narmada Sagar on Narmada River. There are about five more projects proposed upstream of the Chinki Project namely Upper Narmada, Raghavpur, Rosara, Basania and Bargi. It is the sixth project on main Narmada River from its origin. The project location is 16 km from Narsinghpur district, near village Pipariya. The latitude and longitude of the project location are 23 °02' 00" N and 79 °05' 24" E respectively. Besides these projects, there are other 17 projects proposed in the basin. Narmada basin spreads over three states namely, Madhya Pradesh, Maharashtra and Gujarat. As per award of Narmada Water Dispute Tribunal (NWDT), the total water availability at Navagam Dam site was taken as 28 MAF, out of which 18.25 MAF was allocated to Madhya Pradesh. The Chinki Project is one of many proposed projects to utilize the allocated water to Madhya Pradesh.

The design flood (PMF) for the Project has been estimated as 67,000 cumec from the catchment of 8,802 sq. km. In-flow series for intermediate catchment between G &D sites at Jamatra and Braman Ghat is used on pro-rata basis. 75% dependability value for water availability is 2,138 MCM.

Further, flow series below Bargi up to Braman Ghat gives 75% dependable value 2615 MCM.

A Dam of 35.5m height and 1536 m length is proposed at Chinki. The main spillway and saddle spillway will be having 12 gates and 17 gates respectively. Live storage is about 238 MCM. Out of total CCA of 73,979 ha, the lift canal is proposed to serve CCA of 57,274 ha and remaining 16,705 ha will be served by Garlanding scheme. A dam toe power house having an installed capacity of 15 MW (3x5MW) generating energy of 47 Million Unit and meet partial requirement of power for the proposed lift irrigation scheme for which 94 Million Units will be required. The length of the main canal will be about 80 km and having a discharge capacity of 52.2 cumec.

Total land requirement for the project including land required for canal and other project infrastructure is 4150 ha out of which 3610 is Government land and 540 ha is private land. The submergence area for the project at FRL is 3250 ha out of which 2710 ha is Government land and 540 ha of private land. Land requirement for the canal alignment will be 900 ha. The estimated cost of the project is Rs. 1439.70 Crore. The benefit cost ratio for the project is calculated to be 1.57 and internal rate of return of 15.44%. Total Irrigation intensity is 138.1.

The response to the comments given by the Committee members was also discussed. After critically examining all the issues, the Committee recommended scoping clearance for pre-construction activities and approve the proposed TOR for preparation of EIA/EMP report along with the following additional TORs-

- (i) A figure may be added to show the inlet transition connecting the tunnel.
- (ii) The irrigation efficiencies need to be looked into carefully as a part of DPR.
- (iii) A Cumulative Impact Assessment Study/Basin Study should be carried out for Narmada River, either by NVDA or Government of Madhya Pradesh. CIA Study should ascertain river stretches of fish migration and breeding grounds.
- (iv) A separate table showing inflow, turbine flow, spill-flow and environmental release needs to be given in EIA/EMP report.
- (v) Since the tunnel of 2 km is passing under/ below the forest which may have effect on fauna, stream flow, root systems of forest trees etc. This may be addressed and permission should be taken from

the State Forest Department. Land cover of this area to be included as part of project affected land use/cover.

- (vi) Floristic composition of the submergence area should be given separately.
- (vii) The answer for Item 1.30- Loss of native species or genetic diversity in Form -1 should come after studying the floristic composition of 4150 ha of the land involved. Even non forest areas have remarkable biodiversity in many cases. Likewise answer to the item- Areas used by protected, sensitive species should be mentioned only after a study of the flora and fauna of the land involved.
- (viii) Land use pattern of the land to be acquired including submergence area needs to be given.
- (ix) The occurrence of certain species of riverine fauna including Hilsa fish may be ascertained.
- (x) There is huge difference between irrigation potential created and actual irrigation being done in existing projects. This implies that much lesser than the proposed area under irrigation will actually be irrigated. Its implication will be reflected in the agricultural production, equity in water sharing among the beneficiaries and on the project economics. The steps taken by State Government to bridge the gap in irrigation potential created and actual irrigation in the existing projects needs to be included in the CEIA study. Similar steps need to be recommended for the Chinki project as well.
- (xi) Sprinkler system and drip irrigation to be introduced. A plan/scheme for this may be included in the EIA/EMP report. For these, details of cropping pattern and their reduced water requirement is to be calculated and shown in suitable Tables and maps in the EMP.
- (xii) Command Area Development Plan should be included in EIA/EMP report.
- (xiii) A Videography of the project area up to 10km upstream and down streams of the project components may be carried out presented before the EAC while considering project for EC. Videography should clearly capture river course, nallas, existing dams, canals,

powerhouse, affected villages, environmental monitoring sites etc. depicting the ground realities of the project area in all seasons.

2.5 Morand and Ganjal Complex Irrigation Project in District Hoshingabad, Madhya Pradesh by Narmada Valley Development Authority – for Reconsideration for TORs.

The project proponent made a fresh presentation on the entire project however; there was no clarity in the proposal. Further, the proponent did present the point-wise response on the points raised by the EAC in its 55th meeting held on 10th -11th February, 2012 in which the proposal was considered. The Committee felt that the entire project along with point-wise reply may be presented again.

2.6 Shiggaon Lift Irrigation Project on Varada River in Haveri District, Karnataka by Karnataka Neera Vari Nigam Ltd., Government of Karnataka – For Environment Clearance.

The Government of Karnataka through Karnataka Neeravari Nigam Limited proposes to construct a diversion weir across Varada River in Halasur village of Savanur Taluka of Karnataka State for providing Sprinkler Irrigation facility to 9,900 ha of command area in Shiggaon, Savanur and Hangal Taluks of Haveri district. This will divert 42.45 MCum (1.5 TMC) of water and benefit 30 draught affected villages. It will also provide drinking water facility and sub soil replenishment by filling up of existing 5 minor irrigation (MI) tanks within the command area. 6 bandaras will be constructed. Filling of existing MI tanks in the command area will help in stabilization and replenishment of the underground water table in the region. Rainfall in the area is of the order of 532 mm and quite uncertain.

The total water allocated for the project is 42.45 MCum (1.5 TMC) but by adopting Sprinkler Irrigation system with piped conveyance system, as suggested by the EAC while giving ToRs, the utilization of water has reduced to 31.696 MCum (1.12 TMC) thereby saving 10.77 MCum (0.38 TMC) of water which can be used at a later stage.

Total land requirement for project is 45 ha and no Forest land is involved in the project and no cutting of trees for construction activities is envisaged hence, the project doesn't require Forest clearance. There is no submergence involved hence no rehabilitation and resettlement is required.

Bankapura Peacock Conservation Reserve is located in the command area of the project. The consultant submitted that since the project envisages sprinkler irrigation system by carrying water to the agricultural lands through HDPE pipes, there is no impact of this project on this reserve. Further, there is no

impact on the aquatic life/ecology from the project.

The proposed irrigation is only in Khariff and the intensity of irrigation is kept at 100%. The benefit cost ratio for the project is 1.28 and the total cost of the project is 238 Crores as per 2007-08, out of which cost for implementation of mitigation measures shall be Rs 68.82 Lakhs during the construction phase, Rs 21.82 Lakhs during the first three years of operation phase and Rs 50,000 from fourth year onwards for maintenance of green belt.

The Committee was not happy with the quality of presentation and the maps were not at all clear. The Committee felt that it is difficult to comprehend the project in the absence of clear maps. The Committee suggested to the consultant that comprehensive power point presentation providing highlights of the projects instead of putting so much running matter on the slide should be made. The Committee decided to reconsider the project, after the following additional information is submitted-

- (i) To submit clear separate Maps with clear legends of the project vicinity, characteristics of the project, project component sites, the Command Area of the project, land use pattern and Land cover of the project as well as command area, Hydro-geology of the area, Soil coverage and Soil erosion intensity, Drainage etc. The maps should show only one characteristic in one map thereby decongesting the maps.
- (ii) Figures stated for the land use map needs to be relooked.
- (iii) Clarity in the coding the names w.r.t map showing location of various sampling sites.
- (iv) The biodiversity study carried out is very superficial, especially the botanical aspect. In general flora of the Haveri district, only 19 tree species and 17 animal species have been mentioned. This is surprisingly a low number. Even project area will certainly have much more plant and animal species. Revise Ecology and Biodiversity Assessment studies with in detail characterization of the vegetation into Trees, Shrubs, Herbs, Grasses, Angiosperms /Ferns etc. In 3.3.11: Floral species found in the study area: is neither comprehensively nor correctly. One list for cultivated and horticultural species and another for wild species may be provided. It is difficult to believe that only six shrub species and one herb (*Cassia tora*) occur in the entire area involved.
- (v) The statement 'Quantitative survey is not required for the study due to the absence of forests in the study area of the project' (page

3.76) is not correct. In fact, many rare species, especially herbs and grasses, occur in non forest areas. Hence, survey may be carried out in the project area.

- (vi) Fauna study is incomplete as insects, moths, butterflies, nocturnal animals and reptiles have not been included in the list. It is surprising that all animals occurring in the area belong to only the 'Least Concern' category. This indicates that surveys done are not adequate.
- (vii) In 3.4.8.1: Planktons (page 3.93.) Table 3.40. Plankton diversity of Varada river of EMP, under the title 'species' only 'genera' are given; in other words, they are not identified at species level. The purpose of why some generic names are given in italics and others in normal letters is not clear. The proponent may entrust scientific work to scientists in the respective fields or if it was entrusted, they may be asked to carry out the assigned work more seriously. This is also applicable to data provided for Dharma river.
- (viii) The Table 4.2 of EMP gives a list of species proposed for green belt. It is said that these species are selected for their thick canopy etc. *Gliricidia maculata*, *Grevillea robusta*, *Polyalthia longifolia* etc. do not have even a moderate canopy cover. Such wishful listing may be avoided as EIA and EMP reports are scientific documents. Species given for green belt development may also be checked and corrected for nativity and quality of broad leaf base.
- (ix) The soil quality details given should also be rechecked.
- (x) All units for land should be given in Hectares instead of Acres.
- (xi) Slope map is wrong showing 80% undulated land and showing drainage as gentle.
- (xii) Whether, ground water is extractable and what is the storage coefficient.
- (xiii) Study on Fisheries needs to be relooked.
- (xiv) Review the Conservation status of the flora and fauna of the region as per latest IUCN list.
- (xv) All species name should be written in scientific manner and in Italics.

- (xvi) Environmental Management Plan also needs to be reviewed.
- (xvii) Presentation slides to be reduced and presentation matter shall be in brief and not as per the TOR.
- (xviii) Undertake a detailed Videographic documentation of the river course, nallas, existing dams, canal, powerhouse, balancing reservoirs, proposed project sites, environmental monitoring sites, etc. depicting the ground realities of the project area in all seasons.
- (xix) A Videography of the project area upto 10km upstream and down streams of the project components may be carried out presented before the EAC while reconsidering project for EC. Videography should clearly capture river course, nallas, existing dams, canals, powerhouse, affected villages, environmental monitoring sites etc. depicting the ground realities of the project area in all seasons.

2nd June, 2012

2.7 Seli 400 MW Hydro Power Project on Chandrabhaga River at Shulling village in Lahul and Spiti District, Himachal Pradesh by M/s. Seli Hydro Electric Power Company Limited of Moserbaer Group- For Environmental Clearance.

Shri Awadhesh Kumar Jha, Associate Vice President- Hydro Development, Moser Baer Projects Private Limited started the presentation on the Project features by showing a videography of the project area, both upstream and downstream of the Dam Site to give an idea of the physical and environmental features of the area.

The Committee noted that the proposed Seli HEP is a Run of River scheme on Chenab River in Lahaul & Spiti District of Himachal Pradesh. Project was accorded TOR for 320 MW capacity on 19th March 2010 which was revised for 400 MW on 12th October 2011 after considering it in 52nd meeting held on 16th September 2011. The Public Hearing for the project was conducted on 18th November 2011 at Mudgram in Lahaul & Spiti District of Himachal Pradesh.

It was submitted by the Project Proponent that the proposal for diversion of 276.1875 ha of forest land is under consideration and notification under Section-4 for acquisition of 16.7779 ha private land is also under consideration of State Government. Hydrological Study has been approved by CWC and approval of Power Potential has been accorded by CEA. NOC from Public Works Department has been obtained.

The project envisages construction of a Concrete Gravity Dam of 80 m height from the river bed level. The FRL of the project is 2606 m and live storage is 8.223 MCM. The dam will be located near Shulling village. The project envisages having twin Head Race Tunnel of 4.17 km and 4.25 km long having a dia of 8.4 m. Two underground surge shafts of 29 m in diameter and 51 m high, four pressure shafts each having 4.6m diameter and having length of 247m, 270m, 229m and 252 m and an intermediate Adit of 7.5m dia of 435m long. Underground Power House will be located on the right bank of Chenab River near Gugal Nallah in Kurched Village that shall house 4 units of 100 MW each to have installed capacity of 400 MW with design Energy of 1434.67 Million Units. The Tail race Tunnel shall discharge the water back to river Chenab with Normal Tail Water Level of 2489.8m. The estimated cost of the project is Rs. 2891.97 Cr. and construction period is 114 months.

The catchment area at the dam site is 6,033 Sq. km out of which 3,787 sq. km. (63%) remains snow covered. The annual average run-off is 8673 MCM. The design discharge of the project is 404.64 cumec and design flood (PMF) is 8,086 cumec.

Total Land requirement for the project is 292.9654 ha out of which 276.1875 ha is forest land and 16.7779 ha is private land. It was clarified by the Project Proponent that earlier land requirement of 320 ha as given in the draft EIA report was based on topographical sheets and google maps but completion of land case by revenue & forests departments, the actual requirement of land is only 292.965 ha and not 320 ha. The detail of actual land considered is given in chapter 2 of final EIA report.

Total submergence area is 197.9092 ha out of which Forest Land is 183.5205 ha and remaining 14.3817 ha is private land. Compensatory Afforestation is proposed on 552.375 ha of degraded forest land. An amount of 114.44 Crore has been earmarked for EMP which includes CAT, R&R, Compensatory Afforestation, Bio-diversity Conservation, Environmental Monitoring, Fish Development, Energy Conservation, Reservoir Rim Stability, Solid Waste Management, Public Health, Pollution & Hazard Mitigation, NPV and Landscaping & Restoration activities. In addition, an amount of Rs. 43.85 Crore has been earmarked towards Local Area Development.

Water Availability Series has been approved by Central Water Commission based on 33 years of observed series. Project proponent has also installed an Automatic Weather Station in the project area to monitor various weather parameters including rainfall, snowfall and water level. Besides, Gauge & Discharge station has also been established by project proponent to capture site specific data. This station is functioning since November 2009. The observation is taken using Current Meter.

The project falls in seismic zone IV. Project Proponent has got the site specific responses spectra study done by Department of Earthquake Engineering, IIT Roorkee. The report has been submitted to NCSDP for necessary approval. A copy of the Report has also been enclosed in the EIA Report.

Through an L- Section of Chenab River, it was explained that a clear 2.61 km of free flowing river stretch between tip of the Seli reservoir and Tail Water Level of proposed upstream Bardang project is available whereas there is no gap between Tail Water Level of Seli Project and Tip of the reservoir of downstream Reoli-Dugli Project. Project Proponent informed to the Committee that project domain of Seli with FRL of 2606m and TWL of 2489.8 m had been allotted by GOHP, letter for which has been submitted to the Ministry. EAC also noted that GOHP had made a presentation before EAC in February 2012 for the TOR of Cumulative Environment Impact Assessment of Chenab Basin in Himachal Pradesh. During that presentation made by the State Power Secretary the Longitudinal Section of all the projects were presented. According to that presentation, the TWL of Bardang project has been shown as 2615.5m. EAC observed that Bardang and Reoli-Dugli projects have not approached MoEF yet for getting the Scoping clearance and it was decided that their domain shall be examined whenever they apply for Scoping clearance.

The baseline data for EIA study was collected for three seasons during 2010, covering a 10 km study area delineated all around the project component i.e. from the tip of the reservoir on one side and tail water release point on other. The Committee noted that river is flowing in very deep gorge and therefore, sampling locations for various base line data had to be selected within the narrow band along the river itself. The various sampling locations were depicted on the map. The Committee noted that the ambient air quality and sound levels in the project area are well within the prescribed standards.

The land use/ land cover map of the study area as prepared from the satellite data shows that non-forest area is the predominant portion in the study area followed by open forest. About 6% of the study area is covered by glaciers and Dense Forest constitutes only 4%. The forest types based on the Champion and Seth classification are Dry Temperate Mixed Evergreen Forest, Dry Coniferous Forest, Dry Broad Leaved and Coniferous Forest, West Himalayan Dry Juniper and Alpine Pastures.

Vegetation sampling have been done at seven locations which is quite representative of study area, as per the Committee. A total of 168 plant species have been recorded from study area, 115 species of Angiosperm, 8 species of Gymnosperms, 9 species of Pteridophytes, 22 species of Lichens and 14 species of Bryophytes. A list of all these species has been provided in

the EIA report. Three RET floral species namely *Eremurus himalaicus* (*Liliaceae* family–*Himalayan Foxtail Lily*); *Dactylorhiza hatagirea* (*Orchidaceae* family – *Salam Panja*) and *Saussurea Costos* (*Asteraceae* family - *Kuth*) have been observed in the study area. The findings of EIA Study were discussed at length and it was observed that the list of species should be provided as running text in the body of the report instead of putting it separately as Annexure.

List of mammalian species was prepared based on the forest working plan and primary data. Only three species were sited during the primary survey viz. Mountain Fox, Yellow throated Marten and Himalayan Mouse Hare; all three fall under least concern category of IUCN. Further, 41 species of birds were recorded from study area but none of them are RET species.

No fish could be captured in Chenab River between Dam and Power House while doing net fishing. Further, Project proponent also provided a list of streams in Himachal Pradesh, which has been declared as negative list by GOHP indicating that these rivers are high on fisheries activities and require measures for fish conservation. The Chenab River does not appear in this list.

However, the Project Proponent informed that during the EIA study, the Team of Consultant was informed by the local residents that trout had been sighted in Chenab River near Kukumseri village which is about 15 km upstream of dam site. As the water temperature of Chenab is conducive for trout fish and considering the local residents' observation about trout in Chenab, the project proponent has proposed a fisheries development plan in the project area in consultation with State Forest Department. For this, a budget of Rs. 309.82 Lakh has been provided in EMP.

A study carried out by Prof. Prakash Nautiyal of Garhwal University, Srinagar, Uttarakhand for computing environmental flow to sustain the downstream ecology was also presented and discussed by the Committee. The study covered various water usages and discharge-velocity-depth relationships at different locations in the study reach was computed to assess the minimum flow requirement based on established water requirement in the stretch in lean season. A minimum discharge of 9 cumec has been recommended by the study to ensure that in lean season required width, depth and velocity can be maintained in the river. This works out to be 16% of average flow in four leanest months in 90% dependable year. However, Project Proponent submitted that they would be adhering to the norm given by EAC in ToRs which is 20% of average flow of four leanest months in 90% dependable year. This works out to be 11.20 Cumec. The Committee accepted the same. The Committee also verified that the average spill during three monsoon months i.e. June – August is more than 30% in 31 years out of 33 years for which data have been approved by CWC and found it satisfactory. A

provision for embedding a pipe of 1000mm diameter just below the MDDL has been provided to let environmental flow pass uninterruptedly and without intervention of human. The Committee expressed its concern regarding choking up of pipe due to silt during operation of the project. Project proponent clarified that since the pipe shall be located at the highest possible level in the dam, there would not be any silt deposition near MDDL and thus the pipe would be free from silt.

A total of 18.93 Lakh Cubic Meter muck including 40% swell factor of the excavated rock is expected to be generated from the Project. Out of this, 7.57 Lakh Cubic Meters is expected to be utilized. The net muck to be disposed of will be 11.36 Lakh Cubic Meter which shall be disposed of at three designated locations approved by State Pollution Control Board. The locations of the muck dumping sites were discussed in detail. It was observed that Muck Dumping Site-1 and Muck Dumping Site- 2 are located close to Highest Flood Level at a distance of 10m only. The EAC pointed out that this distance is less than what has been suggested in TOR. The Project Proponent showed the video to EAC where in it was seen that there was not much space between two banks of river. It was informed by Project Proponent that considering the space constraint in the area, State Pollution Control Board had asked the project proponent to provide for RCC counter fort wall along the river edge of the dumping site. Project proponent have provided for the necessary protection measures accordingly. Having seen the video of the project area, the Committee was satisfied that it was not possible to have muck dumping sites located 30 m away from HFL and considering the RCC protection wall, EAC agreed to all the locations of Muck Dumping sites.

It was noted that out of the total requirement of 292.9654 ha, private land requirement is 16.7779 ha only which is 5.7% of total land. There are 93 PAFs out of which 22 are BPL. One PAF is losing its land and secondary house as well. Seven cattle sheds are also getting affected. Project proponent informed that R&R policy has been proposed keeping in view the features of existing National Rehabilitation & Resettlement Policy 2007 of Government of India with appropriate adjustment for inflation. A provision of Rs. 13.153 Crore has been provided towards R&R budget. EAC queried the reasoning for a provision of Monthly Subsistence Allowance of Rs. 200/- per day for 25 days per month for a period of one year. Project proponent clarified that as per NRRP-2007, this amount is to be linked with Minimum Agricultural Wages. The project proponent explained that this amount has been arrived on the basis of the minimum wage policy of Himachal Pradesh. In Himachal Pradesh, the minimum wage in Tribal area for Hydro project gets increased by an additional amount to the extent of 65%. The minimum wage in Himachal Pradesh is Rs. 120 per day for unskilled category. Therefore, the Monthly Subsistence Allowance @ Rs. 200 per day has been allocated for 25 days per month over a period of one year. On being queried about the special

provisions for the BPL families, the project proponent explained the distribution of 1% free energy provision under the LADF which specifies 15% of the revenue received from 1% free power to be allocated to the BPL families. In addition, project proponent has also provided an annuity for all 93 PAFs. EAC found the provision under R&R is quite reasonable for 93 PAFs.

An amount of Rs. 43.85 Crores has been earmarked for the Local Area Development Activities (LADA) which shall be executed by a designated Local Area Development Committee (LADC) under the Chairmanship of Deputy Commissioner. The activities under LADC would be carried out at various levels like Panchayat, Block and District. EAC desired to know the activities to be covered under Local Area Development Fund. Project Proponent informed that the activities under LADF shall be decided and implemented by the LADC as per the notified LADF Management Guidelines of Government of Himachal Pradesh (GOHP). EAC expressed its concern about the actual implementation of the activities and utilization of fund on actual designated activities. Project Proponent informed that though Project Developer cannot have control on the activities to be taken up but being the Member Secretary, can indirectly influence the utilization of fund to the identified activities only. EAC observed that this arrangement was relatively better to have control on the implementation of the LADF.

The Committee discussed the voluntary CSR activities under Brand name HEARTH launched by the Project proponent and appreciated various activities suggested under the programme which is in addition to the activities and funds allocated under LADA. The activities under CSR have been decided on the basis of a study conducted through Delhi School of Social Work, University of Delhi to assess the need of the community of the project area. A provision of Rs. 47.24 Lakh annually during the construction period has been proposed for this. EAC suggested providing common toilet facilities & solar lighting arrangement in the villages and suggested that Project Proponent should consider distributing Solar Lantern to needy families in the project area as a backup arrangement for lighting. Project proponent agreed to the proposal.

The issues raised during the public hearing were discussed at length. Regarding the issue of capacity on the web-site, the proponent explained that due to oversight, the website had not been updated till November therefore showing 320 MW whilst the capacity had been increased to 400 MW by CEA and agreed to by EAC/MOEF as conveyed in the revised TOR. EAC advised project proponent to update their website regularly.

Concerns were also expressed by the public about the impact of avalanches/glaciers on the reservoir for which Project Proponent informed that to alleviate the apprehensions of the public, a study through experts of

Snow and Avalanche Study Establishment (SASE), a Ministry of Defense organization has already been undertaken. The Committee appreciated the prompt action taken by the Project Proponent, as it was not the part of ToRs, and requested the Ex- SASE Experts, who were present in the meeting to share the findings of study. Various aspects of Avalanches, its impact, treatment measures suggested etc. were discussed. The EAC observed that Ex-SASE experts have done a good study however, desired to know the provision for the cost of the treatment measures suggested by the study. The Project Proponent clarified that the cost of treatment measures of Avalanches are part of Catchment Area Treatment.

The Committee noted that the public had another important concern regarding impact on crops due to increase in moisture level. EAC observed that this was not part of TOR and queried on the action taken by Project Proponent. The project proponent clarified that they have requested Regional Horticulture Research Station, Kullu to undertake a study on the same as a sponsored project and Project Proponent will fund the study. The study is likely to take one year time. EAC appreciated the proactive initiative taken by the Project Proponent.

In response to a representation received by the Ministry and EAC, the Committee desired to know from the project proponent who fixed the date and venue of public hearing and whether road through Rohtang pass was open for general traffic as it has been raised as an issue by the public. It was clarified by project proponent that State Pollution Control Board in consultation with Deputy Commissioner, Keylong fixed the date and venue of public hearing and the Rohtang Pass was open and public transport were plying at the time of hearing. Project Proponent produced a certificate issued by State Road Transport Corporation, Keylong wherein it was mentioned that Rohtang Pass was open during that time and buses were plying on the route. Further, project proponent shared a news article, which appeared in Amar Ujala on 31st Dec 2011, which mentioned that Rohtang Pass was open till 30th Dec 2011 up to Petsio. The Committee was satisfied with the process of public hearing carried out by State Pollution Control Board. EAC also did not find any discrepancies in the conductance of public hearing by SDM, Udaipur in view of the fact that Deputy Commissioner has made a note on the proceeding of Public Hearing wherein he certified that there was no post of ADM/ ADC in Lahaul & Spiti and all the functions of ADM/ADC are being looked after by the SDMs of the district.

The Committee appreciated the Project Proponent and Consultant both for their systemic presentation and proactive approach. After elaborate deliberations, the Committee recommended the project for Environment Clearance with the following suggestions-

- (i) During Compensatory Afforestation, native species should preferably be planted. However, as the project developer does not have any say in the activities being undertaken by State Forest Departments like CAT, Compensatory Afforestation, MOEF should take up the matter with State Forest Department to ensure plantation of native species in general as a part of Afforestation. The Brood Parasitism is a natural phenomenon and no attempt should be made to prevent it.
- (ii) Snow leopard is not a common animal in the area, as given in Table 6.15 of the EMP. This may be corrected. There is likelihood of occurrence of Brown and Himalayan Black Bear (Schedule I and II WPA 1972 respectively) in the vicinity of project components and specific impacts on them due to the project may be included. This may be submitted to the Ministry for record.
- (iii) *E. himalaicus*, *S. costus*, *E. densa* and *D. hataginea* need special attention from conservation point of view. Proponents may, in collaboration with appropriate R&D centres, initiate steps to mass multiply or vegetatively propagate these species and conserve them at appropriate places like Botanic Gardens and/or under cryopreservation. Only natural populations (not cultivated ones) of *S. costus* be considered for conservation efforts.
- (iv) At Page 6.39 of EMP, seven species of mammals occurring in the area are listed under threatened and endangered category. EMP has not addressed the wildlife management for these. Strategies envisaged to protect them may be elaborated for their survival in the natural habitat.

2.8 Shift of Dam site by 36 m for Rangit-II 66 MW Hydro Power Project on river Rimbi Khola in West Sikkim District of Sikkim by Sikkim Hydro Power Ventures Limited-for review.

The project was given environmental clearance on 10th June, 2009. Later, the Project Proponent informed that the dam location at the time of environmental clearance in 2009 was not found to be suitable for concrete gravity during detailed geological investigation. Foundation grade rock for the concrete gravity dam was found too deep to keep the project economically viable; and therefore the dam has been changed to rock fill dam. The revision was accepted by the Ministry on 16th April, 2010.

However, now the Project Proponent has submitted that during the construction material survey, rock fill option was not found to be viable due to non-availability of clay, to be used as core of the rock fill dam, within

economical distance from the dam site. After carrying out geotechnical drilling at alternate upstream locations, they have found the foundation grade rock at a reasonable depth at about 36 m upstream of the old location. Hence, the dam axis has now been changed 36 m u/s of the old location and accordingly the surge shaft location. No change in FRL is proposed. New location of surge shaft has advantage that it can be constructed from the surface resulting in elimination of adits and valve chamber. Also a four-step pressure shaft is proposed now instead of two steps pressure shaft, as this can be constructed from portal resulting in elimination of construction of adits which will reduce the quantum of muck generation from 1,73,445 cu.m. to 1,61,721 cu.m. There is no additional land requirement.

EAC reviewed and observed that proposed changes are essential to make project techno-economically viable and these changes do not cause any additional environmental impacts. Therefore, the Committee recommended revalidation of environmental clearance with the proposed changes in the location of dam and other components. The Committee suggested that such small changes having no implication on the environment may be dealt with at the Ministry's level itself.

2.9 Rapum 80 MW Hydro Power Project on River Yargyap–Chu in West Siang District, Arunachal Pradesh by M/s. Rapum Hydro Power Pvt. Ltd. – Reconsideration for TORs.

The Project is a run-off-river project and is located on Yargyap Chu, a right bank tributary of Siyom River in West Siang District of Arunachal Pradesh downstream of Mechuka Town. The project envisages a 22m high barrage to divert the water of Yargyap Chu through a head race tunnel of 1.5 Km length. Power House will be on the right bank of Yargyap Chu. This is contemplated as to generate 80 MW power by utilizing a head of 95m and discharge of 99.20 Cumecs. The estimated annual energy will be 322.19 GWh in a 90% dependable year. The catchment area of Yargyap Chu River at the diversion site is 834 Sq.km. The estimated cost of the project is about Rs.550.00 Crores.

The project proposal for ToR was discussed by EAC in its 46th meeting held on 21st January 2011 and the Committee did not agree cascading projects with no free riverine stretch between u/s Rego Project and d/s Pauk projects. It was submitted by the Project Proponent that Rego has an extra head of 80 m available with them and if the same is adjusted then a length of 0.5 km free riverine stretch shall be available. The FRL and TWL of 1800 m and 1635 m for Rego means 165m head but for 70 MW capacity, head requirement is only 85 m. Hence 80 m of head is in excess with Rego. Accordingly, the following rearrangement of FRL and TWLs of u/s and d/s projects was proposed by M/s Raajratna Energy Holdings Pvt. Ltd. –

Projects	Allotted by GoAP		Proposed & Revised for maintaining the natural flow distance	
	FRL	TWL	FRL	TWL
Rego 70 MW	1800	1635	1770	1685
Rapum 80 MW	1635	1540	1650	1555
Pauk 120 MW	1540	FRL of Heo	No Change	

The proposal was discussed by EAC in its 47th meeting held on 26th February 2011 and it was decided that approval from the Govt. of Arunachal Pradesh for the revised levels should be obtained before according scoping clearance and ToRs. The Government of Arunachal Pradesh has now given its approval on 4th May, 2012 vide its letter no. PWRS/HPD/W-1831/2008/2137-41 for FRL of 1650 m and TWL of 1555 m for this project.

The Committee desire to know that whether the FRL and TWL of Rego project has also been changed for which Project Proponent submitted that they had submitted the same proposal as discussed during last meeting to the Government of Arunachal Pradesh. The GoAP has accepted their proposals as it is and after that only the FRL & TWL of the project has been changed.

After critically examining all the issues related to environment, the Committee recommended Scoping/ToR clearance for the project subject to the confirmation by GoAP regarding revised levels of Rego HEP, as proposed by the proponent.

2.10 Bursar 1200 MW Hydro Power Project on Marusudhar River at Pakal site in Kishtwar District of Jammu & Kashmir by NHPC- For TORs.

Under the Indus Water Treaty, there is a provision of storage 1 MAF of water from Chenab River, hence the project. The Project proposal was considered in the last meeting held on 27th-28th April, 2012 and it was decided that two separate applications may be submitted as these are two different locations and different capacities. Bursar project has been declared as National Project by Central Government.

Accordingly, NHPC proposes to utilize of 410m gross head of Marusudar River (tributary of Chenab River) by constructing a 265 m high Concrete Gravity dam (above river bed level) on this river near Pakal village in Marwah Tehsil of Kishtwar District of Jammu & Kashmir. The FRL & TWL are 2130 m and 1700 m respectively. The TRT of this project is discharging into the reservoir of d/s Pakal Dul project. MDDL shall be 2040 m and total live storage shall be 624 Mcum (0.5 MAF). Head Race Tunnel will be 8 km long

taking water to an underground power station of 1200 MW (6 X 200 MW) located on the right bank of river Marusudar near Drangdhuran village. Annual Energy Generation shall be 2282 MU.

Total submergence area is 1563 ha. The total land requirement (tentative) is 1665 ha out of which about 1077 ha is forest land and 588 is revenue /private land. Out of the total forest land about 577 ha of forest land falls outside Kishtwar High Altitude National Park (KHANP) and 500 ha of forest land falls inside KHANP. Forest clearance for 577 ha has been accorded by J&K Government on 16.6.2005 under J&K Forest (Conservation) Act, 1997. Proposal for Wildlife clearance for 500 ha forest land falling inside the KHANP has been submitted to J&K State Government on 16th March, 2012. About 495 families in 11 villages shall get affected due to the project.

It was further noted that both the alternatives are upstream of Pakal Dul-Drangdhuran project which is at FRL 1700 m. The TRT of both the sites will be in the reservoir of Pakal Dul project hence there is no free flowing river stretch between Pakal Dul project and the Bursar project.

After detailed deliberations, the Committee recommended scoping clearance and approved draft ToRs with the following additional ToRs -

- (i) Relative locations of three cascade HEPs namely, Pakal Dul, Bursar and Salal and information regarding their possible interference on reservoirs' maximum water spread length at FRL, the FRL elevations, the HRT lengths and the TRT elevations and the total length of the river stretch, from the reservoir tip of the uppermost project to the TWL of the lowermost project of these three projects may be provided.
- (ii) The TRT of the project shall be discharging water in the reservoir of Pakal Dul HEP thereby meaning that there is no free flowing riverine stretch between projects. A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.
- (iii) The project is going to encroach upon reserve forest area of Kishtwar High Altitude National Park. Clearance/No Objection will have to be obtained from the Authorities for undertaking preconstruction activities.
- (iv) The minimum environmental flow shall be 20% of the flow of four consecutive lean months of 90% dependable year, 30% of the average monsoon flow. The flow for remaining months shall be in between 20-30%, depending on the site specific requirements. A

site specific study shall be carried out by an expert organization for computing month-wise environmental flows.

- (v) Muck disposal sites shall be minimum 30 m away from the HFL of the river.
- (vi) Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the dam, the flow diverted to the power house and the spill comprising the environmental flow and additional flow towards downstream of the dam for the project may be given.
- (vii) Information on sub-watersheds with their SYI values and its corresponding clear map of the catchment area with identification of very severely and severely erosion-prone sub-watersheds may be provided.

2.11 Bursar 1500 MW Hydro Power Project on Marusudhar River at Hanzal site in Kishtwar District of Jammu & Kashmir by NHPC- For TORs.

This is the Alternative 2 for the above mentioned project. In this, a Rockfill Dam of 248 m height from river bed level shall be constructed on Marusudar River near village Hanzal in Marwah Tehsil of Kishtwar District of Jammu & Kashmir and. HRT will be of 12 km ending on the power house site which is same in both the proposals i.e. from Dam at Pakal or at Hanzal sites. FRL and TWL is El 2200 m and 1700 m respectively. MDDL shall be El 2100 m. Catchment area for this site is 2865 sq. km. and maximum observed flood will be 1570 cumec. Live Storage will be 1 MAF and submergence area will be 3758 ha. Underground Power House will be near village Drangdhuran with installed capacity of 1500 MW having 6 units of 250 MW with design energy of 2533 MU. Max. Gross Head will be 476 m.

Total land requirement for this site is 4593 ha out of which 1420 ha is forest land involving 517 ha inside KHANP and 903 ha outside KHANP. Total submergence area shall be 3758 ha and total affected families shall be 2593 in 11 villages. Proposal for forest clearance for forest land of 903 ha outside KHANP has been submitted to J&K State Forest Dept. on 16.3.2012. The site is also geologically difficult.

Proposal for Wildlife clearance for 517 ha of forest land falling in KHANP has been submitted to State Government on 16.03.2012.

It was further noted that both the alternatives are upstream of Pakal Dul-Drangdhuran project which is at FRL 1700 m. The TRT of both the sites will

be in the reservoir of Pakal Dul project hence there is no free flowing river stretch between Pakal Dul project and the Bursar project.

The Committee discussed both the alternatives in detail and felt that the site at Pakal i.e. the alternative 1 seems more environmentally and geologically suitable as it involves lesser submergence and forest land and no. of affected families is also lesser in this alternative. The Committee suggested that the proponent may go ahead with this site however the officials of NHPC informed that by choosing this site, the storage capacity of the reservoir is only 0.5 MAF therefore, India will have to lose its share of water under the Indus Water Treaty. Accordingly, the installed capacity also works out to be lesser.

After detailed deliberations, the Committee recommended scoping clearance and approved draft ToRs with the same additional ToRs as for above project at Pakal site.

2.12 Revalidation of Environment Clearance for Brutang Major Irrigation Project in Naya Garh District, Orissa by Water Resources Department, Bhubaneshwar, Odisha.

The environment clearance to the above mentioned project was given on 2nd June, 2006 under the EIA Notification 1994 with a validity of five years. The project has also got TAC approval on 22.12.2000. The Government of Orissa has now requested to extend the validity of environmental clearance for another five years as admissible in EIA Notification, 2006. The Government of Orissa has informed that there was an extreme delay in obtaining other statutory clearances therefore, the project work could not start. Since the EIA Notification, 1994 has been replaced by EIA Notification, 2006, the request of Government of Orissa has been considered as per the prevailing Notification. Accordingly, Government of Orissa was requested to submit the following information to the Committee to review the current status of the project-

- (i) Whether there are any changes in the land use pattern within 10 km radius of the project.
- (ii) Whether there is any change in the water use pattern from the river.
- (iii) The status of requirement of irrigation for the project area.
- (iv) Whether there are any changes in the detailed scope of the project? In case of any change, updated PFR needs to be submitted.

- (v) Progress of the work undertaken relating to the project so far.
- (vi) Compliance to the environmental safeguard measures stipulated in the environmental clearance.
- (vii) Latest six monthly report submitted to the Regional Office of the Ministry or monitoring carried by the State Pollution Control Board.
- (viii) Any violation with regard to compliance of the stipulated conditions.
- (ix) Any litigation against the project/show cause notice issued for violation.
- (x) Details regarding adoption of better technologies for environment protection and conservation.
- (xi) Details of conjunctive use of water.
- (xii) Bottlenecks in implementation of the conditions which may require mid-course correction.
- (xiii) Any other issue to which the project proponent may like to highlight.

The Government of Orissa submitted salient features of the project. It was noted by the Committee that the proposed Project envisages construction of 552m long and 42 m height Earth dam with saddle Spillway of 125m on river Brutang, a tributary of river Mahanadi in Manjari village of Nayagarh District, Odisha to divert the stored water to the existing Kuanria reservoir through a 12 Km long link canal. The FRL of the project is 165.0 m. This water from Kuanria reservoir will feed a CCA of 23,300 ha in drought prone 5 Blocks of Nayagarh District. The catchment area at the dam site is 725 sq. km.

Total area of submergence is 2110 ha out of which 1009.44 ha is forest land. A total of 1524.17 ha of Forest land is involved in the project. The Stage -I Forest clearance for the project has been received on 9.9.2010. Baishipalli Wild Life Sanctuary is 1.5 km from the project. A total 680 families having 2002 PAP's in 41 villages are likely to be affected due to the Project. The R&R clearance from Ministry of Tribal Affairs has also been received on 9.6.2008. 7.42 lakh people spread over 309 villages will be benefited. The estimated cost of the Project comes is Rs.490.00 Crores (2008 price level) with Benefit Cost ratio of 1.964.

The Committee felt that the information asked for by the Ministry as listed above needs to be presented to review the changes in the area and the project. Further, a separate Social Impact Assessment would be needed for the project. The request shall be considered again on receipt of this information.

3. Discussion on Environment Clearance to Gundia 200 MW Hydroelectric Power Project in Hassan and Dakshina Kannada Districts of Karnataka by M/s Karnataka Power Corporation Ltd. in view of recommendation of Western Ghats Ecology Expert Panel.

It was decided that Prof. J.K. Sharma, Dr. Nayar and Dr. Dhananjay Mohan shall meet and consolidate their views, which shall be presented in the next meeting.

The meeting ended with a vote of thanks to the Chairman.

**List of EAC Members and Project Proponents who attended 58th Meeting of
Expert Appraisal Committee for River Valley & Hydroelectric Power
Projects held on 1st-2nd June, 2012 in New Delhi**

Members of EAC

1. Shri Rakesh Nath- Chairman
2. Shri A.K. Bhattacharya
3. Dr. Dhananjai Mohan,
4. Prof. Arun Kumar
5. Prof. S.K. Mazumdar
6. Dr. (Mrs.) Maitrayee Choudhary
7. Dr. K.D. Joshi
8. Shri T.S. Nayar
9. Dr. J.K. Sharma
10. Shri G.L. Bansal
11. Dr. Surendra Kumar Mishra
12. Ms. Sanchita Jindal, Director, MoEF - Member Secretary
13. Dr. Subba Rao, MoEF

**Pale Parmar Nala, Bhandora Nala and Bandra Nala Projects by
Government of Maharashtra**

1. Shri P.B. Sonawane, Chief Engr. (Konkan Region)
2. Shri S.S. Waghmare, Superintending Engr. (Konkan Irrigation Circle)
3. Shri V.P. Patil, Exe. Engr.
4. Shri Hari babu, MD
5. Shri P.B. Sanawau, Chief Engineer,
6. Shri APR Vittal Babu, Project Consultant
7. Dr. B. Hari Babu, Project consultant

**Chinki Multipurpose Project by Narmada Valley Development Authority,
Government of Madhya Pradesh**

1. Shri A.K. Awasthi, Chief Engineer (Power)
2. Shri r.p. Malviya Chief Engineer (RABLS)
3. Shri V.K. Pandey, Executive Engineer
4. Shri Shambhu Azad, Chief Engineer (WAPCOS)
5. Dr. Aman Sharma, Chief Engineer (WAPCOS)
6. Shri Nayan Jyoti Malakar, Chief Engineer (WAPCOS)
7. Shri L.K. sood, APCCF (NVDA)

Morand and Ganjal Complex Irrigation Project by Narmada Valley Development Authority, Government of Madhya Pradesh

1. Dr. Yogi Narsingh,
2. Dr. D.I. Bhatt
3. Shri Sunny Surti
4. Shri B.K. Singh
5. Shri Krishnamoorty

Shiggaon Lift Irrigation Project in Haveri District, Karnataka by Karnataka Neera Vari Nigam Ltd.

1. Shri Sharanappa Suiganti
2. Shri B.S. Chandrashekar,
3. Shri Shirane M. Dhabe
4. Shri M.S. Bhajantri Assistant Engineer

Seli Hydro Power Project by M/s. Seli Hydro Electric Power Company Limited of Moser Bear

1. Shri A.K. Jha,
2. Shri S.K. Khasi, CPO, Moserbeer Proj
3. Shri Satish Sharma,
4. Prof. Arun Shankar, Consultant
5. Shri R. Bhatia, Consultant
6. Dr. Y.P Sharda, SNC
7. Dr. Sethi
8. Dr. Parashar

Rangit-II HEP by M/s Sikkim Hydro Power Ventures Limited

1. Shri M.S. Bisaria
2. Mr. Vinod Kumar, Director
3. Mr. Kalpesh Pathak, GM, SHPVL
4. Shri Sandeep Singh, Project Head
5. Shri K.K. Saxena, Env. Officer
6. Shri H.M. Dayal, Geologist
7. Shri O.P. Singhal, Consultant SHPVL
8. Shri Arun Bhaskar – Consultant
9. Shri Vimal Garg, Consultant
10. Shri Ravinder Bhatia, Consultant

Rapum HEP by M/s Rapum Hydro Power Pvt. Ltd.

1. Shri Ramesh Chandra
2. Shri Sasi Kumar Bopanna,
3. Dr. Aman Sharma, WAPCOS
4. Shri S.K. Anil
5. Shri Basudev Barman
6. Shri Arjun Avasthy
7. Shri Dhananjay Gohlot

Bursar HEP in Jammu & Kashmir by NHPC

1. Shri Ajay Mayhar, Chief Engr.
2. A.K. Sarkar, ED(Planning)
3. Keshav Deshmukh, Chief (D&E)
4. Shri Vipin Kumar, Chief (Env.)
5. Shri P.K. Gupta, Chief (Geology)
6. Ms Manjusha Nigam, DM (Hydrology)
7. Ms. Dhanya, AM (Geology)
8. Shri Farooq Beg, DM (Civil)
9. Ms. Ritumala Gupta, AM (Env.)

**Brutang Major Irrigation Project by Water Resources Department,
Government of Orissa**

1. Shri S. Pant, IFS
2. Shri J.B. Manapatla
3. Shri S.S. Patnaik, Ex. Director
4. Shri R.K. Sirohi
