

Minutes of the 61st Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects constituted under the provisions of EIA Notification 2006, held on 12-13th October, 2012 at SCOPE Complex, New Delhi.

The 61st Meeting of the Expert Appraisal Committee (EAC) for River Valley and Hydropower Projects was held during 12-13 October, 2012 at SCOPE Convention Centre, Opposite Jawaharlal Nehru Stadium, New Delhi. The meeting was chaired by Dr. B. P. Das, Vice-Chairman on 12.10.2012 and by Shri. Rakesh Nath, Chairman on 13.10.2012. The Chairman welcomed the newly nominated Member Dr. Bhowmik. DR. Praveen Mathur, Dr. G. L. Bansal and Dr. K. D. Joshi could not attend the meeting due to pre-occupation. The list of EAC Members and Officials from various projects who attended the meeting is Annexed.

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

2nd Day (13.10.2012)

1. Agenda Item No.1: Welcome by Chairman and Confirmation of Minutes of the 60th EAC Meeting held on 7-8 September, 2012.

The Chairman welcomed the members. The minutes of the 60th EAC meeting were confirmed with the following amendment –

- (i) In agenda item no.2.9, (**Brutang Irrigation Project**), the last para has been replaced as under:

“The release of environmental flow for the project during the June-September would be 30% of the average corresponding to these months, in view of the fact that the flow in the river is almost nil during lean period i.e. in the months of December-March, the environmental flow of 0.5 cumec would be maintained. During October-November and April-May the environmental flow shall not be less than 20 % of average discharge in these months”

- (ii) In agenda item 2.9. (**Reoli-Dugli & Sach Khas**)

In form1 under1.30 the answer should be “Yes” as some forest area is getting submerged. Under Environmental sensitivity (III) point no.1 the forests getting submerged or diverted may be protected under Indian Forest Act, 1927.

While carrying out EIA studies special effort may be made to ascertain the presence of species such as Snow Leopard, Bharal and Ibex particularly during winters. While studying birds riverine species may require special emphasis and effect of tunneling and diversion of water through them needs to be assessed in detail.

1st Day (12.10.2012)

2. Consideration of Project proposals for Scoping and Environmental Clearance.

The following project proposals were considered

2.1 Dagmara HEP (130 MW) Supaul District of Bihar by M/s. Bihar State Hydroelectric Power Corporation Limited– For Reconsideration of ToR [J-12011/5/2012-IA-I].

The Bihar State Hydroelectric Power Corporation Limited proposes to develop a barrage toe 130 MW hydropower project in Supaul District of Bihar. This project was earlier considered by EAC on 29.7.2009 for environmental clearance for 126 MW. The EAC sought clarifications and also mentioned to take concurrence from the competent authority for land submergence in Nepal due to the project. The project proponent could not submit the requisite information. Thereafter, the project proponent submitted a proposal to Ministry on Dagmara HEP for 130 MW capacity for scoping clearance in view of the suggestions of EAC. It has been mentioned that in this proposal location of the barrage has been shifted about 8.5 km downstream of the earlier site to ensure that entire submergence area falls in Indian territory and no submergence in Nepal territory. The capacity has been enhanced from 126 MW to 130 MW. Therefore, the earlier Dagmara hydropower power project for 126 MW at old location 22.5 km downstream of Bhimnagar barrage stands cancelled.

The project proponent made a presentation about the project background and response to various issues raised by EAC for River Valley Projects. The project proponent informed that during the last meeting, the project envisaged 26 units of 5 MW each, from which, it has been changed to 17 units of 7.65 MW each from power optimisation consideration. The rated discharge however, remains same as 2739 cumec (17 x 161.1 Cumec, which is the design discharge of each 7.65 MW unit).

The new project proposal for 130 MW was considered afresh for Scoping clearance by the EAC in its meeting held on 30-31st March, 2012 and finally on 12th October, 2012.

The project proponent informed that the catchment area intercepted at barrage site is 61,992 Sq. km. The break-up of catchment is given as below:

- India - 126 sq.km
- Nepal- 30281 sq.km
- Tibet - 31585 sq.km

The project proponents also informed that there is no possibility of catchment area treatment in Nepal/ Tibet.

The committee noted that the proposed project is located at a distance of 31 km downstream of Bhimnagar barrage with no submergence in Nepal. It is proposed to construct a 14 m high and 998.50 m long barrage with 5750 m long guide bunds (2220 m on left and 3530 m on right side) on river Kosi near Old Bhaptiahi Village.

The EAC members expressed concern on the sharp constriction to only 1 Km wide barrage of the 10 Km wide river, prone to extensive avulsion. The hydraulic viability / stability of the sharply contracting left and right earthen guide bunds is a matter of concern. Severe scour and parallel flow might adversely affect the barrage which need to be studied in a comprehensive physical and analytical models. The orientation of the leading channel to the power house separated by three curve divide walls to exclude silt may lead to parallel flow as well as scour shoal in the upstream pond. The river behaviour from the existing Bhimnagar barrage jacketed by 31 Km long embankments need critical study for successful operation of barrage.

The total land requirement for the project is about 7595.35 ha. Out of which 7205.95 ha is private land and 390 ha is government land. No forest land is involved in this project. Total submergence area is 7500 ha. A total of 29 villages (fully affected villages-18 + partially affected villages -11) consisting of 5686 families (loss of land only-761 + Loss of land & Homestead-4925) are likely to be affected due to this project. Total cost of the project is about Rs.1069.25 Crores and will be completed in 4 years.

The EAC considers that economic viability of the project be reviewed as the submergence area is quite large and affecting large number of families thereby making it economically unviable. The project proponents informed that the project is located in an economically backward area and has no source of power. The project will provide power to the power deficit area. On the whole, the project will provide an impetus to the overall development in the area. As far as PAFs is concerned, the land within embankments is brought under cultivation only during summer season. PAFs make temporary houses for stay during the time crops are being grown. These families have permanent homesteads in nearby villages and they stay temporarily in these areas. They leave the area, prior to rise of water level in monsoon season. However, from the map drawing No WAP/Dagmara/DWG-1 of WAPCOS furnished by the promoter that it is seen that a large number of villages with dwellings exist within the eastern and western embankments. This is also reflected against compliance to comment no.-2 (of 30-31 March, EAC), where the status of 18 villages is fully submerged. The proponents contention that these villagers stay temporarily on the river bed / over bank during non-monsoon is anomalous. In fact 4925 families shown as losing land and house cannot be having only temporary hutment. This aspect needs detailed verification at EIA stage.

Kosi being a turbulent river has more silt as compared to other rivers. During floods, huge quantum of sediments will enter the power house. Unless the turbine manufacturer guarantees the safety of the low head turbines, acute problem of maintenance of the turbines apprehended. The project proponents informed that during high floods and heavy silt conditions (for a few days), the powerhouse will be shut down. In addition, due to pondage effect during non-monsoon period, there will be settling effect in silt; hence silt affecting generation is likely to be minimum. The accumulated silt will be flushed out through spillway/under sluice gates. Silt deflector walls will also be provided in front of power house intake to deflect silt towards under sluice. The crest level of spillway is kept

at El 58.10 m. Pond Level of barrage will be maintained at El 65.5 m whereas MDDL is at EL 64.5 m. live storage (72.87 Mm³) will be used for power generation, Silt load is not likely to encroach into live storage. Hence, no effect on live storage capacity vis-a-vis on power generation is anticipated. The Turbine manufacturer has indicated that the safety of the moving parts against the abrasive effect of the moving silt is possible with the use of latest technology like Tungsten coating/ ceramic coating etc.

The EAC asked for the revenue status (private, government, community, any other) of the 7,500 ha of land within the embankment that remains under submergence during the monsoon season. The break-up of area under submergence is 7500 ha (Government land -375 ha + Private Land-7125 ha) was provided by the project proponents. In project operation phase, the area under MDDL is 6224 ha, which will be permanently under submergence. The area in between MDDL and FRL (1276 ha) will have a diurnal cycle of being under water and dry phases.

The committee suggested exploring the possibility of providing a powerhouse as an integral part of existing Kosi barrage at Bhimnagar which will avoid large submergence due to building of this new barrage. It was informed that the Kosi Barrage was constructed in 1965 for irrigation and flood control under Indo-Nepal Agreement and has outlived its life. This barrage is in Nepal Territory where construction work cannot be taken up. The waterway of 1005.95 m has been provided for safely passing the flood discharge and no portion of it can be used for any other purpose. The canal head works exists on both sides of Barrage leaving no space for construction of a powerhouse.

The Committee after critical examination recommended clearance for pre-construction activities and approved the TOR with the following additional TORs:

- i. For a capacity of 130 MW power generation, the submergence is huge and the project proponent may consider it appropriate to re-work out its economic viability before carrying out pre-construction activities for EIA
- ii. The number of project affected families is large; R&R Plan has to be formulated in detail and also a separate Social Impact Study to be prepared for project affected families. R&R Plan is for land for land or any other arrangement for satisfactory rehabilitation of PAFs need to be clarified. Whether any cultivable land is available outside when compared to that of river bank on which they are dependent. Family-wise land details in the river bank as well as elsewhere should be provided
- iii. A study highlighting the land-use pattern of land under Submergence area under various seasons to be conducted. This study should be undertaken using satellite data for various seasons
- iv. Details of the Govt. land of 375 ha required for the project may be provided.
- v. *Cultivable land for rabi crop during the lean season. Explore the possibility of using kharif irrigation.*
- vi. Initially there was an irrigation component in the project, while in the revised project it does not reflect the same. Explain the economic feasibility of the project
- vii. As proposed, total length of embankments on both sides is about 75 km whose protection should be ensured and be done properly on U/S and D/S

- viii. A detailed hydraulic model study should be undertaken for the project
- ix. A detailed study on seismotectonic survey of the project has to be carried-out. Micro-seismic monitoring for 1-2 years has to be done
- x. Large scale geomorphological mapping to reveal the pattern of river migration as well as paleo-channels in the flood plains of Kosi river has to be made for the project
- xi. Study to be carried out for silt management and flushing through under sluices of existing Bhimnagar barrage concurrently with proposed Dagmara barrage.
- xii. A fish pass of adequate size and capacity based on scientific ichthyofauna study needs to be provided in the barrage
- xiii. A study on Dolphin in the river Ganga should be carried-out in consultation with Dr. R. K. Sinha who is an expert on Gangetic Dolphin.

2.2 Lower Penganga Irrigation Project in Adilabad District of Andhra Pradesh by M/s. Irrigation & CAD Department, Government of Andhra Pradesh – for TOR [J-12011/28/2012-IA-I].

The project proponent made detailed presentation on the project. The committee noted that this is an Inter-State Project between Maharashtra and Andhra Pradesh. The net annual flows at Lower Penganga dam are assessed as 42.67 TMC to be shared in the ratio of 88:12 between Maharashtra and Andhra Pradesh (i.e. Maharashtra-37.55 TMC & Andhra Pradesh-5.12 TMC) This will create an irrigation potential of gross command area (GCA) of 29,757 ha and culturable command area (CCA) of 19,233 ha in Adilabad District of Andhra Pradesh.

The committee also noted that the Ministry of Environment & Forests granted environmental clearance to Lower Penganga Irrigation Project in Yavatmal District of Maharashtra on 17.5.2007. The project envisages construction of an earthen dam across Penganga river. The project has an irrigation potential of 1,40,818 ha in Maharashtra and 19,233 ha in Andhra Pradesh. The project proponent could not provide information on environmental issues pertaining to Andhra Pradesh at that time. Therefore, the proposal for irrigation in Andhra Pradesh was not considered by the EAC. Now the project proponent (A.P) made a separate proposal for Andhra Pradesh portion and has submitted to Ministry for Scoping clearance. The committee found the information provided by the consultant as too meager and did not conform to the standards prescribed for ToR of an irrigation project. The pre and post project cropping pattern need enough elaboration and justification with appropriate measures for drainage.

The Lower Penganga left bank canal is the source of off-take point for the Andhra Pradesh State to draw water. The take-off point is at RD 11.91 km from the dam and subsequent canal length of 1.90 km will take water into Andhra Pradesh border. Total land requirement for the project is about 509.261 ha. Out of which 500.481 ha is private land and 8.78 ha is forest land. No submergence is involved in Andhra Pradesh. As the long contour canal cuts through certain forest land the impact needs to be understood.

The Geology of the area around the Penganga project reveals a peculiar morphotectonic set-up of the area. The Penganga succession occurs independently in

different faults controlled basin characterized by varying degrees of tectonism. Subjected to strong compression, the Godawari rocks suffered large scale penetrative deformation, resulting to folding and imbricate thrusting. Two major thrusts are identified in Adilabad area. There was southerly propagated sheet as evident from southward transportation of northern packages of rocks. In the Somanpalli area, the ENE-WSW oriented cross folds, superposed on NW-SE trending folds were formed due to strike slip sinistral faulting during main contractional deformation.

The Penganga formation is predominant lithographic limestone with minor shales that form carbonate ramp in relatively deeper water environment below the base of storm waves. During marine transgression, basin wide oxygen deficient anoxic conditions caused precipitation of black carbonates forming middle level of Chanda formation.

After detailed deliberations, the committee desired the information on the following issues:

- The basic details of water availability with respect to 50% & 75% dependable years and the rainfall data etc are not available in the documents and Pre-feasibility Report (PFR) is also not made available to the EAC members and therefore, the PFR needs to be sent to all the members to get clear picture of the project.
- The Form-1 to be revised giving all the components of the project including that of the Lower Penganga Project already cleared for Maharashtra portion
- The details of the command area development (CAD), and main canals & distributaries involved and their alignments are to be provided
- The present and proposed cropping pattern in the command area of the project
- Baseline data on soil physical and chemical parameters, surface and groundwater quality parameters (primary data) and groundwater table variation history over the past 5 or 10 years (from secondary sources) are to be collected for 3 seasons, analyzed and interpreted to understand the impact of the project on the environment. Keeping in view the size of the CCA, it is suggested that such data may be collected from about 10 to 15 well-distributed locations in the proposed command area.
- A detailed study on structural mapping of the project area, geomorphological mapping and evaluation of morphometric set-up of the area has to be carried-out for the project.
- EMP should include CAD and OFD plans in general with the target date of completion; and the details of such a plan for sample an outlet command for examination by the EAC. In the detailed plan, please highlight the outlet location, the field channels, the field drains, the field boundaries, the farm roads, etc. The prevalent slopes in the proposed command area and the need and plan for land development may be spelt out. Similarly, if any conjunctive water use is contemplated, adequate information on it may be given.
- Pressurized and water saving irrigation methods such as drip, sprinkler, etc is to be introduced on pilot basis in five well-distributed locations in the command area each

measuring about 500 ha, at project cost and maintained under the project. For such areas, suitable crop plan may be evolved and described in the EMP.

- In form 1 part III (Environmental Sensitivity) the answer to point no. 1 should be yes since the forest land coming under submergence is protected under national legislation. Moreover Tippeshwar Sanctuary is only 2 km from the canals. Under Environmental sensitivity (III) point no 3 there is a possibility of area being used by sensitive species which may be investigated during the EIA stage.
- A clearance from NBWL would also be required for the project since it is within 10km from a sanctuary.

The committee observed that the documents are incomplete; PFR is not available and the draft TORs proposed for an irrigation project was not available. Therefore, the committee suggested that all requisite documents complete in manner incorporating above information may be submitted for further consideration of the project

2.3 Lara Sumta HEP (104 MW) Project in Lahaul & Spiti District in Himachal Pradesh by M/s Lara Sumta Hydro Power Private Limited. – For ToRs [J-12011/32/2012-IA-I]

The project proponent made detailed presentation on the project. The committee noted that the project envisages construction of a 22 m high barrage on Spiti (tributary of Sutlej) river near Tabo Village in Lahul & Spiti District of Himachal Pradesh to generate 104 MW of hydropower. This is a run-of-the-river scheme. The head race tunnel (HRT) is about 8.47 Km with 6.1 diameter and 190 m tail race tunnel (TRT) with 6.1 m diameter to carry the powerhouse release back to the river. An underground powerhouse is proposed on the right bank of the river near Tipta village with 2 units of 52 MW capacity. The total land requirement for the project is about 97.75 ha. Out of which 79.50 ha is forest land 18.50 ha is private land. Total submergence area is 26.30 ha. The catchment area of the project is about 5210 Sq.km. The estimated cost of the project is Rs. 898.41 Crores and will be completed in 66 months.

The hydrological aspects are based on the Gauge & Discharge data maintained at Khab for 31 year period from 1970 to 2001. The catchment area of Spiti basin at Khab where river Spiti meets river Satluj is about 9480 Sq. Km and the catchment area up the diversion site / barrage is about 5210 Sq. Km. The flow series arrived in the PFR are interpolated on catchment area at Khab. The committee deliberated in detail on this aspect and suggested that the project proponent should follow the guideline suggested by CWC for estimation of flow series.

Further, the committee suggested that actual discharges at diversion site of the project may be measured by installing Automatic Water Level recorders during the investigations. The committee noted that very few rain gauge stations are installed in the area and suggested that adequate rain/snow recorders need to be installed. The project proponent clarified that it proposes to install Automatic Weather Stations, Automatic Water Level recorders, snow and rainfall recorders in the area for observation of hydro-meteorological data.

In the PFR of the project, the project proponent has considered environmental flow as 15% of the minimum discharge observed in a 90% dependable year as per the notification of Govt. of Himachal Pradesh. The committee suggested that minimum Environmental Flow release should be 20% of the average of the four lean months of 90% dependable year. In non-monsoon non lean season the release should be between 20-30% of the average flows during the period in 90% dependable year. The environmental releases / spill during the monsoon season should be 30% of average Monsoon flow for 90% dependable year. This should be adhered to cater to the downstream requirement. The project parameters may be finalized in the DPR keeping the above considerations. The project proponent clarified that while in the PFR the notification of Govt. of Himachal Pradesh on environmental flows was followed, the studies in the DPR would be made as per the above norms suggested by the committee.

It was also emphasized that detailed subsurface investigations, in-situ permeability tests of the media may be carried out for realistic assessment of the area during survey & investigations for the DPR. Reservoir tightness aspect should be looked into based on the foundation parameters and geo-structural regime and proper cut off may be provided in the diversion structure. The committee suggested that the area falls in seismic zone –IV and therefore the approval of the seismic parameters should be obtained from the appropriate authority.

It was noted that the project area is remotely located and sparsely populated and as such would not involve much displacement. The committee suggested that land required for the project may be optimized, since it is developing another project (Sumte Kothang) which is immediate downstream of this project. The committee also noted that the free riverine stretch between FRL of Lara Sumta HEP and TWL of upstream Mane Nandang HEP is about 2.50 Km and the free riverine stretch between FRL of downstream Sumte Kothang HEP and TWL of Lara Sumta HEP is about 8.50 Km.

The committee suggested that in the Form-1 under the Environmental sensitivity and under the head 1.30 the reply should be affirmative - "Yes". The project proponent should resubmit the Form-1 with above amendments.

The Committee after critically examining all environmental issues, recommended clearance for pre-construction activities and approved the TOR with the following additional TOR:-

- i. Exact distance of the project with respect to Kibber Wildlife Sanctuary be established during the EIA study and be depicted on map showing/markings clearly the project area and the sanctuary
- ii. As the project site is within 10 km from the Wildlife Sanctuary, as per Hon'ble Supreme Court order, clearance from NBWL may be obtained.
- iii. In view of proximity project components with Kibber Wildlife Sanctuary a detailed study on the biodiversity especially fauna to be done giving emphasis on endemics and RET species.

- iv. Details of RET floral and faunal species be included in the report and appropriate management measures be included.
- v. Details of the Chilgoza pine tree which is likely to be affected by the project may also be indicated in the EIA report.
- vi. Automatic Water Level recorders should be installed for recording discharges at G&D sites to assess snow and rainfall contribution
- vii. A site specific study may be carried-out considering minimum environmental flow release @ 20% of the average of the four lean months of 90% dependable year, in non-monsoon non lean season the release should be between 20-30% of the average flows during the period in 90% dependable year and the environmental releases / spill during the monsoon season should be 30% of average monsoon flow for 90% dependable year. Village Tabo is located between diversion structure / barrage and tail race disposal site. This village has a famous Buddhist Monastery. The environmental flow requirements for religious purposes needs to be established.
- viii. The area fall in seismic zone –IV and therefore a site specific study need to be conducted and the approval of the seismic parameters be obtained from the appropriate authority.
- ix. Detailed geological mapping of the area (structural aspects: major and minor structures) should be undertaken
- x. Under Environmental sensitivity (III) point no 3 there is a possibility of area being used by sensitive species of the trans-Himalayas such as Snow Leopard, Brown Bear, Bharal or Ibex which may be investigated during the EIA stage and so the answer to this should be 'yes'. The PFR table 10-3 also lists out many threatened species from the area.

2.4 Sumte Kothang HEP (130 MW) in Lahaul & Spiti District in Himachal Pradesh by M/s Sumte Kothang Hydro Power Private Limited.– For ToRs [J-12011/33/2012-IA-I]

The project proponent made detailed presentation on the project. The committee noted that the project envisages construction of a 22 m high barrage is proposed on Spiti river near Hurling Village in Lahul & Spiti District of Himachal Pradesh to generate 104 MW of hydropower. This is a run-of-the-river scheme. The head race tunnel (HRT) is about 10.84 Km with 6.20 diameter and 286 m long tail race tunnel (TRT) with 6.20 m diameter to carry the powerhouse release back to the river. An underground powerhouse is proposed on the right bank of the river near Chango village with 2 units of 65 MW capacity. The total land requirement for the project is about 110 ha. Out of which 87 ha is forest land 23 ha is private land. Total submergence area is 32.20 ha. The catchment area of the project is about 5560 Sq.km.

The hydrological aspects are based on the Gauge & Discharge data maintained at Khab for 31 year period from 1970 to 2001. The catchment area of Spiti basin at Khab where river Spiti meets river Satluj is about 9480 Sq. Km and the catchment area up the barrage is about 5560 Sq. Km. The flow series arrived in the PFR are interpolated on catchment area at Khab. The committee deliberated in detail on this aspect and suggested

that the project proponent should follow the guideline suggested by CWC for estimation of flow series.

Further, the committee suggested that actual discharges at diversion site of the project may be measured by installing Automatic Water Level recorders during the investigations. The committee noted that very few rain gauge stations are installed in the area and suggested that adequate rain/snow recorders need to be installed. The project proponent clarified that it proposes to install Automatic Weather Stations, Automatic Water Level recorders, snow and rainfall recorders in the area for observation of hydro-meteorological data.

In the PFR of the project, the project proponent has considered environmental flow as 15% of the minimum discharge observed in a 90% dependable year as per the notification of Govt. of Himachal Pradesh. The committee suggested that minimum Environmental Flow release should be between 20-30% of the average of the four lean months of 90% dependable year. In non-monsoon non lean season the release should be 25% of the average flows during the period in 90% dependable year. The environmental releases/spill during the monsoon season should be 30% of average Monsoon flow for 90% dependable year. This should be adhered to cater to the downstream requirement. The project parameters may be finalized in the DPR keeping the above considerations. The project proponent clarified that while in the PFR the notification of Govt. of Himachal Pradesh on environmental flows was followed, the studies in the DPR would be made as per the above norms suggested by the committee.

It was also emphasized that detailed subsurface investigations, in-situ permeability tests of the media may be carried out for realistic assessment of the area during survey & investigations for the DPR. Reservoir tightness aspect should be looked into based on the foundation parameters and geo-structural regime and proper cut off may be provided in the diversion structure. The committee suggested that the area falls in seismic zone –IV and therefore the approval of the seismic parameters should be obtained from the appropriate authority.

It was noted that the project area is remotely located and sparsely populated and as such would not involve much displacement. The committee suggested that land required for the project may be optimized, since it is developing another project (Lara Sumta) which is immediate upstream of this project. The committee also noted that the free riverine stretch between FRL of Sumte Kothan HEP and TWL of upstream Lara Sumta HEP is about 8.50 Km and the free riverine stretch between FRL of downstream Chango Yangthang HEP and TWL of Sumte Kothang HEP is about 3.12 Km.

The committee suggested that in the Form-1 under the Environmental sensitivity and under the head 1.30 the reply should be affirmative - "Yes". The project proponent should resubmit the Form-1 with above amendments.

The Committee after critically examining all environmental issues, recommended clearance for pre-construction activities and approved the TOR with the following additional TOR:-

- i. Exact distance of the project with respect to Kibber Wildlife Sanctuary be established during the EIA study and be depicted on map showing/markings clearly the project area and the sanctuary
- ii. As the project site is within 10 km from the Wildlife Sanctuary, as per Hon'ble Supreme Court order, clearance from NBWL may be obtained.
- iii. In view of proximity project components with Kibber Wildlife Sanctuary a detailed study on the biodiversity especially fauna to be done giving emphasis on endemics and RET species.
- iv. Details of RET floral and faunal species be included in the report and appropriate management measures be included.
- v. Details of the Chilgoza pine tree which is likely to be affected by the project may also be indicated in the EIA report.
- vi. Automatic Water Level recorders should be installed for recording discharges at G&D sites to assess snow and rainfall contribution
- vii. A site specific study may be carried-out considering minimum environmental flow release @ 20% of the average of the four lean months of 90% dependable year, in non-monsoon non lean season the release should be between 20-30% of the average flows during the period in 90% dependable year and the environmental releases / spill during the monsoon season should be 30% of average monsoon flow for 90% dependable year. Village Tabo is located between diversion structure / barrage and tail race disposal site. This village has a famous Budhist Monastery. The environmental flow requirements for religious purposes needs to be established.
- viii. The area fall in seismic zone –IV and therefore a site specific study need to be conducted and the approval of the seismic parameters be obtained from the appropriate authority.
- ix. Detailed geological mapping (structural aspects: major and minor structures) of the area should be undertaken.
- x. Under Environmental sensitivity (III) point no 3 there is a possibility of area being used by sensitive species of the trans-Himalayas such as Snow Leopard, Brown Bear, Bharal or Ibex which may be investigated during the EIA stage and so the answer to this should be 'yes'. The PFR table 10-5 also lists out many threatened species from the area.
- xi. Since this project and the Lara Sumta project belong to the same proponent i.e. M/S Reliance Power Limited (R Power) and the two projects are in close proximity, a sincere effort to have a common camp & infrastructure for the two may be made to reduce forest land requirement.

2.5 Raigam HEP(96 MW) Project in Anjaw District of Arunachal Pradesh by M/s. Sai Krishnodaya Industries Pvt. Ltd. – For ToRs [J-12011/36/2012-IA-I]

2.6 Gimliang HEP(99 MW) Project in Anjaw District of Arunachal Pradesh by M/s. Sai Krishnodaya Industries Pvt. Ltd. – For ToRs [J-12011/37/2012-IA-I]

The project proponent did not attend the meeting and committee also noted the absence of the project proponent.

2.7 Loktak Downstream HEP (66 MW) Project in Tamenglong District of Manipur by M/s. NHPC Ltd – For Reconsideration for Environmental Clearance [J-12011/17/2007-IA-I]

The project was earlier considered in 53rd meeting of EAC held on 11–12th November, 2011 and 59th meeting of EAC held on 20-21st July, 2012. The Committee had sought additional information and modified EIA/ EMP reports. The project proponent submitted the information and also made a detailed presentation before the EAC on 12.10.2012. The committee noted that this project is a joint venture by M/s. NHPC Ltd. and Government of Manipur. The project is a run-of-the-river scheme in which the tail race discharge of upstream commissioned Loktak 105 MW powerhouse along with the inflow of the River Leimatak will be used for power generation. The project envisages construction of 28 m high barrage on river Leimatak (a tributary of Irang River) near Tousang Khunou Village in District Tamenglong of Manipur to generate 66 MW of hydro power. The project is likely to utilize 112 m gross head of Leimatak river by constructing a barrage with one HRT of 5.8 km length conveying water to a proposed surface powerhouse on the left bank of the river with 2 units of 33 MW each. The tail race tunnel (TRT) of 71 m long will be opening into Irang River. The yearly energy generation during the 90% dependable year with 95% machine availability is 330.24MU. The design discharge is 65.28 cumec and design flood is 2450 cumec. The catchment area of the project is 554 Sq.km.

The total land requirement is 211.50 ha., which is of 4 types viz. wet paddy fields (on river bed), community land, Jhum land and unclassified forest land. No private land is to be acquired for the project. However, 705 families are likely to be affected due to loss of their right over community and unclassified forest land.

An amount of Rs. 63.52 Crores has been allocated for Environmental Management Plan (EMP). The project proposed to be completed in 78 months.

The Public Hearing was conducted on 7.6.2011. The Stage-1 Forest Clearance has been accorded for diversion of 211.50 ha forest land on 3.3.2011. The TEC has been accorded on 15.11.2006 by CEA

After detailed deliberations and examining all environmental and social aspects, the committee recommended environmental clearance subject to following commitments & submission of the information:

- i. Increase of environmental flow during the monsoon season to 10 cumecs, as against the proposed quantity of 4.47 cumecs for downstream aquatic life
- ii. Estimated cost of Rs. 494 lakhs under Biodiversity Conservation plan is inadequate. Therefore, an additional amount of Rs.150 lakhs as suggested by the EAC be kept for conservation of endemic flora and fauna under Biodiversity Conservation plan.
- iii. EAC has observed that the cost for Community and Social Development plan (Local Area Development) is too less to meet the requirements of the local people, as the area is under developed. Further, it was desired that the cost of the plan should be increased to about 1.5% of the total cost of the project.

Further, it is also suggested a provision for development of orange/fruit orchid, fruit processing unit etc. may also be made available under local area development.

- iv. The committee further emphasized that community and social development plan may be separated from R&R plan.
- v. EAC observed that the budget provisions of Rs. 6370.35 lakhs kept for implementation of Environmental Management Plan (EMP) are very less. Further, the budget kept under Public Health Delivery System, Fuel provision and Restoration of Construction Areas and Landscaping seemed to be inadequate and project proponent should also include the cost of hospital, additional benefits for locals, in the EMP. The overall budgetary provisions should be increased in EMP.
- vi. A separate reply to the memorandum of Sh. S. Sarat Singh, Manipur dated 29.06.2011 may be provided

Keeping in view of the above recommendations, the project proponent submitted the requisite information during the EAC meeting on 13.10.2012. The committee was satisfied with the reply given by M/s. NHPC Ltd. The committee also noted the agreed environmental flows & additional budgetary provisions made in EMP. The committee observed that the additional provisions made by M/s. NHPC Ltd were found to be in order. The EAC recommended the grant of environmental clearance to the project.

2.8 Teesta Low Dam-V HEP (80 MW) Project in Darjeeling District of West Bengal by West Bengal State Electricity Distribution Company Ltd – For ToR [J-12011/39/2012-IA-I]

The project proponent made a detailed presentation. It is noted that a 19 m high and 144 m long barrage is proposed on Teesta River just downstream of Coronation Bridge and about 800 m upstream of Sevoke Bridge in Darjeeling District of West Bengal for generating 80 MW of hydropower. A surface powerhouse is proposed on the right bank of river with 4 units of 20 MW each. Total land requirement is about 157.5 ha. Out of which 142.5ha is forest land and 15 ha is private land. Total submergence area is 82.5 ha

The committee noted that the free riverine stretch between FRL of TLDP-V HEP and TWL of upstream TLDP-IV HEP is about 1.1 km and the free riverine stretch between FRL of downstream Teesta Barrage Project and TWL of TLDP-V HEP is about 20 km. The locations of all the 4 Teesta Low-dam projects should be shown in 'L' section, including that of Teesta Intermediate Project; giving the elevations of the FRL and TWL of the contiguous projects in the cascade. The clear river flow distance between the TWL of an U/S project and the FRL tip of the next D/S project must be at least 1 km. In the present case, however, as there is no HRT in this project, the river interference is very little. In this context, it has to be clarified the 'drying up of river', mentioned in Page 31 of Form 1.

It is also not clear as to whether the entire 8120 km² catchment is to be considered for developing CAT Plan or the catchment of the project. The catchment area treatment should be based on SYI values and therefore a table of SYI values sub-watershed-wise

should be shown on a clear map identifying the sub-watersheds to be treated in this project.

The committee suggested that in the Form-1 under Items 1, 2 & 3 of Environmental sensitivity and under the head 1.30 the reply should be affirmative - "Yes". The PFR is to be more informative with respect to the water availability situation. The project proponent should resubmit the Form-1 with above amendments.

The committee suggested that the area falls in seismic zone-IV and therefore the approval of the seismic parameters to be obtained from the appropriate authority. In addition, Geo-morphological Mapping and Structural Mapping of the Study Area be also conducted.

In the PFR of the project, the project proponent has not considered environmental flow while conducting the power potential studies. The minimum environmental flow release during the lean months should be 20% of the average of the four lean months of 90% dependable year. In non-monsoon non-lean season the release should be between 20-30% of the average flows during the period in 90% dependable year. The environmental releases/spill during the monsoon season should be 30% of average Monsoon flow for 90% dependable year. This should be adhered to cater to the downstream requirement. As Teesta river with very high flow opens out to the plains below this project the river has rich fish population species diversity. Maintaining adequate migratory path and flow are crucial. Detailed studies by a reputed institute in this regard say CIFRI is absolutely necessary along with provision of a well design fish pass. The project parameters may be finalized in the DPR keeping the above considerations.

The Committee after critical examination of all issues related to environment, desired additional information

- i. Levels of TLDP-V HEP and upstream project TLDP-IV to be reviewed and L-Section of Teesta River be given
- ii Impact of passage of SPF on Coronation Bridge and upstream project be estimated.
- iii The distance of the project with respect to Mahananda Biosphere Reserve to be established and on map giving the clear details of project components and Biosphere Reserve
- iv A detailed study on the biodiversity especially fauna to be done giving emphasis on endemics and RET species to be included
- v Details of RET floral and faunal species and appropriate management measures be included in the EIA Report.
- vi Presence of Elephant Migratory Path in the Study Area along with impacts due to the project be ascertained
- vii. The DPR/studies may be finalized considering minimum environmental flow release @ 20% of the average of the four lean months of 90% dependable year; in non-monsoon non-lean season the release should be between 20-30% of the average flows during the period in 90% dependable year and the

environmental releases /spill during the monsoon season should be 30% of average Monsoon flow for 90% dependable year.

- viii The area falls in seismic zone –IV and therefore the approval of the seismic parameters' be obtained from the appropriate authority as a part of DPR.
- ix Detailed Geo-morphological and structural Mapping of the study area be conducted as a part of DPR.

The Committee mentioned that the project proponent should to resubmit the PFR and Form-I incorporating the above information for further consideration

2.9 Kalisindh Major Irrigation Project in Shajapur District in Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh - For ToRs [J-12011/41/2012-IA-I]

The project proponent made a detailed presentation on the project. It is noted that the project envisages construction of an earthen dam across Kalisindh river near Samaskhedi village in Shajapur District of Madhya Pradesh to provide for irrigation facility for 36,000 ha. area benefitting 171 villages. The Gross Command Area (GCA) of the project is 61,635 ha; culturable command area (CCA) is 49,023 ha and the irrigable command area is 36,000 ha. About 43.71 Mm³ has been earmarked for meeting for irrigation requirements.

The total land requirement for the project is 4919 ha. The submergence area is 4239 ha. The total private to be acquired for the project is 4165 ha. and the remaining land of 774 ha is revenue land (Government). About 2005 families in 15 (7 partially + 8 fully) will be affected due to this project. The number of families losing land shall be about 2384.

As per the CGWB Annual Report (2008-09), the upper reaches of Kali Sindh river in parts of Sonkatch & Bagli blocks in Dewas District of Madhya Pradesh. 191 artificial recharge structures have been completed during the year.

The ravines of Chambal and its tributaries have probably originated from tectonic activity and have till date shown no obvious relation to climate but continued deforestation exposes the nutrient deficient soil, which exacerbates ravine expansion. The extreme climatic events in such a scenario can speed-up erosion and prompt a disaster. The Chambal ravine formation significantly increases soil loss from agricultural lands and severely impacts agricultural productivity. A review of ephemeral gully erosion and spreading rates of the ravenous tracks of Lower Chambal Valley using geospatial tools shows that both the ravenous and the marginal lands have increased during the last 15 years. Slow natural disaster- ravine erosion is an obvious threat to the inhabitants of the region.

Conventionally, ravine formation, classified as soil erosion, does not feature as a natural disaster, and yet it is a plague-like disease which slowly engulfs valuable agricultural land each year. In its totality, however, it exerts an impact similar to disasters in terms of destroying the socio-economic fabric of a region. A livelihood threat, ravine

formation should thus be addressed in as much the same way as one would treat a disaster and minimise damage.

Soil characteristics, up-liftment of land and ecological factors have played an important role in the genesis of these ravines. Additionally, the region is semi-arid, marked by extremes of temperature and great uncertainty of rainfall. The climatic conditions with cold winters and hot and dry summers may be attributed to the inland location, lack of vegetative cover, nature of soil and bare rock. It is of interest to note that a total 16,05,300 ha of Chambal region predominantly bears a rural character with its activities such as overgrazing and unsustainable agricultural activities further adding to soil erosion.

During the presentation, the committee made a point that Pre-feasibility Report (PFR) does not contain any information and needs to be revised giving all the details of project, hydrology, water availability, soils, land, existing cropping pattern and proposed cropping pattern etc so that the committee get a clear picture of the project. The project proponent should also to submit the Form-1 based on the revised PFR.

The Committee after critically examining all the issues related to environment sought additional information on the following:

- i. All relevant information and data pertaining to Chambal basin.
- ii. Water availability studies including details of quantity of water earmarked for downstream users.
- iii. Cropping pattern proposed for the project
- iv. Delta for various crops
- v. Total Crop water requirements and month-wise water abstractions for meeting irrigation water requirements

The committee also recommended following additional studies to be conducted as a part of the TOR:

- i. Irrigation planning for the project
- ii. Mapping of location of water harvesting structures in the Kali Sindh flood plains should be done
- iii. Geospatial mapping of the flood plains to assess the riverine development should be carried-out and detailed geomorphological mapping for flood plains migration and paleochannels should also be done.
- iv. Command Area Development (CAD) Plan and time target for its implementation
- v. Review of topographical conditions to ascertain the requirement of land leveling and other OFD works
- vi. Sample plan of one outlet covering water courses, field drains, irrigation channels, etc.
- vii. Detailed map showing soil classification of the command area & map showing land irrigability classification of the command area

- viii. Soil and water sampling locations be so selected that they are evenly distributed in the head , middle and tail reaches of canal network and the sampling locations are to be shown on a map
- ix. Detailed plan for covering 10% of the area command area under pressurized/drip irrigation, including its cost.
- x. Morpho-tectonic map of the study area should be prepared to estimate the channel migration patterns.
- xi. Under soil sampling, additional parameters e.g, soil pH of the saturation extract, Water Holding Capacity, Field Capacity, Wilting point, Calcium, Magnesium, Potassium, Sodium should be studied
- xii. Ten (10) sampling locations are to be covered under terrestrial ecological survey
- xiii. Considering large number of project affected families (PAFs), a separate Social Impact Assessment Study to be carried-out

The Committee mentioned that the project proponent should to resubmit the PFR and Form-I incorporating the above information for further consideration.

2.10 Sip Kolar Link Medium Irrigation Project in Sehore District of Madhya Pradesh by M/s. Water Resources Department, Government of Madhya Pradesh – For TOR [J-12011/42/2012-IA-I]

The Principal Secretary (Irrigation) made a detailed presentation on the project. The committee noted that the Sip Kolar project is a diversion project proposed to augment existing Kolar reservoir. The existing Kolar project was granted environmental clearance on 6.4.1984 by the Ministry and the project was completed in 1989. The forest clearance was granted on 10.6.2009. The Kolar project was proposed to irrigate 45,078 ha of area but only 31,000 ha is being irrigated presently. The presentation document however showed irrigation coverage of only 22,868 ha (maximum in 2006-07). Therefore, the Sip Kolar project is proposed to divert water into the existing Kolar project for augmentation and to irrigate an area of 6,400 ha. A total of 39.92 ha of forest land involved in the proposed Sip Kolar project for which forest clearance has already been obtained. In the proposed project 34.36 Mcum of water of Sip basin is to be diverted to Kolar reservoir to augment the present Kolar project live capacity. A TAC note for the project has been prepared by the director M&A, CWC, Narmada Basin Organisation on 22-03-2012. Further development is not known. A 6.51 km long diversion channel and 5.94 km long tunnel will be constructed to divert water from Sip basin. The catchment area of the project is 96.50 Sq.km. There is no national park/ wildlife sanctuary/biosphere reserve/historical monuments are present in the project area. The project cost is about Rs. 9260.19 lakhs

Prima-facie, the project appeared to be simple for augmenting the water availability in the existing Kolar reservoir as the current availability is found to be inadequate to meet the irrigation water requirement of the command area. However, during the detailed presentation the requirement of three diversion structures was revealed, involving construction of 18 m high diversion dam for sip diversion and not a weir. The need for

additional water through the link project has not been well-established. In this regard, a comparison between the actual cropping pattern as applicable now, and the cropping pattern planned for the existing Kolar project to be brought-out clearly. Since, the Kolar project completed in 1989, factual data on the completion of the planned CAD and OFD activities as well as of the progress in the implementation of the CAT Plan to be submitted/made available. The committee also keen to know the extent of sedimentation (and hence capacity reduction) in the existing Kolar reservoir vis-à-vis the sedimentation rate and reservoir life assumed at the time of its planning. These are some of the crucial information, which are to be placed before the EAC to understand the possible success of the augmentation project.

Further, with reference to Item 9.4 of Form 1, supplement the tabular information on year-wise filling by giving the design FRL of the Kolar reservoir and the corresponding water storage volume in Mcum. It may be seriously explored, if the need of this link project can be dispensed with by introducing water-saving irrigation methods (sprinkler, drip, etc.) in the existing command area. Apparently, providing irrigation water to a meagre 6100 ha in the existing Kolar command area through this new component of the project does not appear to be justified. Perhaps, it may not be needed if proper attention is paid to the water management aspect in the existing Kolar command area.

The item-10 on Page-19 in Form-1, the of environmental flow release on 10-daily basis and in m^3/s and length of river reach that will be deprived of natural river flow due to water diversion for irrigation should be quantified. The Form 1 is customarily followed by the proposed TOR, which is not found in the document. This may necessitate a fresh TOR and base line data collection for preparing the EIA and the EMP documents.

The groundwater is the main source for drinking and irrigation in Sehore District of Madhya Pradesh. About 62% of the irrigation in the district is from groundwater resources. However, 27% of geographical area is being irrigated. It has caused the depletion of the water table. The improvement in the existing drainage system substantially decreases the natural recharge for groundwater resources in the region. The recycling of water, change in cropping patterns and change in the irrigation policy may effectively maintain the recharge of groundwater resources in the district.

After detailed deliberations on all environmental issues, the committee mentioned that based on the available status of present irrigation in the area, the proposed Sip Kolar Link should ascertain the following:

- Enhancing the groundwater resources of the project area
- Regular monitoring should be undertaken for water-table in the vicinity of Sip Kolar link project
- The area is composed of Deccan Trap which has developed a very thin soil profile and hence the cropping pattern for irrigation should be proposed after a detailed investigation

After detailed scrutiny and examination of all relevant issues on environment, the committee recommended scoping clearance for the project mentioning that it is small project and hence, one season data (preferably monsoon season) should be collected for the preparation of EIA/EMP for the project. The additional TORs prescribed are as follows:

- The shortage of water in Kolar may be due to silting of live storage which should be investigated during the study
- The index map should be prepared indicating the links
- Verify, how a 100 year flood was determined, without any flood data
- A study to be carried-out indicating flow series – i.e. inflow series, flow diverted and environmental flow release for the downstream users
- Public hearing to be conducted as per EIA Notification, 2006 and its subsequent amendment in 2009.

2.11 Dugar HEP (380 MW) Project in Chamba District of Himachal Pradesh by M/s. Dugar Hydro Power Ltd – For ToR [J-12011/43/2012-IA-I]

The project proponent made a detailed presentation on the project and mentioned that the project was awarded to the consortium for the capacity of 236 MW through International Competitive Bidding in April 2011. The Consortium signed Pre Implementation Agreement with Directorate of Energy, Government of Himachal Pradesh in May 2011. The PFR of the project was made for 380 MW and was submitted to Directorate of Energy, Government of Himachal Pradesh in July 2012. The Government of Himachal Pradesh has given its NOC for enhancing the capacity of the Project to 380 MW in August 2012.

The committee noted that the project envisages construction of a 97 m high concrete gravity dam across Chamba River for generating 380 MW of hydropower. The CWC approved the hydrology. The project FRL is 2105 m and TWL is 2006 m. This is a run-of –the-river scheme. An underground powerhouse is proposed on the right bank of the river and is located at dam toe.

During the presentation, the project proponent informed about the progress made during survey and investigation which includes setting up of an Automatic Weather Station to measure various weather parameters, Automatic Water Level Recorder to measure continuous water level of river and an arrangement for discharge and sediment measurement. Topographical survey of project area has been completed.

The committee noted that in the PFR of the project, the project proponent has considered environmental flow as 15% of the minimum discharge observed in a 90% dependable year as per the notification of Govt. of Himachal Pradesh. The committee suggested that minimum environmental flow release should be 20% of the average of the four lean months of 90% dependable year. In non-monsoon non-lean season the release should be between 20-30% of the average flows during the period in 90% dependable year. The environmental releases/spill during the monsoon season should be 30% of average monsoon flow for 90% dependable year. This should be adhered to cater to the downstream requirement. The project parameters may be finalized in the DPR keeping the above considerations. The project proponent clarified that while in the PFR the notification

of Govt. of Himachal Pradesh on environmental flows was followed, the studies in the DPR should be made as per the above norms suggested by the committee.

The committee enquired about the immediate upstream and downstream projects and length of the free flowing river stretch between each project. The project proponent informed that immediate upstream project is Sach-Khas HEP and downstream is Himachal Pradesh- J&K Border. The free flowing river on the upstream side up-to the TWL of Sach khas HEP is 9 km and to the downstream side is 3 km.

The Committee after thorough scrutiny and examination, recommended clearance for pre-construction activities and approved the TOR with the following additional terms:-

- i. The DPR/studies may be finalized considering minimum environmental flow release @ 20% of the average of the four lean months of 90% dependable year, in non-monsoon non lean season the release should be between 20-30% of the average flows during the period in 90% dependable year and the environmental releases / spill during the monsoon season should be 30% of average Monsoon flow for 90% dependable year.
- ii. The details of Chilgoza pine trees likely to be affected by the project should be covered indicated in the detailed study.
- iii. One year data on meteorology, sedimentation and discharge data being monitored thorough Automatic Weather Station and Automatic Water Level Recorder should be included in the EIA report.
- iv. The EIA study report should indicate inflow, environmental flow to be released, subsidiary turbine release for 24 hours, diversion for main turbine and actual environmental flow released for 90% dependable year.
- v. A detailed study on tribal population of the Pangi Valley area and their culture, ethnographic and ethno-biological should be carried-out
- vi. This is high dam, therefore Dam break analysis and disaster management plan should be prepared
- vii. It is required to study the micro-seismicity of the project area by a array of three seismographs for a period of one year, as the project falls under the high seismic zone.
- viii. A detailed muck disposal plan should be prepared for the project with costs.
- ix. Under Environmental sensitivity (III) point no 1, answer should be yes since 290 ha of forest land is involved which is protected under national statutes. In point no. 3 the answer to this should be 'yes' since there is a possibility of area being used by sensitive species of the Himalayas such as Musk Deer, Himalayan Black Bear, etc. as indicated in table 13.5 of PFR which may be investigated during the EIA stage. In the same table in the birds section some mammals have been included. Information provided should be re-checked before inclusion in the report.
- x. **Baseline Studies:** Include after first bullet point "RS and GIS studies for the land use/ land cover patter, drainage patter, snow and rain-fed areas"

xi. Biological Environment:

Flora:

- Include under the First bullet point after Working Plan “ and Champion and Seth (1968) and the extent of each forest type”
- Include under third bullet point “ number and” ...before locations of quadrats.
- Include another bullet point as “ Species-wise details of trees (total number and their basal area) in the project area (submergence, road construction, muck disposal sites, colony establishment, etc.) to be cut/ removed/submerged with their RET status, if any.

Fauna:

- Include under first bullet point “ amphibians” after herpetofauna....
- A part of the Fourth bullet point “For RET species...rehabilitation” should be transferred under “Flora”

xii. **Socio-economic Environment:** Include under a separate chapter on Ethnography of the area - “Details about different Tribes of Pangi Valley pertaining to their population, demographic status, and cultural, ethno-biological and traditional aspects will be studied.

xiii. **Impact Prediction: Environmental Management Plan – Biodiversity Conservation and Wildlife Management Plan –** Include “Conservation of RET species (such as *Chilgoza* pine) through augmenting/promoting natural regeneration, rehabilitation, planting, establishing conservation areas, etc.”

2.12 Arpa Bhasajhar Barrage project in Bilaspur District of Chattisgarh by M/s Water Resources Department, Government of Chattisgarh – For ToR [J-12011/44/2012-IA-I]

The project proponent made a detailed presentation on the project. The committee noted that this is a medium irrigation project proposed on Arpa river to provide irrigation facility in 25,000 ha in 92 villages of Kota, Bilha, Takhatpur blocks in Bilaspur District. The project envisages construction of 12.35 m high and 130 m long barrage across river Arpa for irrigating 25,000 ha and also to meet drinking water requirement as well as industrial purpose. The catchment area of the project is 7811 Sq.km. The total land requirement is about 802.105 ha. Out of which 442.350 ha is forest land. Total submergence is 653.586 ha (forest land-384.262 ha + 58.088 ha is revenue forest land + 56.46 ha is private land + 154.770 ha other land). There is no national park/wildlife sanctuary/biosphere reserve/historical monuments are present in the project area. Total cost of the project is about Rs. 606 Crores and will be completed in 5 years.

The CWC has given in-principle consent for the project for preparation of DPR

After detailed deliberations on all environmental issues, the committee made following observation:

- i. The project deliverables are not firmed-up yet. Thus, no information on the water allocation for irrigation, drinking water and industrial purposes

- ii. Form-I does not mention the details of river/tributary on which the barrage is proposed
- iii. The proposed TOR is not available with Form-I. The standard TOR for irrigation project may be collected from the Ministry and accordingly the different items for investigation/study should be added based on the site specific conditions
- iv. For a study of 25,000 ha of command area, a minimum of 15-20 sampling sites are needed for determination of soil, surface water and groundwater parameters
- v. There should be at-least 10% of the command area earmarked for commissioning pressurized irrigation system (sprinkler/drip etc) with suitable cropping pattern which may different than the rest of the command area. Accordingly, there should be 5 parcels of command area @ 500 ha each should be earmarked for introducing pressurized irrigation which is to be commissioned and maintained at the project cost
- vi. The EMP of the project is to contain a section on Command Area Development (CAD) wherein the CAD and the OFD plan should be discussed along with a sample plan for an outlet command. The sample plan is to show the water course, field channels, field drains and the other relevant features of CAD and OFD activities. A Table should be given to indicate the target date of progress of the CAD and the OFD activities, which are to be co-terminus with the project completion time.
- vii. The plan (if any) of conjunctive use of surface water and groundwater for irrigation and the energy availability situation for pumping groundwater may be given in the EMP.
- viii. In form 1 part III (Environmental Sensitivity) the answer to point no. 1 should be yes since the forest land coming under submergence is protected under national legislation. Annexure IV referred in point no 2 has not been provided. In point no. 3 the answer should be 'yes' since there is a possibility of area being used by sensitive species of the region since 442 ha of forest land is being submerged/utilised.

The committee mentioned that the project proponent is not able to provide/send minim required documents i.e. Pre-feasibility Report (PFR), detailed hydrological data for the project and a draft TOR for irrigation project in order to go through documents by the members to get an clear view, idea and understand the details of the project before coming to EAC meeting.

The Committee mentioned that the project proponent should resubmit the PFR and Form-I incorporating the above information for further consideration of the project.

3. Other items pertaining to extension of the validity of TOR

The following projects were taken-up for the extension of the Validity Period for TOR:

3.1 Extension of the Validity Period of TORs for Simang-I HEP (67 MW) and Simang-II HEP (66 MW) project in Arunachal Pradesh by M/s. Adishankar Power Pvt. Ltd.

The project proponent requested the Ministry for the extension of their Simang-I HEP (67 MW) and Simang-II HEP (66 MW) projects in Arunachal Pradesh on the plea that

the field works, property survey, socio economic surveys could not be completed on time due to unforeseen local problems although, substantial progress has been achieved. The project proponent informed the Ministry the following:

- Simang-I (67 MW) and Simang-II (66 MW) HEPs for which TOR was issued in May 2010 with a validity period of two years.
- After completing the remaining studies and data collection, the draft EIA/EMP Reports for the projects will be submitted for conducting public hearing and other related activities for obtaining EC. These activities could be completed in another 1 year.
- No parameter is changed & no change in the scope of the project.

The MoEF appraised the EAC accordingly. The EAC recommended for extension of validity for 1 year i.e. up-to June, 2013.

3.2 Extension of the Validity Period of TORs for Subansiri Middle HEP (1600 MW) in Arunachal Pradesh by M/s Jindal Power Ltd.

The project proponent requested the Ministry for the extension of their Subansiri Middle **HEP (1600 MW) project** in Arunachal Pradesh on the plea that the field works, property survey, social impact assessment study could not be completed on time primarily due to delay in finalisation of DPR although, some progress has been achieved. The project proponent informed Ministry the following:

- The Ministry granted TOR to this project on 27.12.2010 and 2 year validity term period will be over on 26.12.2012.
- Subansiri Middle HEP (1600 MW) project name has been changed to Kamla HEP (1600 MW) project
- The Subansiri Hydro Electric Power Company Ltd name has been changed to Kamla Hydro Electric Power Company Ltd on 25.4.2012.
- After completing the remaining studies and data collection, the draft EIA/EMP Reports for the projects will be submitted for conducting public hearing and other related activities for obtaining EC. These activities could be completed in another 1 year.
- No parameter is changed & no change in the scope of the project.

The MoEF appraised the EAC accordingly. The EAC recommended for extension of validity for 1 year i.e. up-to December, 2013 and change of name of the Project as well as the Company.

3.3 Extension of the Validity Period of TORs for Talong HEP (225 MW) in Arunachal Pradesh by M/s GMR Hydro Power Ltd.

The project proponent requested the Ministry for the extension of their Talong **HEP (225 MW) project** in Arunachal Pradesh on the plea that the MOEF has given few more additional TORs, social impact assessment study could not be completed on time and finally EIA/EMP reports submitted to SPCB for conducting public hearing. It has been

informed by the project proponent that the public hearing could not be conducted by SPCB. The project proponent also informed Ministry the following:

- The Ministry granted TOR to this project on 10.8.2010 and the 2 years validity period will be over on 9.8.2012.
- The draft EIA/EMP Reports for the project have been prepared and submitted to the SPCB for conducting public hearing. The project proponent informed that the same would be completed in another 2 years time.
- No parameter is changed & no change in the scope of the project.

The MoEF appraised the EAC accordingly and was informed about Office Order dated 22.3.2010 as per which only 1 year extension could be given. The EAC thus, recommended for extension of validity for 1 year i.e. up-to August, 2013.

List of EAC members and Project Proponents who attended 61st Meeting of Expert Appraisal Committee for River Valley & Hydro Electric Power Projects held on 12th – 13th October, 2012 in New Delhi

A. Members of EAC

1. Shri Rakesh Nath, Chairman
2. Dr. B. P. Das, Vice-Chairman
3. Professor Aruna Kumar, Member
4. Dr. S. Bhowmik
5. Dr. K. D. Joshi
6. Dr. (Mrs.) Maitrayee Choudhary
7. Dr. S. K. Mishra
8. Dr. G. L. Bansal
9. Dr. S. K. Mazumder
10. Dr. A. K. Bhattacharya
11. Dr. Praveen Mathur
12. Dr. J. K. Sharma
13. Shri B. B. Barman, Director, MoEF
14. Dr. P. V. Subba Rao, MoEF

B. Dagmara HEP (130 MW) project in Supaul District of Bihar by M/s. Bihar State Hydroelectric Power Corporation.

1. Shri A. K. Galhot, Chief (Civil) WAPCOS
2. Shri A. K. Pandey, M.D. (BHPC)
3. Shri R. K. Singh, BHPC
4. Dr. Aman Sharma, WAPCOS

C. Lower Penganga Irrigation Project in Adilabad District of Andhra Pradesh by M/s. Irrigation & CAD Department, Government of Andhra Pradesh.

1. Shri J. Vijay Prakash, Commissioner Godavari Water
2. Shri B. Yella Reddy, Superintending Engineer
3. Shri Sridhar Deshpandy, Executive Engineer
4. M. V. V. Saradhi, Aarvee Associates
5. K. Kareemulla Basha, Manager (Env) Aarvee Associates

D. Lara Sumta HEP (104 MW) Project in Lahul & Spiti District of Himachal Pradesh by M/s. Lara Sumta Hydro Power Pvt. Ltd.

E. Sumte Kothang HEP (130 MW) Project in Lahul & Spiti District of Himachal Pradesh by M/s. Sumte Kothang Hydro Power Pvt. Ltd

1. Shri N. K. Deo, Sr. VP
2. Shri P.S. S. Manian, VP
3. Shri Ashok Kumar, VP
4. Shri Manoj, Pradhan, AVP

5. Dr. J. K. Thakur, GM
6. Shri B. K. Mishra, GM
7. Shri Gurchetan Singh, AM
8. Dr. Aman Sharma, WAPCOS

F. Loktak Downstream HEP (66 MW) Project in Tamenglong District of Manipur by M/s. NHPC Ltd.

1. Shri A. K. Sarkar, ED (PLG)
2. Shri S. K. Chauhan. CEO
3. Shri Y. K. Chaubey, EE (Derigh), NHPC
4. Shri Virmani, Chief (Geo)
5. Dr. Shahid Ali Khan, Chief (Env.)
6. Shri P. P. Singh, CE (Civil)
7. Dr. Anuradha Bajpayee, AM (Env.)
8. Dr. S. P. Bhatt, CISMHE, DU
9. Dr. Dorje Dawa, CISME, DU
10. Dr. D. C. Nautiyal, CISMHE, DU
11. Ms. Bharti Gupta, DM (C), NHPC
12. Mr. Prakash Sharma, DMCE, NHPC
13. Dr. A. K. Jha, AE (Env.)
14. Shri Gaurav Singh, JE (C)
15. Shri Ajay Kumar

G. Teesta Low Dam-V HEP (80 MW) Project in Darjeeling District of West Bengal by M/s. West Bengal Electricity Distribution Company Ltd.

1. Shri Arvind Dev, Chief (E&M), WAPCOS
2. Shri Kul Bhushan, Advisor
3. Dr. Aman Sharma, CE (Env.), WAPCOS
4. Amitabh Tripathi, Consultant, WAPCOS

H. Kalisindh Major Irrigation Project in Shajapur District of Madhya Pradesh by M/s. Water Resources Department, Government of Madhya Pradesh.

I. Sip Kolar Link Medium Irrigation Project in Sehore District of Madhya Pradesh by M/s. Water Resources Department, Government of Madhya Pradesh

1. Shri M. S. Choubey, EGC, WRD, BPL (MD)
2. Shri. D. K. Swarnkar, SE, WRD, Indore (MP)
3. Shri S. K. Misan, SE BODHI BPL (MP)
4. Shri M. K. Jain, EE WRD Shajapur, (MP)
5. Shri S. C. Shrivastava, SAO, WRD Shajapur (MP)

J. Dugar HEP (380 MW) project in Chamba District of Himachal Pradesh by M/s Dugar Hydro Power Ltd.

1. Shri Sanjay Aggarwal, Chief – Project (ENRP), Tata Power
2. Shri Pradeep Yadav, Technical Director, DHPL
3. Shri Pramod K. Shrivastava, Project Director, DHPL

4. Md. Faisal Jafri, Project Controller, DHPL
 5. Dr. Taruna Saxena, Sr. Manager Env., Tata Power
 6. Shri Naresh Patil, Corporate Env., Tata Power
 7. Shri Amit Jain, Project Manager, Tata Power
 8. Shri Sharat Ranjan, Manager, DHPL
 - K. Arpa Bhisajgarh Barrage Project in Bilaspur District of Chattisgarh by M/s. Water Resources Department, Government of Chattisgarh M/s. Himachal Pradesh Power Corporation Ltd.**
1. Shri C. Xaxa, CE, Hasdeo Basin, Bilaspur CG
 2. Shri V. K. Shrivastava , EC, WRD, Kota C.G.
 3. Shri D. P. Pathak, WRD, Kota CG
 4. Shri B. L. Swarnkar, S/E, WRD, Kota, CG
