सत्यमेव जयते

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
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Minutes of 6TH EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 23/01/2024 to 23/01/2024

Date: 02/02/2024

MoM ID: EC/MOM/EAC/948343/1/2024

Agenda ID: EC/AGENDA/EAC/948343/1/2024

Meeting Venue: MoEF&CC

Meeting Mode: Physical

Date & Time:

23/01/2024	10:30 AM	05:30 PM

1. Opening remarks

The 6th meeting of the re-constituted EAC for River Valley & Hydro-electric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 23rd January, 2024 at Indus Hall, MoEF&CC under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

Confirmation of Minutes of 5th EAC meeting held on 19.12.2023 - 20.12.2023.

3. Details of proposals considered by the committee

Day 1 -23/01/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Tiruvannamalai Pumped Storage Project (2000 MW) by **ECO LEAP TECHNOLOGIES INDIA PRIVATE LIMITED** located at **TIRUVANNAMALAI,TAMIL NADU**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/TN/RIV/456813/2023	J-12011/02/2024-IA.I(R)	27/12/2023	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

The project proponent and the accredited consultant M/s. R S Envirolink Technologies Pvt. Ltd, made a detailed presentation on the salient features of the project and informed that:

1. The Project as envisaged is proposed in the Tiruvannamalai district of Tamil Nadu and is a standalone pumped storage scheme (PSP) with two new greenfield reservoirs. It is a self-identified pumped storage project.

1. The project is located close to Kidampalayam Village in the Polur Taluk of Tiruvannamalai district in Tamil Nadu. The geographical co-ordinate of the upper reservoir is at 12°32'57.25"N and 78°58'59.40"E and the lower reservoir is at geographical co-ordinate 12°32'51.43" N and 79°1'3.47" E.

1. The project is proposed as a off stream-closed loop pumped storage project which envisages the generation of 2000 MW of power during peak hours. The project has two reservoirs i.e., upper and lower reservoirs (closed-loop system) utilising the maximum and minimum gross head of about 592.0 m and 527.5 m respectively.

1. The water from the upper reservoir will be utilized for generating power during peaking hours and the off-peak periods, water from the lower reservoir shall be pumped back to the upper reservoir. The project has a total generating capacity of 2000 MW and envisages the installation of 8 nos. of reversible units of 250 MW each with a 549.75 m rated head and design discharge of 416.9 m3/s. All the units are housed in an underground powerhouse.

1. The Tiruvannamalai off-stream closed loop Pumped Storage Project envisages construction of:

- A Geomembrane Faced Rock-Fill Dam (GFRD) having variable height from 5.0 m to 51.0 m from the natural surface level for the upper and lower reservoir.
- Two intake/outlet structures have been proposed within the upper reservoir by locally excavating to provide sufficient submergence below the MDDL.
- Two numbers of horseshoe and circular shaped high-pressure tunnels of the total length of about 1570 m each, which connects the two number of circular pressure shaft of length of about 300 m each.
- Each pressure shaft divided into four-unit pressure shafts to feed eight pump-turbine housed in the Powerhouse.
- An underground powerhouse of size 215.5 m (L) x 22.0 m (W) x 50.0 m (H) having an installation of eight nos. of reversible Francis pump-turbine of 250 MW each.
- A transformer cavern of size 215.5 m (L) x 17.2 m (W) x 26.0 m (H) has been proposed downstream of the powerhouse cavern.
- One 7.5 m diameter D-shaped main access tunnel (MAT) has been proposed to provide the access to underground powerhouses and transformer caverns.
- A pothead yard of size 50.0 m (L) x 20.0 m (W)
- Eight branches of low-pressure tunnels emerge from each draft tube and combine into two horseshoe shaped low pressure tunnels of length 715 m each.
- Two intake/outlet structures have been proposed to be located within the lower reservoir which discharge the water from the low-pressure tunnel to the reservoir.

1. **Land requirement:** The total land required for the construction of various components and related works for Tiruvannamalai PSP is estimated to be around 295.0 ha, out of which 30.50 ha is private land and 264.50 ha is forest/govt. land. Therefore, **Forest Clearance is required to be obtained under Forest Conservation Act.**

1. **Water requirement:** It is planned to initially fill the proposed lower reservoir by drawing water from the existing Kettavarampalayam lake through a 7 km long water conductor during the commissioning stage. The

proposed lower reservoir has a gross storage capacity of 12.56 MCM.

1. **Environmental Sensitive area:** Koundinya Wild life santuary is about 48.0 Km from site and is the nearest protected area from the proposed project. Any impacts due to development of proposed PSP shall be studied as part of EIA studies

1. **Project Cost:** The estimated project cost is Rs. 12758.0 Crore including IDC. As a preliminary estimate, a construction period of 54 months from the date of award of civil works package has been estimated for this project.

1. **Alternative Studies:**

The three logical alternatives have been studiedfor selecting the final layout of the project. The following aspects have been considered for formulation of alternative layouts.

- Maximumutilization of available head at the project site.
- Development of economical and optimized layout.
- Minimisethe land acquisition of cultivated land to accommodate project components.
- Away from habitation.
- Ease of construction.

The alternatives considered have been focussed on the formation of a separate standalone reservoir for both upper and lower reservoirs where the topography allows this kind of arrangement. Continuous peaking of 8 hours has been considered for fixing installed capacity and computation of annual energy. Based on the above study, comparative merits and demerits of all three alternative schemes have been evaluated and presented in below Table.

Alternative 1	**Alternative 2**	**Alternative 3**
Shortest water conductor system length	The length of the water conductor system is longer by about 1.2 km compared to alternative 1	The length of the water conductor system is longer by about 1.4 km compared to alternative 1.
There is no requirement for surge shaft in the high-pressure tunnel and low-pressure tunnels	There is a requirement for a surge shaft in the low- pressure tunnels	There is a requirement for a surge shaft in the low-pressure tunnels
The shortest ECVT and main access tunnel	The longer ECVT and main access tunnel to the powerhouse, which delay construction of powerhouse, since is in the critical path of the project schedule	The longer ECVT and main access tunnel to the powerhouse, which delay construction of powerhouse, since is in the critical path of the project schedule
Least underground work	Requires more underground work, which impacts project cost	Requires more underground work than others, whichimpacts project cost
Least cultivated land	Least cultivated land	Require more area of cultivated land
Optimum power generation	Maximum power generation	Minimum power generation

1. The Salient features and area statement are as under:

- **Project details:**

Name of the Proposal	Tiruvannamalai Pumped Storage Project
Location (Including coordinates)	Lower Reservoir : 79° 1'3.47" E; 12°32'51.43" N Upper Reservoir : 78°58'59.40" E; 12°32'57.25" N
Inter- state issue involved	No
Seismic zone	Zone-III

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	2000 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	2000 MW
Generation of Electricity Annually	5548.0 MU
No. of Units	8 nos. (8X250 MW)
Additional information (if any)	Nil

- **ToR Details:**

Cost of project	12758.0 Cr.
Total area of Project	295.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 41.0 m Upper Dam – 51.0 m
Length of Tunnel/Channel	2860 m

Details of Submergence area	165.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	65 ha Non-Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	30.5 ha
Government land/Forest Land	264.5 ha
Submergence area/Reservoir area	165.0 ha
Land required for project components	130.0 ha
Additional information (if any)	Nil

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/ No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Koundinya WLS is about 48 Km from site is the nearest protected area from the proposed project.
National Park	----	
Wildlife Sanctuary	----	

- **Court case details:**

Court Case	Nil
Additional information (if any)	Nil

- **Miscellaneous**

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025
Project Benefits	Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. The pumped storage projects are critical to the national economy and overall energy reliability because it's: • Least expensive source of electricity, not requiring fossil fuel for generation • An emission-free renewable source • Balancing grid for demand driven variations • Balancing generation driven variations • Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 264.5 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.

R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

The EAC, after detailed deliberation on the information submitted and as presented during the meeting observed that proposed lake, as a source of water is not sufficient, since it has a shallow depth. It was suggested to explore for other nearest source of water. Further, the alternatives sites proposed by Project Proponent has only explored different sites of lower reservoirs instead PP shall explore alternatives sites for both reservoirs. Also, the proposal of using forest land of 44 ha for disposal of muck is not convincing and required to be relooked for non-forest land.
It was further opined that run off water of the catchment is approximately equal to the requirement of the water for proposed project and therefore PP was asked to explore different avenues. Accordingly, following observations were raised for further appraisal :

1. PP shall submit MoU signed with State department for setting up the proposed project and availability of water for the project along with different users.
2. PP shall explore any alternate source of water and other alternatives site as Kettavarampalayam lake is not having enough/sufficient water.
3. PP shall submit revised land area to minimize the requirement of forest area and muck disposal site shall be proposed in non-forest area.
4. A letter certified from DFO shall be submit stating that no wildlife corridor is passing through out the project boundary.
5. A drone video shall be submitted and presented during the meeting.
6. PP shall submit details and status of other projects proposed in the 10 km range of the Tiruvannamalai Close Loop Pumped Storage Project.
7. An undertaking shall be submitted that no construction has been started till date.

The proposal is therefore ***deferred*** on above lines.

3.1.5. Recommendation of EAC

Deferred for ADS

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Kalamb Thakurwadi Pumped Storage Project (1000 MW) by **RENEW SOLAR POWER PRIVATE LIMITED** located at **RAIGAD,MAHARASHTRA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/456439/2023	J-12011/03/2024-	23/12/2023	River Valley/Irrigation projects

	IA.I(R)]		(1(c))

3.2.2. Project Salient Features

The PP vide email dated 22.1.2024 has informed that they need to verify and validate some additional information related to their project and requested for deferment

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

The EAC therefore ***returned*** the proposal.

3.2.5. Recommendation of EAC

Returned in present form

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Saruali Pumped Storage Project (840 MW) by **JINDAL RENEWABLE POWER PRIVATE LIMITED** located at **DEOGARH,ODISHA**

Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/OR/RIV/456130/2023	J-12011/04/2024-IA.I(R)	21/12/2023	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

The Project Proponent and the accredited Consultant M/s. R S Envirolink Technologies Pvt. Ltd, made a detailed presentation on the salient features of the project and informed that:

1. The Saruali Pumped Storage Project is an Off-Stream closed loop PSP with two reservoir. The Project as envisaged is proposed in the is located in Deogarh District, Odisha. The installed capacity of the project is estimated as 840 MW (Generation mode)/945 MW (Pumping mode).

1. The project envisages creation of two artificial reservoirs interconnected with water conductor system, feeding the reversible pump-turbine units before draining into the lower reservoir through tailrace tunnel. Both the reservoirs are located away from all existing nearby rivers/streams/nallahs. The geographical coordinates of the proposed upper reservoir are at Latitude-21°33'36.64"N and Longitude-85°09'43.87"E and that of lower reservoir are at Latitude- 21°32'42.33"N and Longitude- 85°10'27.37"E.

1. It will utilize a maximum gross head of 372 m and design discharge of 274.08 cumecs for generation of 840 MW (2 units of 280 MW & 2 units of 140 MW).

1. The Saruali Pumped Storage Project envisages construction of :

- Creation of two artificial reservoirs i.e.-upper and lower reservoir with gross storage capacity of 8.35 MCM and 9.846 MCM respectively.
- A Concrete Faced Rock-Fill dam, 1878 m long peripheral embankment with maximum height of 48 m from deepest bed level for creation of Upper reservoir. • A Concrete Faced Rock-Fill dam, 2893 m long peripheral embankment with maximum height of 29 m from deepest bed level for creation of lower reservoir.
- 3 nos. of Intake structure proposed at the upper reservoir comprising of a self-cleaning vertical trash rack for each intake to minimize the entrapment of debris in the pressure shaft/penstock.
- 2 nos. of circular steel lined Pressure shafts of 5.0 m diameter and each 1433.5 m long to feed 2 units of 280 MW capacity. In addition, one no. of circular steel lined Pressure shaft of 5.0 m diameter and 1376.5 m long will be bifurcating into two numbers of 3.5 m diameter unit pressure shafts about 57 m & 66.5 m long to feed 2 units of 140 MW capacity.
- A surface Powerhouse (Machine Hall) of size 104.1 m (L) x 24.5 m (W) x 46.2 m (H) housing 2 units of 280 MW & 2 units of 140 MW is proposed. A Service Bay of size 40 m (L) x 24.5 m (W) x 19.8 m (H) is proposed at an elevation of 163.0 amsl. Transformer yard will be placed on the downstream side in the open area at El. 200.0 amsl. The Transformers yard area size would be 144.1 m (L) x 18 m (W) x 23.5 m (H).
- A Pothead yard of size 73 m (L) x 30 m (W) at El. 200.00 amsl is proposed.
- One no. of 8.5 m diameter D–shaped Main Access Tunnel (MAT) has been proposed to provide access to the service bay at El. 163.0 amsl.
- 2 nos. of Tail Race Tunnel of 5.0 m diameter having length of 168 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the bigger units of 280 MW each. In addition, 2 nos. of Tail Race Tunnel of 3.6 m diameter having length of 172.8 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the smaller units of 140 MW each
- 4 nos. of outlet structure at the lower reservoir which discharges water from tailrace tunnels into the reservoir. The same acts as an inlet during pumping to draw water from the lower reservoir. The structure will be equipped with a self-cleaning vertical track rack to avoid entry of debris into the conduit.

1. **Land requirement:** The total land requirement for construction of various civil structures, associated infrastructure facilities and muck disposal area /green belt area is estimated as 276 Ha. Out of 276 Ha of land, about 106.85 Ha falls under the category of forest land and 169.15 Ha under non-forest land.

1. **Water requirement:** Water requirement is estimated as 10.24 MCM for filling of reservoirs and replenishment of evaporation loss. Annual evaporation loss is estimated as 1.44 MCM for both the reservoirs. This water requirement shall be met from one-time filling of reservoirs from Jautuk nala of Brahmani River, located at about 4.2 km from the proposed lower reservoir. A pumphouse in vicinity of the diversion structure is proposed to be constructed at the identified location of river for conveyance of water from this location to the lower reservoir.

1. **Environmental Sensitive area:** Khalasuni WLS is located at an approximate distance of 65.0 Km. River/ water body, Jautuk N is flowing at the aerial distance of 500 m in North to South-west direction.

1. **Project Cost:** The hard cost of the project is estimated as INR 3369.42 Crore and total completion cost is estimated as INR 3711.56 Crores considering escalation and interest during construction. This completion cost excludes the transmission line cost and R-communication works aggregating to INR 160.35 Crores. The cost per MW is worked out as INR 4.42 Cr. The levelized tariff for one cycle generation works out to INR 5.79/ kWh with consideration of pumping energy rate of INR 2.63/kWh.

1. **Alternative Studies:**

Four alternative project layouts have been studied based on the combination of different options of upper and lower reservoir.

Alternative-I: Upper Reservoir (Option-1) and Lower Reservoir (Option-1) connected with water conductor system and pit type of surface powerhouse
Alternative-II: Upper Reservoir (Option-1) and Lower Reservoir (Option-2) connected with water conductor system and pit type of surface powerhouse
Alternative-III: Upper Reservoir (Scenario-2A of Option-2) and Lower Reservoir (Scenario-3A of Option-3) connected with water conductor system and Underground powerhouse
Alternative-IV: Upper Reservoir (Scenario-2B of Option-2) and Lower Reservoir (Scenario-3B of Option-3) connected with water conductor system and Underground powerhouse

Two of the alternative project layouts (Alternative-I&II) contemplates pit type surface powerhouse and two of the alternative project layouts (Alternative-III & IV) contemplates underground powerhouse, transformer cavern along with down surge gallery. Out of these four alternatives, the project layout as per Alternative-II has been selected, which will be equipped with four nos. of reversible Francis pump turbines (2 units of 280 MW/315 MW & 2 units of 140 MW/157.5 MW) housed in a pit type of surface powerhouse. The selected alternative (Alternative-II) is considered better alternative owing to the advantages over other alternatives (Alternative-I with IC-825 MW, Alternative-III with IC-1000 MW and Alt.-IV with IC 860 MW) in terms of shorter water conductor length, length to head ratio (L/H) ratio within 5 and relatively lesser land requirement. In addition, issues related to R&R, environmental and social considerations are minimal in the selected alternative.

1. The Salient features and area statement are as under:

- **Project details:**

Location (Including coordinates)	Lower Reservoir : 85°10'27.37"E; 21°32'42.33"N Upper Reservoir : 85°09'43.87"E; 21°33'36.64"N
Inter- state issue involved	No
Seismic zone	Zone-II

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	840 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	840 MW
Generation of Electricity Annually	2366.7 MU
No. of Units	4 nos. (2X280 MW+2X140 MW)
Additional information (if any)	Nil

- **ToR Details:**

Cost of project	3711.65 Cr.
Total area of Project	276.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 29.0 m Upper Dam – 48.0 m
Length of Tunnel/Channel	1601.5 m
Details of Submergence area	129.3 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	92 ha Non-Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	169.15 ha
Government land/Forest Land	106.85 ha
Submergence area/Reservoir area	129.30 ha
Land required for project components	146.70 ha
Additional information (if any)	Nil

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Khalasuni WLS is about 65.0 Km from site is the nearest protected area from the proposed project.
National Park	--- -	
Wildlife Sanctuary	--- -	

- **Court case details:**

Court Case	Nil
Additional information (if any)	Nil

- **Miscellaneous**

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025

Project Benefits	The pumped storage projects are critical to the national economy and overall energy reliability because it's: • Least expensive source of electricity, not requiring fossil fuel for generation • An emission-free renewable source • Balancing grid for demand driven variations • Balancing generation driven variations • Voltage support and grid stability • Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 106.85 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

6.4.3: The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference (ToR) for conducting EIA study of the project for setting up of Saruali Close Loop Pumped Storage Project of capacity 840 MW in an area of 276 ha at Village Saruali, Tehsil Rengali, District Deogarh (Odisha) by M/s Jindal Renewable Power Private Limited.
- The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry
- The EAC observed that water will be drawn from Jautuk nala of Brahmani River, which is not a perennial river, and hence may impact low end user when water gets withdrawn.
- The EAC further observed that the project involves 106.85 Ha of forest land and as per the Kml file and photographs, the location of the project is comes under very high density of forest.
- Further, it was noted that MoU with State Government has not been submitted by project proponent or signed till date.

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

The EAC after detailed deliberation on the information submitted and as presented observed that proposed source of water is non-perennial and the availability of water for other users of this stream is required to be known. PP may explore the alternate source of water i.e. Rangali Dam which is about 15-16 km from the proposed site. Further it was observed that the project involves 106.85 Ha of forest land and as per the Kml file and photographs, the location of the project comes under very high density of forest, so alternative sites of the project may be relooked. It was opined that MoU or any kind of agreement with State Government is required to substantiate the site allocation to instant Project Proponent. Accordingly, EAC desired that PP shall submit the further details on below mentioned observation:

1. PP shall explore any alternate source of water nearer to the site as Jautuk nala is not a perineal river.
2. PP shall resubmit the proposal with revised layout after minimizing the forest land for the proposed project
3. PP shall submit MoU signed with State department for setting up the proposed project and availability of water for the project.
4. A drone video shall be submitted and presented during the meeting.

5. PP shall submit an undertaking stating that power to be use for pumping the water will be from green source.
6. Demographic of the 10km radius of the project area shall be provided.
7. Secondary data of presence/occurrence of wildlife in the in consultation in forest department and local people shall be provided.
8. Explore the possibility for management of muck in any closed coal mine.

The proposal was therefore ***deferred*** on the above lines.

3.3.5. Recommendation of EAC

Deferred for ADS

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Dharampur Pumped Storage Project of Capacity 1500 MW by **ADANI GREEN ENERGY LIMITED** located at **VALSAD,GUJARAT**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/GJ/RIV/455669/2023	J-12011/05/2024-IA.I(R)	19/12/2023	River Valley/Irrigation projects (1(c))

3.4.2. Project Salient Features

The proposal is for grant of Terms of Reference (ToR) to the project for Dharampur Close Loop Pumped Storage pproject of capacity 1500 MW in an area of 278.7 ha at Village Bhanval, Sub-District Dharampur, District Valsad (Gujarat) by M/s Adani Green Energy Limited.

6.5.2: The EAC during deliberations noted the following:

- Ministry vide its letter dated 23.09.2023 has already granted terms of reference in this location to M/s Torrent Power Limited for the project Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat for conducting EIA study as per recommendations of the Expert Appraisal Committee (River Valley & Hydro-electric).

- It was noted that current project i.e. Dharampur Close Loop Pumped Storage Project and Pindval Closed Loop Pumped Storage Project have not signed any MoU with State Government and the project layout and almost all the components are overlapping with each other.

3.4.3. Deliberations by the committee in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

The EAC, after deliberations expressed its displeasure with the project proponent for submitting proposal of the location in which the Ministry has already granted the ToR and desired that the PP/Consultants must make sure that proper consultation and information dissemination be carried out between various stakeholders before submitting any proposal. Accordingly, the proposal was ***returned*** in the present form.

3.4.5. Recommendation of EAC

Returned in present form

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Bilaspur Pumped Storage Project (1000 MW) by **JINDAL RENEWABLE POWER PRIVATE LIMITED** located at **BILASPUR,CHHATTISGARH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/CG/RIV/454612/2023	J-12011/06/2024-IA.I (R)	11/12/2023	River Valley/Irrigation projects (1(c))

3.5.2. Project Salient Features

The Project Proponent and the accredited Consultant M/s R S Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

1. The Bilaspur close Loop Pumped Storage Project is located in Bilaspur district in the state of Chhattisgarh. The upper reservoir is located near Manjurpah village and lower reservoir is located near Karichhaper village in Bilaspur district which is about 165 km from Raipur airport.
2. The geographical coordinates of the proposed upper reservoir are at latitude 22°13'9.21" North and longitude 82°21'22.13" East and that of lower reservoir are at 22°11'58.87" North and 82°20'58.66" East. The elevation difference between proposed upper and lower reservoir is about 420 m.
3. The Pumped Storage Component of Bilaspur PSP envisages construction of upper reservoir located near Manjurpah village in Bilaspur district whereas the lower reservoir is located near Karichhaper village in Bilaspur district of the Chhattisgarh state. The required quantum of 10.14 MCM of water for one-time filling of the proposed Bilaspur PSP lower reservoir will be taken up from nearby existing Khutaghat dam reservoir by pumping which is located at about 16 km from the proposed lower reservoir.
4. The proposed project envisages following major civil components:

- A Concrete Faced Rock-Fill dam, 2570 m long embankment having weighted average height of 22 m (with maximum height of 27 m from bed level) for creation of Upper reservoir with gross storage capacity of 8.06 MCM.
- A Concrete Faced Rock-Fill dam, 2174 m long embankment having weighted average height of 19.4m (with maximum height of 23 m from bed level) for creation of Lower reservoir with gross storage capacity of 9.84 MCM.
- 4 nos. of Intake structure proposed at the upper reservoir comprising of a self-cleaning vertical trash rack for each intake to avoid entry of debris in the water conductor system.
- 3 nos. of circular steel lined Pressure shafts of 4.4 m diameter and each 1578.03 m long to feed 3 units of 250 MW capacity. In addition, one no. of circular steel lined Pressure shaft of 4.4 m diameter and 1537.93 m long

will be bifurcating into two numbers of 3.0 m diameter unit pressure shafts about 45.05 m long to feed 2 units of 125 MW capacity.

- Surface Powerhouse (Machine Hall) of size 131 m (L) x 25 m (W) x 51 m (H) housing 3 units of 250 MW & 2 units of 125 MW is proposed. A service bay of size 40 m (L) x 25 m (W) x 24.24 m (H) with EL at 265.50 m is proposed. Transformer yard will be placed on the downstream side in the open area at EL 309 m. The size of the transformer yard area would be 138.00 m(L) x 16 m (W). GIS building of size 75 m (L) x 14 m (W) x 17.5 m (H) is proposed on the downstream side of the transformer yard.
- A Pothead yard of size 90 m (L) x 40 m (W) at EL309.00 is proposed.
- One no. of 8.0 m diameter D–shaped Main Access Tunnel of length 730 m has been proposed to provide access to the service bay.
- 3 nos. of Tail Race Tunnels of 4.8 m diameter having length of 179.71 m from bigger units and 2 nos. of Tail Race Tunnels of 3.6 m diameter having length of 179.71 m from smaller units to discharge water from the draft tubes to the lower reservoir of outlet structure.
- 5 nos. of outlet structure at the lower reservoir which discharges the water from the tailrace tunnels into the reservoir, the same acts as an inlet during pumping to draw water from the lower reservoir. The structure comprises of a self-cleaning vertical track rack to avoid entry of debris into the conduit.

1. **Land requirement:** The total of 301.50 Ha of land will be required for Bilaspur PSP (1000MW), out of which 166.0 Ha will be forest land from Bitkuli Reserve Forest area and remaining 135.50Ha will be non-forest land area.
2. **Water requirement:** The one-time filling of 10.14 MCM of water is proposed to be filled up in the lower reservoir by pumping from existing nearby Khutaghat dam reservoir (which is about 16 km from the proposed lower reservoir). This dam has been built on the Kharang River for the purpose of irrigation. To augment evaporation and other losses the annual replenishment is also to be obtained from the same source.

1. **Environmental Sensitive area:** Upper and lower reservoir of the project is proposed in Bitkuli reserved forest. The nearest wild-life sanctuary is Achanakmar which is about 67.5 km from the proposed Project site. River/ water body, Sagri N is flowing at the aerial distance of 10 km in east to west direction.

1. **Project Cost:** The cost of the project is estimated to be INR 3985.20 Crore at July 2023 price level. The total project completion cost comes to INR 4697.12 Crores considering escalation and interest during construction. The per MW cost is approx. INR 4.7 Cr.

1. **Alternative Studies:**

Three alternatives (Alt-1 ,2 &3) for the project layout considering different locations for the upper and lower reservoirs with surface powerhouse have been studied. On the basis of detailed studies Alternative-1 is selected for preparation of prefeasibility study report owing to the following advantages over Alternative-2 & 3

- The total land requirement for Alt-1, 2 & 3 is 301.5 Ha, 336 Ha & 485.2 Ha respectively. Thus, total land requirement in alternative-1 is least.
- Upper reservoir Excavation quantity for upper reservoir in alternative-1 is least.
- Material required for dumping is also least in alternative-1 leading to lesser land acquisition
- requirement for dumping.
- After optimization of the locations of upper and lower reservoirs, the layout for alternative-1 has
- been fixed and the same has been adopted as final selected layout.
- The rock excavation material from the upper reservoir is sufficient for construction of both upper
- and lower reservoir CFRDs.
- No private land acquisition is required for the construction of both the reservoirs in Alt-1.
- No issues related to displacement of people or rehabilitation work.

1. The Salient features and area statement are as under:

- **Project details:**

Location (Including coordinates)	Lower Reservoir : 82°20'58.66"E; 22°11'58.87"N Upper Reservoir : 82°21'22.13”E; 22°13'9.21"N
Inter- state issue involved	No
Seismic zone	Zone-III

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1000 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2821.50 MU
No. of Units	5 nos. (3X250 MW+2X125 MW)
Additional information (if any)	Nil

- **ToR Details:**

Cost of project	4697.12 Cr.
Total area of Project	301.5 ha
Height of Dam from River Bed (EL)	Lower Dam – 23.0 m Upper Dam – 27.0 m
Length of Tunnel/Channel	2487.71 m
Details of Submergence area	128.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and constructio

	n waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	116 ha Non-Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	135.50
Government land/Forest Land	166.0 ha
Submergence area/Reservoir area	128.0 ha
Land required for project components	173.50 ha
Additional information (if any)	Nil

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Achanakmar Tiger Reserve is about 34.0 Km from site is the nearest protected area from the proposed project.
National Park	--- -	

	-	
Wildlife Sanctuary	--- -	

- **Court case details:**

Court Case	Nil
Additional information (if any)	Nil

- **Miscellaneous**
  - Least expensive source of electricity, not requiring fossil fuel for generation

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025
Project Benefits	The pumped storage projects are critical to the national economy and overall energy reliability because it's: • An emission-free renewable source • Balancing grid for demand driven variations • Balancing generation driven variations • Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 166.0 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

6.6.3 The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference for conducting EIA study to the project for

Setting up of Bilaspur Close Loop Pumped Storage Project of capacity 1000 MW in an area of 301.5Ha in Village Manjurpah & Karichhaper, District Bilaspur, Chhattisgarh by M/s Jindal Renewable Power Private Limited.

- The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.
- Source of water is from Khutaghat dam which is about 16 km from the proposed lower reservoir.

The location of the project is near to Achanakmar Tiger Reserve

3.5.3. Deliberations by the committee in previous meetings

N/A

3.5.4. Deliberations by the EAC in current meetings

The EAC after detailed deliberation on the information submitted and as presented observed that the project proponent has not given the justification for proposing water from Khutaghat dam as the reservoir is about 16 km from the proposed lower reservoir. Also, the availability of water in the said reservoir is unknown. Further, it was observed that the location of the project is near to Achanakmar Tiger Reserve and presence of Tiger corridor is required to be affirmed. Also, the proposed location of the project comes under dense forest especially Sal Forest which is having high ecological value and hence the EAC is concerned with the proposed location of the project. The EAC was of the view to conduct site visit by the sub-committee of the EAC to examine forest status and alternative locations proposed by the project proponent.

1. Site visit shall be conducted by a sub-committee of the EAC to examine forest status and alternative locations proposed by the project proponent
2. PP shall explore any alternate source of water nearer to the site and details of other consumers.
3. PP shall explore the possibility to reduce the forest land for the proposed project and also for reduction of muck disposal area by increasing the height of muck dump.
4. PP shall submit an undertaking stating that power to be use for pumping the water will be from green source.
5. Demographic of the 10km radius of the project area shall be provided.
6. Secondary data of presence/occurrence of wildlife in the in consultation in forest department and local people shall be provided.

The proposal was therefore ***deferred*** *till site visit and other documents.*

3.5.5. Recommendation of EAC

Deferred for ADS

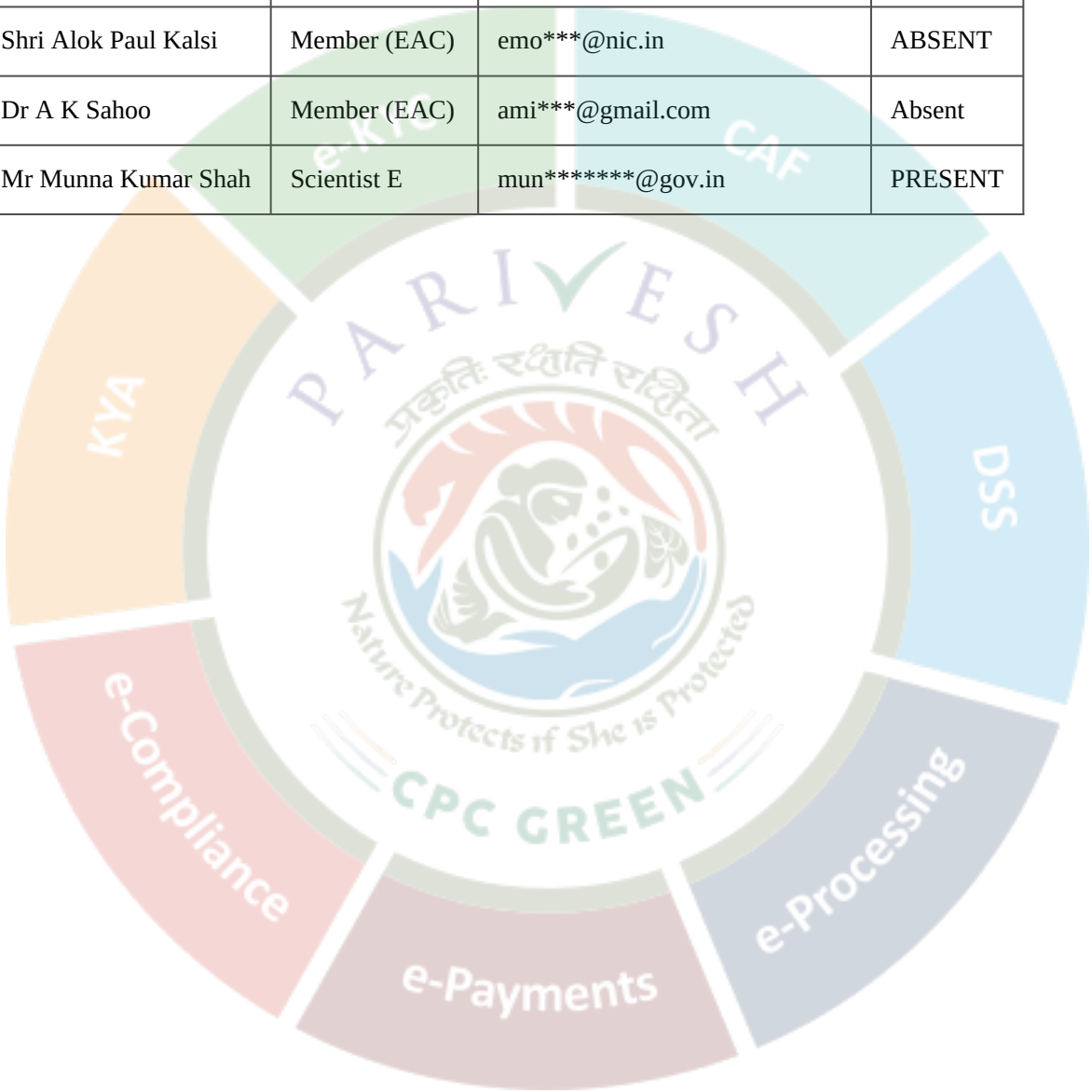
4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Prof G J Chakrapani	Chairman, EAC	cha**********@gmail.com	PRESENT
2	Dr Uday Kumar R Y	Member (EAC)	uda********@yahoo.com	ABSENT

3	Dr J A Johnson	Member (EAC)	jaj@wii.gov.in	PRESENT
4	Dr J V Tyagi	Member (EAC)	jvt******@gmail.com	PRESENT
5	Shri Kartik Sapre	Member (EAC)	kar********@gmail.com	PRESENT
6	Prof. Mukesh Sharma	Member (EAC)	muk***@iitk.ac.in	ABSENT
7	Shri Ajay Kumar Lal	Member (EAC)	akl****@gmail.com	PRESENT
8	Shri Sharvan Kumar	Member (EAC)	krs******@nic.in	PRESENT
9	Shri Alok Paul Kalsi	Member (EAC)	emo***@nic.in	ABSENT
10	Dr A K Sahoo	Member (EAC)	ami***@gmail.com	Absent
11	Mr Munna Kumar Shah	Scientist E	mun********@gov.in	PRESENT



MINUTES OF THE 6th MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 23RD JANUARY 2024 FROM 10:30 AM – 05:30 PM BY PHYSICAL MODE AT INDUS HALL, JAL WING, MOEF&CC.

The 6th meeting of the re-constituted EAC for River Valley & Hydro-electric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 23rd January, 2024 at Indus Hall, MoEF&CC under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure**.

Agenda No. 6.1

Confirmation of Minutes of 5th EAC meeting held on 19.12.2023 - 20.12.2023.

Agenda No.6.2

Tiruvannamalai Close Loop Pumped Storage Project of capacity 2000 MW at Village Gengavaram, Sub-District Kalasapakkam, District Tiruvannamalai (Tamil Nadu) by M/s Eco Leap Technologies India Private Limited – Terms of References (TOR) – reg.

[Proposal No. IA/TN/RIV/456813/2023; F. No. J-12011/02/2024-IA.I(R)]

6.2.1 The proposal is for grant of Terms of Reference (ToR) to the project for Tiruvannamalai Close Loop Pumped Storage Project of capacity 2000 MW in an area of 295 ha at Village Gengavaram, Sub-District Kalasapakkam, District Tiruvannamalai, Tamil Nadu by M/s Eco Leap Technologies India Private Limited.

6.2.2 The project proponent and the accredited consultant M/s. R S Envirolink Technologies Pvt. Ltd, made a detailed presentation on the salient features of the project and informed that:

i. The Project as envisaged is proposed in the Tiruvannamalai district of Tamil Nadu and is a standalone pumped storage scheme (PSP) with two new greenfield reservoirs. It is a self-identified pumped storage project.

ii. The project is located close to Kidampalayam Village in the Polur Taluk of Tiruvannamalai district in Tamil Nadu. The geographical co-ordinate of the upper reservoir is at 12°32'57.25"N and 78°58'59.40"E and the lower reservoir is at geographical co-ordinate 12°32'51.43" N and 79°1'3.47" E.

iii. The project is proposed as a off stream-closed loop pumped storage project which envisages the generation of 2000 MW of power during peak hours. The project has two reservoirs i.e.,

upper and lower reservoirs (closed-loop system) utilising the maximum and minimum gross head of about 592.0 m and 527.5 m respectively.

iv. The water from the upper reservoir will be utilized for generating power during peaking hours and the off-peak periods, water from the lower reservoir shall be pumped back to the upper reservoir. The project has a total generating capacity of 2000 MW and envisages the installation of 8 nos. of reversible units of 250 MW each with a 549.75 m rated head and design discharge of 416.9 m^3/s. All the units are housed in an underground powerhouse.

v. The Tiruvannamalai off-stream closed loop Pumped Storage Project envisages construction of:
   - A Geomembrane Faced Rock-Fill Dam (GFRD) having variable height from 5.0 m to 51.0 m from the natural surface level for the upper and lower reservoir.
   - Two intake/outlet structures have been proposed within the upper reservoir by locally excavating to provide sufficient submergence below the MDDL.
   - Two numbers of horseshoe and circular shaped high-pressure tunnels of the total length of about 1570 m each, which connects the two number of circular pressure shaft of length of about 300 m each.
   - Each pressure shaft divided into four-unit pressure shafts to feed eight pump-turbine housed in the Powerhouse.
   - An underground powerhouse of size 215.5 m (L) x 22.0 m (W) x 50.0 m (H) having an installation of eight nos. of reversible Francis pump-turbine of 250 MW each.
   - A transformer cavern of size 215.5 m (L) x 17.2 m (W) x 26.0 m (H) has been proposed downstream of the powerhouse cavern.
   - One 7.5 m diameter D-shaped main access tunnel (MAT) has been proposed to provide the access to underground powerhouses and transformer caverns.
   - A pothead yard of size 50.0 m (L) x 20.0 m (W)
   - Eight branches of low-pressure tunnels emerge from each draft tube and combine into two horseshoe shaped low pressure tunnels of length 715 m each.
   - Two intake/outlet structures have been proposed to be located within the lower reservoir which discharge the water from the low-pressure tunnel to the reservoir.

vi. **Land requirement:** The total land required for the construction of various components and related works for Tiruvannamalai PSP is estimated to be around 295.0 ha, out of which 30.50 ha is private land and 264.50 ha is forest/govt. land. Therefore, **Forest Clearance is required to be obtained under Forest Conservation Act.**

vii. **Water requirement:** It is planned to initially fill the proposed lower reservoir by drawing water from the existing Kettavarampalayam lake through a 7 km long water conductor during the commissioning stage. The proposed lower reservoir has a gross storage capacity of 12.56 MCM.

viii. **Environmental Sensitive area:** Koundinya Wild life santuary is about 48.0 Km from site and is the nearest protected area from the proposed project. Any impacts due to development of proposed PSP shall be studied as part of EIA studies

ix. **Project Cost:** The estimated project cost is Rs. 12758.0 Crore including IDC. As a preliminary estimate, a construction period of 54 months from the date of award of civil works package has been estimated for this project.

x. **Alternative Studies:**

The three logical alternatives have been studied for selecting the final layout of the project. The following aspects have been considered for formulation of alternative layouts.

- Maximum utilization of available head at the project site.
- Development of economical and optimized layout.
- Minimise the land acquisition of cultivated land to accommodate project components.
- Away from habitation.
- Ease of construction.

The alternatives considered have been focussed on the formation of a separate standalone reservoir for both upper and lower reservoirs where the topography allows this kind of arrangement. Continuous peaking of 8 hours has been considered for fixing installed capacity and computation of annual energy. Based on the above study, comparative merits and demerits of all three alternative schemes have been evaluated and presented in below Table.

Alternative 1	Alternative 2	Alternative 3
Shortest water conductor system length	The length of the water conductor system is longer by about 1.2 km compared to alternative 1	The length of the water conductor system is longer by about 1.4 km compared to alternative 1.
There is no requirement for surge shaft in the high-pressure tunnel and low-pressure tunnels	There is a requirement for a surge shaft in the low-pressure tunnels	There is a requirement for a surge shaft in the low-pressure tunnels
The shortest ECVT and main access tunnel	The longer ECVT and main access tunnel to the powerhouse, which delay construction of powerhouse, since is in the critical path of the project schedule	The longer ECVT and main access tunnel to the powerhouse, which delay construction of powerhouse, since is in the critical path of the project schedule
Least underground work	Requires more underground work, which impacts project cost	Requires more underground work than others, which impacts project cost

Least cultivated land	Least cultivated land	Require more area of cultivated land
Optimum power generation	Maximum power generation	Minimum power generation

viii. The Salient features and area statement are as under:

- **Project details:**

Name of the Proposal	Tiruvannamalai Pumped Storage Project
Location (Including coordinates)	Lower Reservoir : 79° 1'3.47" E; 12°32'51.43" N Upper Reservoir : 78°58'59.40" E; 12°32'57.25" N
Inter- state issue involved	No
Seismic zone	Zone-III

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	2000 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	2000 MW
Generation of Electricity Annually	5548.0 MU
No. of Units	8 nos. (8X250 MW)
Additional information (if any)	Nil

- **ToR Details:**

Cost of project	12758.0 Cr.
Total area of Project	295.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 41.0 m Upper Dam – 51.0 m
Length of Tunnel/Channel	2860 m
Details of Submergence area	165.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste

E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	65 ha Non-Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	30.5 ha
Government land/Forest Land	264.5 ha
Submergence area/Reservoir area	165.0 ha
Land required for project components	130.0 ha
Additional information (if any)	Nil

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Koundinya WLS is about 48 Km from site is the nearest protected area from the proposed project.
National Park	--- --	
Wildlife Sanctuary	--- --	

- **Court case details:**

Court Case	Nil
Additional information (if any)	Nil

- **Miscellaneous**

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025
Project Benefits	Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. The pumped storage projects are critical to the national economy and overall energy reliability because it's: • Least expensive source of electricity, not requiring fossil fuel for generation • An emission-free renewable source • Balancing grid for demand driven variations • Balancing generation driven variations • Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 264.5 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

6.2.3 The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference for conducting EIA study for proposed construction of the project Tiruvannamalai Close Loop Pumped Storage Project (2000 MW) in an area of 295 ha at Village Gengavaram, Sub-District Kalasapakkam, District Tiruvannamalai, Tamil Nadu by M/s Eco Leap Technologies India Private Limited.

- The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.

- The EAC observed that water will be drawn from the existing Kettavarampalayam lake through a 7 km long water conductor during the commissioning stage.

- The EAC noted that from all the alterative explored by the PP, alternative -3 has least forest area i.e. 249 ha as compare to selected alternative – 1 which has 264.5 ha of forest area. Alternative -1 has been choosen over the other alternatives due technical feasibility of the project. It was further noted that out of 65 ha of total area of muck disposal area 44 ha falls under forest area.

- The runoff water of the catchment is approximately 13 MCM which almost equal to the requirement of the water for proposed project i.e. 12.56 MCM

6.2.4: The EAC, after detailed deliberation on the information submitted and as presented during the meeting observed that proposed lake, as a source of water is not sufficient, since it has a shallow depth. It was suggested to explore for other nearest source of water. Further, the alternatives sites proposed by Project Proponent has only explored different sites of lower reservoirs instead PP shall explore alternatives sites for both reservoirs. Also, the proposal of using forest land of 44 ha for disposal of muck is not convincing and required to be relooked for non-forest land.
It was further opined that run off water of the catchment is approximately equal to the requirement of the water for proposed project and therefore PP was asked to explore different avenues. Accordingly, following observations were raised for further appraisal :

i. PP shall submit MoU signed with State department for setting up the proposed project and availability of water for the project along with different users.
ii. PP shall explore any alternate source of water and other alternatives site as Kettavarampalayam lake is not having enough/sufficient water.
iii. PP shall submit revised land area to minimize the requirement of forest area and muck disposal site shall be proposed in non-forest area.
iv. A letter certified from DFO shall be submit stating that no wildlife corridor is passing through out the project boundary.
v. A drone video shall be submitted and presented during the meeting.
vi. PP shall submit details and status of other projects proposed in the 10 km range of the Tiruvannamalai Close Loop Pumped Storage Project.
vii. An undertaking shall be submitted that no construction has been started till date.

The proposal is therefore ***deferred*** on above lines.

Agenda No. 6.3

Kalamb Thakurwadi Close Loop Pumped Storage Project (1000 MW) in an area of 157 ha at Village Ambavane, Sub-District Mulshi, District Pune, Maharashtra by M/s Renew Solar Power Private Limited – Terms of References (ToR) – reg.

[Proposal No. IA/MH/RIV/456439/2023; F. No. J-12011/03/2024-IA.I (R)]

6.3.1: The PP vide email dated 22.1.2024 has informed that they need to verify and validate some additional information related to their project and requested for deferment.

The EAC therefore ***returned*** the proposal.

Agenda No.6.4

Setting up of Saruali Close Loop Pumped Storage Project of capacity 840 at Village Saruali, Tehsil Rengali, District Deogarh (Odisha) by M/s Jindal Renewable Power Private Limited - Terms of References (TOR) - reg.

[Proposal No. IA/OR/RIV/456130/2023; F. No. J-12011/04/2024-IA.I (R)]

6.4.1: The proposal is for grant of Terms of Reference (ToR) to the project for setting up of Saruali Close Loop Pumped Storage Project of capacity 840 MW in an area of 276 ha at Village Saruali, Tehsil Rengali, District Deogarh (Odisha) by M/s Jindal Renewable Power Private Limited.

6.4.2: The Project Proponent and the accredited Consultant M/s. R S Envirolink Technologies Pvt. Ltd, made a detailed presentation on the salient features of the project and informed that:

i. The Saruali Pumped Storage Project is an Off-Stream closed loop PSP with two reservoir. The Project as envisaged is proposed in the is located in Deogarh District, Odisha. The installed capacity of the project is estimated as 840 MW (Generation mode)/945 MW (Pumping mode).

ii. The project envisages creation of two artificial reservoirs interconnected with water conductor system, feeding the reversible pump-turbine units before draining into the lower reservoir through tailrace tunnel. Both the reservoirs are located away from all existing nearby rivers/streams/nallahs. The geographical coordinates of the proposed upper reservoir are at Latitude-21°33'36.64"N and Longitude-85°09'43.87"E and that of lower reservoir are at Latitude-21°32'42.33"N and Longitude- 85°10'27.37"E.

iii. It will utilize a maximum gross head of 372 m and design discharge of 274.08 cumecs for generation of 840 MW (2 units of 280 MW & 2 units of 140 MW).

iv. The Saruali Pumped Storage Project envisages construction of :

- Creation of two artificial reservoirs i.e.-upper and lower reservoir with gross storage capacity of 8.35 MCM and 9.846 MCM respectively.
- A Concrete Faced Rock-Fill dam, 1878 m long peripheral embankment with maximum height of 48 m from deepest bed level for creation of Upper reservoir. • A Concrete Faced Rock-Fill dam, 2893 m long peripheral embankment with maximum height of 29 m from deepest bed level for creation of lower reservoir.
- 3 nos. of Intake structure proposed at the upper reservoir comprising of a self-cleaning vertical trash rack for each intake to minimize the entrapment of debris in the pressure shaft/penstock.
- 2 nos. of circular steel lined Pressure shafts of 5.0 m diameter and each 1433.5 m long to feed 2 units of 280 MW capacity. In addition, one no. of circular steel lined Pressure shaft of 5.0 m diameter and 1376.5 m long will be bifurcating into two numbers of 3.5 m diameter unit pressure shafts about 57 m & 66.5 m long to feed 2 units of 140 MW capacity.
- A surface Powerhouse (Machine Hall) of size 104.1 m (L) x 24.5 m (W) x 46.2 m (H) housing 2 units of 280 MW & 2 units of 140 MW is proposed. A Service Bay of size 40 m (L) x 24.5 m (W) x 19.8 m (H) is proposed at an elevation of 163.0 amsl. Transformer yard will be placed on the downstream side in the open area at El. 200.0 amsl. The Transformers yard area size would be 144.1 m (L) x 18 m (W) x 23.5 m (H).
- A Pothead yard of size 73 m (L) x 30 m (W) at El. 200.00 amsl is proposed.
- One no. of 8.5 m diameter D–shaped Main Access Tunnel (MAT) has been proposed to provide access to the service bay at El. 163.0 amsl.
- 2 nos. of Tail Race Tunnel of 5.0 m diameter having length of 168 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the bigger units of 280 MW each. In addition, 2 nos. of Tail Race Tunnel of 3.6 m diameter having length of 172.8 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the smaller units of 140 MW each
- 4 nos. of outlet structure at the lower reservoir which discharges water from tailrace tunnels into the reservoir. The same acts as an inlet during pumping to draw water from the lower reservoir. The structure will be equipped with a self-cleaning vertical track rack to avoid entry of debris into the conduit.

v. **Land requirement:** The total land requirement for construction of various civil structures, associated infrastructure facilities and muck disposal area /green belt area is estimated as 276 Ha. Out of 276 Ha of land, about 106.85 Ha falls under the category of forest land and 169.15 Ha under non-forest land.

vi. **Water requirement:** Water requirement is estimated as 10.24 MCM for filling of reservoirs and replenishment of evaporation loss. Annual evaporation loss is estimated as 1.44 MCM for both the reservoirs. This water requirement shall be met from one-time filling of reservoirs from Jautuk nala of Brahmani River, located at about 4.2 km from the proposed lower reservoir. A pumphouse in vicinity of the diversion structure is proposed to be constructed at the identified location of river for conveyance of water from this location to the lower reservoir.

vii. **Environmental Sensitive area:** Khalasuni WLS is located at an approximate distance of 65.0 Km. River/ water body, Jautuk N is flowing at the aerial distance of 500 m in North to South-west direction.

viii. **Project Cost:** The hard cost of the project is estimated as INR 3369.42 Crore and total completion cost is estimated as INR 3711.56 Crores considering escalation and interest during construction. This completion cost excludes the transmission line cost and R-communication works aggregating to INR 160.35 Crores. The cost per MW is worked out as INR 4.42 Cr. The levelized tariff for one cycle generation works out to INR 5.79/ kWh with consideration of pumping energy rate of INR 2.63/kWh.

ix. **Alternative Studies:**

Four alternative project layouts have been studied based on the combination of different options of upper and lower reservoir.

Alternative-I: Upper Reservoir (Option-1) and Lower Reservoir (Option-1) connected with water conductor system and pit type of surface powerhouse
Alternative-II: Upper Reservoir (Option-1) and Lower Reservoir (Option-2) connected with water conductor system and pit type of surface powerhouse
Alternative-III: Upper Reservoir (Scenario-2A of Option-2) and Lower Reservoir (Scenario-3A of Option-3) connected with water conductor system and Underground powerhouse
Alternative-IV: Upper Reservoir (Scenario-2B of Option-2) and Lower Reservoir (Scenario-3B of Option-3) connected with water conductor system and Underground powerhouse

Two of the alternative project layouts (Alternative-I&II) contemplates pit type surface powerhouse and two of the alternative project layouts (Alternative-III & IV) contemplates underground powerhouse, transformer cavern along with down surge gallery. Out of these four alternatives, the project layout as per Alternative-II has been selected, which will be equipped with four nos. of reversible Francis pump turbines (2 units of 280 MW/315 MW & 2 units of 140 MW/157.5 MW) housed in a pit type of surface powerhouse. The selected alternative (Alternative-II) is considered better alternative owing to the advantages over other alternatives (Alternative-I with IC-825 MW, Alternative-III with IC-1000 MW and Alt.-IV with IC 860 MW) in terms of shorter water conductor length, length to head ratio (L/H) ratio within 5 and relatively

lesser land requirement. In addition, issues related to R&R, environmental and social considerations are minimal in the selected alternative.

ix. The Salient features and area statement are as under:

- **Project details:**

Location (Including coordinates)	Lower Reservoir : 85°10'27.37"E; 21°32'42.33"N Upper Reservoir : 85°09'43.87"E; 21°33'36.64"N
Inter- state issue involved	No
Seismic zone	Zone-II

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	840 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	840 MW
Generation of Electricity Annually	2366.7 MU
No. of Units	4 nos. (2X280 MW+2X140 MW)
Additional information (if any)	Nil

- **ToR Details:**

Cost of project	3711.65 Cr.
Total area of Project	276.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 29.0 m Upper Dam – 48.0 m
Length of Tunnel/Channel	1601.5 m
Details of Submergence area	129.3 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from

	labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	92 ha Non-Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	169.15 ha
Government land/Forest Land	106.85 ha
Submergence area/Reservoir area	129.30 ha
Land required for project components	146.70 ha
Additional information (if any)	Nil

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Khalasuni WLS is about 65.0 Km from site is the nearest protected area from the proposed project.
National Park	--	
Wildlife Sanctuary	--	

- **Court case details:**

Court Case	Nil
Additional information (if any)	Nil

- **Miscellaneous**

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025
Project Benefits	The pumped storage projects are critical to the national economy and overall energy reliability because it's: • Least expensive source of electricity, not requiring fossil fuel for generation • An emission-free renewable source • Balancing grid for demand driven variations • Balancing generation driven variations • Voltage support and grid stability • Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 106.85 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

6.4.3: The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference (ToR) for conducting EIA study of the project for setting up of Saruali Close Loop Pumped Storage Project of capacity 840 MW in an area of 276 ha at Village Saruali, Tehsil Rengali, District Deogarh (Odisha) by M/s Jindal Renewable Power Private Limited.
- The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry
- The EAC observed that water will be drawn from Jautuk nala of Brahmani River, which is not a perennial river, and hence may impact low end user when water gets withdrawn.

- The EAC further observed that the project involves 106.85 Ha of forest land and as per the Kml file and photographs, the location of the project is comes under very high density of forest.
- Further, it was noted that MoU with State Government has not been submitted by project proponent or signed till date.

6.4.4: The EAC after detailed deliberation on the information submitted and as presented observed that proposed source of water is non-perennial and the availability of water for other users of this stream is required to be known. PP may explore the alternate source of water i.e. Rangali Dam which is about 15-16 km from the proposed site. Further it was observed that the project involves 106.85 Ha of forest land and as per the Kml file and photographs, the location of the project comes under very high density of forest, so alternative sites of the project may be relooked. It was opined that MoU or any kind of agreement with State Government is required to substantiate the site allocation to instant Project Proponent. Accordingly, EAC desired that PP shall submit the further details on below mentioned observation:

i. PP shall explore any alternate source of water nearer to the site as Jautuk nala is not a perineal river.
ii. PP shall resubmit the proposal with revised layout after minimizing the forest land for the proposed project
iii. PP shall submit MoU signed with State department for setting up the proposed project and availability of water for the project.
iv. A drone video shall be submitted and presented during the meeting.
v. PP shall submit an undertaking stating that power to be use for pumping the water will be from green source.
vi. Demographic of the 10km radius of the project area shall be provided.
vii. Secondary data of presence/occurrence of wildlife in the in consultation in forest department and local people shall be provided.
viii. Explore the possibility for management of muck in any closed coal mine.

The proposal was therefore ***deferred*** on the above lines.

Agenda No.6.5

Dharampur Close Loop Pumped Storage pproject of capacity 1500 MW in an area of 278.7 ha at Village Bhanval, Sub-District Dharampur, District Valsad (Gujarat) by M/s Adani Green Energy Limited - Terms of Reference (ToR) - reg.

[Proposal No. IA/GJ/RIV/455669/2023; F. No. J-12011/05/2024-IA.I (R)]

6.5.1: The proposal is for grant of Terms of Reference (ToR) to the project for Dharampur Close Loop Pumped Storage pproject of capacity 1500 MW in an area of 278.7 ha at Village Bhanval, Sub-District Dharampur, District Valsad (Gujarat) by M/s Adani Green Energy Limited.

6.5.2: The EAC during deliberations noted the following:

- Ministry vide its letter dated 23.09.2023 has already granted terms of reference in this location to M/s Torrent Power Limited for the project Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat for conducting EIA study as per recommendations of the Expert Appraisal Committee (River Valley & Hydro-electric).

- It was noted that current project i.e. Dharampur Close Loop Pumped Storage Project and Pindval Closed Loop Pumped Storage Project have not signed any MoU with State Government and the project layout and almost all the components are overlapping with each other.

6.5.3: The EAC, after deliberations expressed its displeasure with the project proponent for submitting proposal of the location in which the Ministry has already granted the ToR and desired that the PP/Consultants must make sure that proper consultation and information dissemination be carried out between various stakeholders before submitting any proposal. Accordingly, the proposal was ***returned*** in the present form.

Agenda No. 6.6

Setting up of Bilaspur Close Loop Pumped Storage Project of capacity 1000 MW in an area of 301.5Ha in Village Manjurpah & Karichhaper, District Bilaspur, Chhattisgarh by M/s Jindal Renewable Power Private Limited - Terms of Reference (ToR) - reg.

[Proposal No. IA/CG/RIV/454612/2023; F. No. J-12011/06/2024-IA.I (R)]

6.6.1: The proposal is for grant of Terms of Reference (ToR) to the project for Setting up of Bilaspur Close Loop Pumped Storage Project of capacity 1000 MW in an area of 301.5Ha in Village Manjurpah & Karichhaper, District Bilaspur, Chhattisgarh by M/s Jindal Renewable Power Private Limited.

6.6.2: The Project Proponent and the accredited Consultant M/s R S Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

i. The Bilaspur close Loop Pumped Storage Project is located in Bilaspur district in the state of Chhattisgarh. The upper reservoir is located near Manjurpah village and lower reservoir is located near Karichhaper village in Bilaspur district which is about 165 km from Raipur airport.
ii. The geographical coordinates of the proposed upper reservoir are at latitude 22°13'9.21" North and longitude 82°21'22.13" East and that of lower reservoir are at 22°11'58.87" North and 82°20'58.66" East. The elevation difference between proposed upper and lower reservoir is about 420 m.
iii. The Pumped Storage Component of Bilaspur PSP envisages construction of upper reservoir located near Manjurpah village in Bilaspur district whereas the lower reservoir is located near Karichhaper village in Bilaspur district of the Chhattisgarh state. The required quantum of 10.14

MCM of water for one-time filling of the proposed Bilaspur PSP lower reservoir will be taken up from nearby existing Khutaghat dam reservoir by pumping which is located at about 16 km from the proposed lower reservoir.

iv. The proposed project envisages following major civil components:

- A Concrete Faced Rock-Fill dam, 2570 m long embankment having weighted average height of 22 m (with maximum height of 27 m from bed level) for creation of Upper reservoir with gross storage capacity of 8.06 MCM.
- A Concrete Faced Rock-Fill dam, 2174 m long embankment having weighted average height of 19.4m (with maximum height of 23 m from bed level) for creation of Lower reservoir with gross storage capacity of 9.84 MCM.
- 4 nos. of Intake structure proposed at the upper reservoir comprising of a self-cleaning vertical trash rack for each intake to avoid entry of debris in the water conductor system.
- 3 nos. of circular steel lined Pressure shafts of 4.4 m diameter and each 1578.03 m long to feed 3 units of 250 MW capacity. In addition, one no. of circular steel lined Pressure shaft of 4.4 m diameter and 1537.93 m long will be bifurcating into two numbers of 3.0 m diameter unit pressure shafts about 45.05 m long to feed 2 units of 125 MW capacity.
- Surface Powerhouse (Machine Hall) of size 131 m (L) x 25 m (W) x 51 m (H) housing 3 units of 250 MW & 2 units of 125 MW is proposed. A service bay of size 40 m (L) x 25 m (W) x 24.24 m (H) with EL at 265.50 m is proposed. Transformer yard will be placed on the downstream side in the open area at EL 309 m. The size of the transformer yard area would be 138.00 m(L) x 16 m (W). GIS building of size 75 m (L) x 14 m (W) x 17.5 m (H) is proposed on the downstream side of the transformer yard.
- A Pothead yard of size 90 m (L) x 40 m (W) at EL309.00 is proposed.
- One no. of 8.0 m diameter D–shaped Main Access Tunnel of length 730 m has been proposed to provide access to the service bay.
- 3 nos. of Tail Race Tunnels of 4.8 m diameter having length of 179.71 m from bigger units and 2 nos. of Tail Race Tunnels of 3.6 m diameter having length of 179.71 m from smaller units to discharge water from the draft tubes to the lower reservoir of outlet structure.
- 5 nos. of outlet structure at the lower reservoir which discharges the water from the tailrace tunnels into the reservoir, the same acts as an inlet during pumping to draw water from the lower reservoir. The structure comprises of a self-cleaning vertical track rack to avoid entry of debris into the conduit.

v. **Land requirement:** The total of 301.50 Ha of land will be required for Bilaspur PSP (1000MW), out of which 166.0 Ha will be forest land from Bitkuli Reserve Forest area and remaining 135.50Ha will be non-forest land area.

vi. **Water requirement:** The one-time filling of 10.14 MCM of water is proposed to be filled up in the lower reservoir by pumping from existing nearby Khutaghat dam reservoir (which is about 16 km from the proposed lower reservoir). This dam has been built on the Kharang River for the

purpose of irrigation. To augment evaporation and other losses the annual replenishment is also to be obtained from the same source.

vii. **Environmental Sensitive area:** Upper and lower reservoir of the project is proposed in Bitkuli reserved forest. The nearest wild-life sanctuary is Achanakmar which is about 67.5 km from the proposed Project site. River/ water body, Sagri N is flowing at the aerial distance of 10 km in east to west direction.

viii. **Project Cost:** The cost of the project is estimated to be INR 3985.20 Crore at July 2023 price level. The total project completion cost comes to INR 4697.12 Crores considering escalation and interest during construction. The per MW cost is approx. INR 4.7 Cr.

ix. **Alternative Studies:**

Three alternatives (Alt-1 ,2 &3) for the project layout considering different locations for the upper and lower reservoirs with surface powerhouse have been studied. On the basis of detailed studies Alternative-1 is selected for preparation of prefeasibility study report owing to the following advantages over Alternative-2 & 3

- The total land requirement for Alt-1, 2 & 3 is 301.5 Ha, 336 Ha & 485.2 Ha respectively. Thus, total land requirement in alternative-1 is least.
- Upper reservoir Excavation quantity for upper reservoir in alternative-1 is least.
- Material required for dumping is also least in alternative-1 leading to lesser land acquisition
- requirement for dumping.
- After optimization of the locations of upper and lower reservoirs, the layout for alternative-1 has
- been fixed and the same has been adopted as final selected layout.
- The rock excavation material from the upper reservoir is sufficient for construction of both upper
- and lower reservoir CFRDs.
- No private land acquisition is required for the construction of both the reservoirs in Alt-1.
- No issues related to displacement of people or rehabilitation work.

x. The Salient features and area statement are as under:

- **Project details:**

Location (Including coordinates)	Lower Reservoir : 82°20'58.66"E; 22°11'58.87"N Upper Reservoir : 82°21'22.13”E; 22°13'9.21"N
Inter- state issue involved	No
Seismic zone	Zone-III

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1000 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2821.50 MU
No. of Units	5 nos. (3X250 MW+2X125 MW)
Additional information (if any)	Nil

- **ToR Details:**

Cost of project	4697.12 Cr.
Total area of Project	301.5 ha
Height of Dam from River Bed (EL)	Lower Dam – 23.0 m Upper Dam – 27.0 m
Length of Tunnel/Channel	2487.71 m
Details of Submergence area	128.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	116 ha Non-Forest Land

Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	135.50
Government land/Forest Land	166.0 ha
Submergence area/Reservoir area	128.0 ha
Land required for project components	173.50 ha
Additional information (if any)	Nil

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Achanakmar Tiger Reserve is about 34.0 Km from site is the nearest protected area from the proposed project.
National Park	--	
Wildlife Sanctuary	--	

- **Court case details:**

Court Case	Nil
Additional information (if any)	Nil

- **Miscellaneous**

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025
Project Benefits	The pumped storage projects are critical to the national economy and overall energy reliability because it's: o Least expensive source of electricity, not requiring fossil fuel for generation o An emission-free renewable source o Balancing grid for demand driven variations o Balancing generation driven variations

	○ Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 166.0 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

6.6.3 The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference for conducting EIA study to the project for Setting up of Bilaspur Close Loop Pumped Storage Project of capacity 1000 MW in an area of 301.5Ha in Village Manjurpah & Karichhaper, District Bilaspur, Chhattisgarh by M/s Jindal Renewable Power Private Limited.
- The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.
- Source of water is from Khutaghat dam which is about 16 km from the proposed lower reservoir.
- The location of the project is near to Achanakmar Tiger Reserve

6.6.4: The EAC after detailed deliberation on the information submitted and as presented observed that the project proponent has not given the justification for proposing water from Khutaghat dam as the reservoir is about 16 km from the proposed lower reservoir. Also, the availability of water in the said reservoir is unknown. Further, it was observed that the location of the project is near to Achanakmar Tiger Reserve and presence of Tiger corridor is required to be affirmed. Also, the proposed location of the project comes under dense forest especially Sal Forest which is having high ecological value and hence the EAC is concerned with the proposed location of the project. The EAC was of the view to conduct site visit by the sub-committee of the EAC to examine forest status and alternative locations proposed by the project proponent.

i. Site visit shall be conducted by a sub-committee of the EAC to examine forest status and alternative locations proposed by the project proponent
ii. PP shall explore any alternate source of water nearer to the site and details of other consumers.
iii. PP shall explore the possibility to reduce the forest land for the proposed project and also for reduction of muck disposal area by increasing the height of muck dump.
iv. PP shall submit an undertaking stating that power to be use for pumping the water will be from green source.

v. Demographic of the 10km radius of the project area shall be provided.
vi. Secondary data of presence/occurrence of wildlife in the in consultation in forest department and local people shall be provided.

The proposal was therefore ***deferred*** *till site visit and other documents.*

Any other item

Agenda No. 6.7

Vijayanagar Pump Storage Project (130 MW) in an area of 127.54 ha at Village Kurekuppa, Sub District Sandur, District Ballari, Karnataka by M/s JSW Energy PSP Two Limited – Environmental Clearance (EC) – reg.

[Proposal No. IA/KA/RIV/444768/2023; F. No. J-12011/05/2022-IA.I (R)]

The Member Secretary informed the EAC that the instant proposal was considered by the EAC in its 1st meeting held on 17-18 October, 2023, wherein the EAC has recommended the proposal for grant of Environmental Clearance. During processing of file, it has been observed that the ToR dated 3rd June, 2022 and Final EIA with Public Hearing has been prepared in the name of M/s JSW Renewable Energy (Vijaynagar) Limited. However, the proposal of Environmental Clearance on PARIVESH Portal has been submitted in the name of M/s JSW Energy PSP Two Limited. Also, in the Minutes of EAC meeting the said name M/s JSW Energy PSP Two Limited is mentioned.

Accordingly, clarification was sought from project proponent through ADS on PARIVESH Portal. The Project proponent vide its reply on 15.1.2024 has to submit clarification with documentary evidence. In response of the same the project proponent has informed that this was due to typographical error. The name of the owner of the project is M/s JSW Renewable Energy (Vijaynagar) Limited.

The EAC deliberated on the matter and observed that this is a serious mistake done by the project authority as they have submitted proposal for EC with wrong name and even after the recommendation of the EAC, the consultant (M/s EQMS Global Pvt. Ltd) and the project proponent have not informed of it to the Ministry. The same may be treated as a severe mistake and ignorance about their project details submitted on Parivesh portal of the Ministry. The EAC suggested that the Ministry may take appropriate action against the consultant for submitting wrong/ misleading information and hiding the facts. The EAC also cautioned the project proponent not to commit any such mistake in future and suggested to submit a clarification in affidavit format.

The EAC after detailed deliberation recommended for change of project name mentioned in 1st EAC meeting held on 17-18 October, 2023 from M/s JSW Energy PSP Two Limited to M/s JSW Renewable Energy (Vijaynagar) Limited subject to submission of clarification in an affidavit regarding name of the project and to change the actual name of the project on PARIVESH Portal.

Agenda No.6.8

Requirement for essential document prior to consideration of ToR in Pump Storage projects

The EAC highlighted on the recent examples of the proposals of Pumped Storage Project (PSPs) where the terms of reference are being considered by EAC and being granted by the Ministry. It was observed in 1-2 cases that the project site of one PSP proposal wherein Ministry has already granted ToR based on recommendation of the EAC without obtaining MoU/consent/Agreement from the State Governments was overlapping with another project proponent on the same location/site. However, in the later case, the project proponent had submitted the signed MoU with the state Government and thereby requested to accord ToR to their project.

Further, in the current meeting another case was observed wherein one project proponent has submitted the proposal for ToR at the same site/location wherein Ministry has granted ToR based on recommendation of the EAC, though both the project authorities have not yet obtained any MoU/consent/Agreement from the State Governments

In view of above instances and since it is very difficult for EAC to ascertain whether locations of the project are clashing-overlapping/close proximity to each other, EAC desired that a mechanism is required to be evolved and MoU/consent/Agreement from the State Governments shall be made essential document prior to consideration of project for grant of ToRs. Also, affidavit/undertaking from each project proponent shall be submitted to ascertain that no ToR has been granted by Ministry and no overlapping of other projects to the instant site/location. A detailed map showing the various project sites in operation in India may also be prepared and displayed by project proponent. Potential available sites for hydro-energy/PSP/RV projects based on land use, forests, wild animal reserve forests, topography, geology, mineral belts, human settlements be prepared by various ministries, along with carrying capacity of various river basins. The same also be directed to be prepared by professional internationally reputed consultancy organizations.

The EAC after detailed deliberations and based on recent incidences suggested the Ministry to consider the view of the committee to avoid any overlapping of project site in future.

***

Annexure

ATTENDANCE

6th MEETING OF RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC)
RIVER VALLEY AND HYDROELECTRIC PROJECTS

DATE : **23rd January 2024**

TIME : **10.30 AM onwards**

VENUE : **Indus Hall, Jal Block, Indira Paryavaran Bhawan, New Delhi.**

Sl.No.	Name of Member	Role	Signature
1.	**Prof. G. J. Chakrapani**	**Chairman**	
2.	**Dr. Udaykumar R. Y.**	Member	
3.	**Dr. Mukesh Sharma**	Member	
4.	**Dr. J V Tyagi**	Member	
5.	**Shri Kartik Sapre**	Member	
6.	**Shri Ajay Kumar Lal**	Member	
7.	**Shri Sharvan Kumar**	Member Representative of Central Electricity Authority (CEA)	
8.	**Shri Alok Paul Kalsi**	Member Representative of Central Water Commission (CWC)	
9.	**Dr. J.A. Johnson**	Member Representative of Wildlife Institute of India (WII)	
10.	**Dr B.K. Das, Director /** **Dr. A.K. Sahoo, Senior Scientist**	Member Representative of Central Inland Fisheries Research Institute (CIFRI)	
11.	**Shri Munna Kumar Shah**	Member Secretary (River Valley and Hydroelectric Projects), MoEF&CC	

***

Approval of the Chairman

From: "chakrapani govind" <chakrapani.govind@gmail.com>
To: "Munna Kumar Shah" <munna.shah@gov.in>
Sent: Thursday, February 1, 2024 4:00:59 PM
Subject: Re: Revised Draft MoM of EAC meeting held on 23.01.2024

Approved.

On Thu, 1 Feb, 2024, 15:16 Munna Kumar Shah, <munna.shah@gov.in> wrote:

> Dear sir
>
> Please find the enclosed corrected MoM of EAC meeting held on 23.01.2024. It is to inform that no comments/inputs has been received from members accordingly corrected/revised Draft MoM is being send for your kind approval please
>
> May please approve for further uploading on PARIVESH Portal of Draft MoM of EAC meeting
>
> Thank you
>
> Regards
>
> Munna Kumar Shah
> Scientist E