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भारत सरकार

पर्यावरण एवं वन मंत्रालय

GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT & FORESTS

पर्यावरण भवन, सी. जी. ओ. कॉम्प्लेक्स

PARYAVARAN BHAVAN, C.G.O. COMPLEX

लोदी रोड, नई दिल्ली-110003

LODHI ROAD, NEW DELHI-110003

No. J-12011/87/2007-IA.I

Dated : December 24, 2009

29

Shri. O P Ajmera
Director
M/s. Bhilwara Energy Limited
A-12, Bhilwara Towers
Sector-1,
Noida 201301(Uttar Pradesh)

Sub: Nyamjang Chhu HEP (900 MW) in Tawang District of Arunachal Pradesh by M/s. Bhilwara Energy Ltd- for Scoping - regarding

Sir,

This has reference to your letter No.P-1151/OG-044 dated 26.06.2009, and subsequent letters dated 21.7.2009, 28.08.2009, 7.09.2009, 21.10.2009, 26.10.2009 & 21.11.2009 on above mentioned subject.

2. The project is proposed across river Nyamjang Chhu in Tawang District of Arunachal Pradesh. This is a run-of-the-river scheme. The project envisages construction of a 11.2 m high concrete Barrage near Zimithang village and underground power house located on left bank of Nyamjang Chhu with 6 (Six) units of 150 MW each. The total land requirement for the project is about 176.5 ha out of which 40 ha is Forest/Government Land; 136.5 ha is Private/Community Land. 48 families are likely to be affected due to this project. The total cost of the project is Rs.7228.82 Crores and will be completed in 60months.

3. This project was earlier considered by Expert Appraisal Committee (EAC) in three stages viz. Nyamjang Chhu HEP Stage-I, II and III at its meetings held on 13.12.2007 and 17.1.2008. The Ministry granted TOR for all the stages on 15.2.2008. Thereafter, the project proponent clubbed all the three stages into one with a revised capacity of 900 MW. The Arunachal Pradesh Government had granted permission for the 900 MW installed capacity on 19.12.2008.

4. The project proponent submitted the proposal to Ministry for the enhanced capacity of 900 MW for a fresh appraisal. The project was considered by the Expert Appraisal Committee at its meetings held on 29.07.2009 and 21.10.2009.

5. The Ministry of Environment and Forests (MOEF) hereby accords clearance for preconstruction activities in the proposed sites as per the provisions of Environmental Impact Assessment Notification, 2006 along with the following "Terms of Reference" for preparation of EIA report.

I. SALIENT FEATURES OF THE PROJECT

II. ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

The Baseline studies should consist of 3 seasonal studies (Pre-Monsoon, Monsoon and Winter Seasons) and be conducted in the following Study area.

Study Area: The study area should include the following areas:

- Catchment area
- Submergence area
- Project area to be acquired for various project appurtenances, area within 10 km from main Project components (i.e. Barrage, Power House etc.)

A. BASELINE DATA

1. Geological and Geophysical Aspects

- Geography & physiography of the project area
- Design discharge & its RI (Recurrence interval)
- Regional Geology and structure of the catchment
- Seismicity, tectonics and history of past earthquakes in the area
- Critical review of the geological features around the project area
- Impact of project on geological environment
- Justification for location & execution of the project in relation to structural components (Barrage height)

2. Seismo-tectonics:

Study of Design Earthquake Parameters

A site specific study of earth quake parameters should be conducted. The results of the site specific earth quake design parameters should be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central Water Commission, New Delhi).

3. Hydrology of the basin

- Hydro-meteorology, drainage systems
- Catastrophic events like cloud bursts and flash floods, if any should be documented
- An elementary stream gauging station should be established at a suitable location up-stream to the Diversion site of the project and record the inflow as well as the sediment concentration of the river water during the 3 seasons of observations particularly during the lean season and during the monsoon season

- For estimation of Sedimentation rate direct sampling of river flow is to be done during EIA to get actual silt flow rate (to be expressed in ha-m/ km² /year). The one year of EIA study should provide an opportunity to do this for ascertaining the actual silt flow rate.
 - Water availability for the project and the aquatic fauna
 - Design discharge and its recurrence interval
 - Installation of two Rainfall Gauge Stations at Diversion site(EL 2100.0 m)
 - Installation of additional G & D sites Takshang Chu perennial
 - Collection of available Rainfall data of nearby Rain gauge stations at similar/higher elevation
 - Quality of water for physio-chemical characteristics like pH, Temperature, Dissolved Oxygen, BOD, COD etc. (5 locations)
4. Biological Resources
- i. Flora
- Forests and forest types
 - Water body inundating forest area
 - Vegetation profile, no. of species in the project area, etc.
 - Community Structure through Vegetation mapping
 - Species Diversity Index (Shanon-Weaver Index) of the biodiversity in the project area as well as plant fossil & phytoplankton (5 Locations)
 - Documentation of economically important plants, medicinal as well as timber, fuel wood etc.
 - Quantification and Inventorisation of flora and fauna of rare, endemic, endangered and threatened species, taking GPS observations
 - Inventory of Bamboos, Cane and Orchids
 - Impact of impoundment and construction activities on the vegetation
 - Location of any Biosphere Reserve, National Park or Sanctuary in the vicinity of the project , if any
 - For categorization of sub-catchments into various erosion classes and for the consequent CAT plan, the entire catchment (Indian portion) is to be considered and not only the directly draining catchment,
- ii. Fauna
- Inventorisation of terrestrial wildlife and present status along with Schedule of the species (5 Locations)
 - Zoogeographic distribution/affinities, Endemic, threatened and endangered species and animal fossil
- iii. Avifauna
- Status
 - Resident/Migratory/Passage migrants
 - Impact of project on threatened/endangered taxa, if any
- iv. Aquatic Ecology
- Aqua- fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc. (5 locations)
 - Conservation Status
- Fish and Fisheries
- Fish migrations, if any & Breeding grounds (5 locations)

- Impact of Barrage building on fish migration and habitat degradation
 - Overall ecological impact up-to 10 Km d/s from the confluence of the TRT with the river or reach of the river in India and the impact of untreated and waste water in to the river and the alternatives explored.
- v. Conservation areas and status of threatened/endangered taxa
- Biotic Pressures
 - Management plan for conservation areas and threatened/endangered taxa
- vi. Remote Sensing & GIS studies
- Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of AISLUS
 - Land use and land cover mapping
 - Drainage pattern/map
 - Soil map
 - Geo-physical features, slope and relief maps
 - Demarcation of Snow fed and rain fed areas for a realistic estimate of the water availability.
 - Soil Sampling covering parameters like pH, N,P,K, organic matter soil texture (8 Locations)
- v. Socio-economic aspects
- Land details*
 - Demographic profile
 - Ethnographic Profile
 - Economic structure
 - Development profile
 - Agricultural practices
 - Cultural and aesthetics sites
 - Infrastructure facilities: education, health and hygiene, communication network, etc.
 - Impact on socio-cultural and ethnographic aspects due to Construction of Barrage.
- *Report should include list of all the Project Affected Families with their names, education, land holdings, other properties, occupation, etc.
- vi. Collection of data pertaining to water (physico-chemical and biological parameters), air and noise environment and likely impact during construction and post construction periods.
- vii. Air Environment
- Baseline Information on ambient air quality in the project area covering aspects like SPM, RSPM, Sox, NOx, (3 Locations)
 - Noise Environment(5 Locations)
 - Traffic density in the project area
- viii. Construction Methodology and Schedule including the tunnel driving operations, machinery and charge density, etc.

B. IMPACT PREDICTION

- Air

- Changes in ambient levels and ground level concentrations due to total emissions from point, line and area sources
- Effects on soils, material, vegetation, and human health
- Impact of emissions from DG sets used for construction power if any, on air environment.
- **Noise**
 - Changes in ambient levels due to noise generated from equipment, blasting operations and movement of vehicles
 - Effect on fauna and human health
- **Water**
 - Changes in quality
 - Sedimentation of reservoir
 - Impact on fish fauna
 - Impact of sewage disposal
- **Land**
 - Changes in land use and drainage pattern
 - Changes in land quality including effects of waste disposal
 - Riverbank and their stability
 - Impact due to submergence
- **Biological**
 - Deforestation and shrinkage of animal habitat
 - Impact on fauna and flora (including aquatic species if any) due to decreased flow of water
 - Impact on rare and endangered species, endemic species, and migratory path/route of animals, if any
 - Impact on breeding and nesting grounds, if any
 - Impact on animal distribution, migration routes (if any), habitat fragmentation and destruction due to barrage building activity
- **Socio-economic Aspects**
 - Impact on the local community including demographic changes
 - Impact on economic status
 - Impact on human health
 - Impact on increased traffic
 - Impact on Holy Places and Tourism
- Downstream impact on water, land & human environment due to drying up of the river in the stretch between barrage site and powerhouse site.
- Assessment of adequacy of assured lean season flow released immediately downstream of the point of diversion to meet the environmental water needs till the point where the tributaries join.
- Positive as well as negative impacts likely to be accrued due to the project are to be listed.

III. ENVIRONMENTAL MANAGENET PLAN (EMP)

a) Catchment Area Treatment Plan


Delineation of micro-watersheds in the river catchment and mapping of critically degraded areas requiring various biological and engineering treatment measures.

Identification of directly/free draining catchment to be done for treatment based upon Remote Sensing & GIS methodology and Silt Yield Index (SYI) method of AISLUS coupled with ground survey. The prioritization of watershed for treatment based upon SYI. Spatial Information in each micro watershed should be earmarked on maps in the scale of 1:50,000. The CAT plan should be prepared with year-wise Physical and financial details.

- b) **Creation of Green Belt Plan** around the Periphery of the Reservoir and Compensatory Afforestation Scheme in consultation with the State Forest department.
- c) **Biodiversity Conservation and Wild life Management Plan** for conservation and preservation of endemic, rare and endangered species of flora and fauna (in consultation with the State Wildlife Department)
- d) **Reservoir Fisheries Development for conservation/management of fishes.**
- e) **Resettlement & Rehabilitation (R&R) Plan** along with social/community development. For Project affected families who are likely to loose land only, the details on the amount of land taken from them and the land remaining (in case 70% of land of any family is taken, then that family should be counted as a fully affected family). R&R plan should be framed in consultation with the Project Affected Persons (PAPs), Project Authorities and the State Government. R & R Plan should be drafted according to the NPRR 2007 and the policy of State Government. Action Plan on R&R also to be included
- f) **Muck Disposal Plan** (Suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department)
- g) **Energy Conservation Measures**
- h) **Restoration and landscaping of working Areas:** reclamation of borrow pits (quarry sites) and construction areas.
- i) **Public Health Delivery System** including the provisions for drinking water facility for the local community.
- j) **Management during the Road Construction**
- k) **Sanitation & Solid Waste Management Plan** for domestic waste from colonies and labour camps, etc.
- l) **Water and Air Quality & Noise Environment Management** during construction and post-construction periods.
- m) **Forest Protection Plan**
- n) **Reservoir RIM Treatment Plan**
- o) **A scientific study** through a reputed institute like NIH, Roorkee for estimation of environmental flow required for maintaining the aquatic life in the river and migration of fishes.
- p) **Environmental Monitoring Programme** (With physical & financial details covering all the aspects form EMP)

6. Clearance from CWC on Project hydrology should also be submitted.
7. For accreditation, the concerned consultant who will be engaged for preparation of EIA/EMP report is requested to register them with Quality Council of India (QCI)/NABET under the scheme of accreditation & register.
8. Consultants should include a "Certificate" in EIA/EMP report regarding portion of EIA/EMP prepared by them and data provided by other organization(s)/Laboratories including status of approval of such laboratories.
9. As per the provisions of the EIA Notification of 2006, you are requested to submit draft EIA/EMP report as per the above terms of reference to the State Pollution Control Board/Committee for conducting the Public Hearing
10. All the issues discussed in the Public Hearing/Public Consultations should be addressed to and incorporated in the final EIA/EMP report and submitted to the Ministry for considering the proposal for Environmental Clearance.

Yours faithfully


(Dr. S. Bhowmik)
Additional Director

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi -1
2. Secretary (Power), Govt. of Arunachal Pradesh, Secretariat, Itanagar, Arunachal Pradesh
3. Secretary, Environment, Govt. of Arunachal Pradesh, Secretariat, Itanagar, Arunachal Pradesh
4. The Chief Engineer, Project Appraisal Directorate, Central Electricity Authority, Sewa Bhawan, R. K. Puram, New Delhi - 110 066
5. Member-Secretary, Arunachal Pradesh State Pollution Control Board, Itanagar, Arunachal Pradesh
6. Chief Conservator of Forests, The Regional Office, Ministry of Environment & Forests, Upland Road, Laitumhran, Shillong-793003
7. M/s. R.S. Envirolink Technologies Pvt. Ltd., 402, Radisson Suites Commercial Plaza, Block-B, Sushant Lok-I, Gurgaon-122002.
8. Guard File

(Dr. S. Bhowmik)
Additional Director