

MINUTES OF THE 20TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 14TH DECEMBER, 2021 FROM 10:30 AM – 3:00 PM THROUGH VIDEO CONFERENCE.

The 20th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 14th December, 2021 through video conference, under the Chairmanship of Dr. Uday Kumar R.Y. The list of Members present in the meeting is at **Annexure**.

Agenda No. 20.1

Confirmation of the minutes of 19th EAC meeting

The minutes of the 19th EAC (River Valley Hydroelectric Project) meeting held on 15th November, 2021 were confirmed.

Agenda No. 20.2

Bahalpur Standalone Pumped Storage Project (1380 MW), in an area of 496.57 Ha located at Village Bahalpur, Tehsil Jhalda, Purulia District (West Bengal) by M/s Greenko Energies Private Limited – Terms of Reference - reg.

[Proposal No. IA/WB/RIV/240914/2021; F. No. J-12011/18/2021-IA.I (R)]

20.2.1: PP vide email dated 14.12.2021 informed the ministry that they have decided to withdraw the proposal due to mistakes done in Form 1. The EAC therefore recommended to delete the proposal from PARIVESH portal.

Agenda No. 20.3

Ramapur Gurar Standalone Pumped Storage Project (3000 MW), in an area of 688.14 Ha located at Gurar Village, Tehsil Robertsganj, Sonbhadra, District (Uttar Pradesh) by M/s Greenko Energies Private Limited – Terms of Reference - reg.

[Proposal No. IA/UP/RIV/241367/2021; F. No. J-12011/19/2021-IA. I (R)]

20.3.1 PP vide email dated 14.12.2021 informed the ministry that they have decided to withdraw the proposal due to mistakes done in Form 1. The EAC therefore recommended to delete the proposal from PARIVESH portal.

Agenda No. 20.4:

Bhavali Pumped Storage Project (1500 MW), in an area of 228 Ha located at Village Jamunde and Kalbhonde, Tehsil Igatpuri and Shahpur, District Nashik and Thane (Maharashtra) by M/s JSW Neo Energy Limited– Terms of Reference - reg.

[Proposal No. IA/MH/RIV/239701/2021; F. No. J-12011/20/2021-IA. I (R)]

20.4.1: The proposal is for grant of Terms of Reference (ToR) to Bhavali Pumped Storage Project (1500 MW), in an area of 228 Ha located at Village Jamunde and Kalbhonde, Tehsil Igatpuri and Shahpur, District Nashik and Thane (Maharashtra) by M/s JSW Neo Energy Limited.

20.4.2: The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

- i. The proposed Bhavali Pumped Storage Project is a self-identified, green field project by the JSW Neo Energy Ltd. The project is located near to Jamunde village located in Igatpuri Tehsil/Mandal of Nashik district and Kalbhonde village in Shahpur Taluk of Thane district in Maharashtra, India. The site is easily approachable by NH-160 from Mumbai via Shahapur. It is located 50 kms from the district headquarters Nashik. Nearest railway head is in Igatpuri from where project site is located.
- ii. The MoU for setting up of the proposed Bhavali Pumped Storage Project (1500MW) has been made on 14th September, 2021, between the Industries Department, Government of Maharashtra and M/s JSW Neo Energy Ltd.
- iii. The Geographical co-ordinates of the proposed Pumped Storage Project component of upper reservoir located near to Jamunde Village in Igatpuri Taluk of Nashik district with latitude 19°36'31.69"N, and Longitude 73°35'45.06"E and that of lower reservoir at Kalbhonde village in Shahpur Taluk of Thane district with latitude 19°34'56.38"N and longitude 73° 35'10.00"E.
- iv. The project, conceived as an off-stream closed loop project of installed capacity 1500 MW / 11017 MWH pumped storage component with 7.34 hours storage capacity for peak power shall be located near to Jamunde village located in Igatpuri Tehsil/Mandal of Nashik district and Kalbhonde village in Shahpur Taluk of Thane district in Maharashtra, India.
- v. This Project comprises of 6 units of 250 MW. The installed capacity of a pumped storage scheme is influenced by the requirements of daily peaking power requirements, flexibility in efficient operation of units, storage available in the reservoirs and the area capacity characteristics. The Project will generate 1500 MW by utilizing a design discharge of 374.60 Cumec with rated head of 447.00m. The PSP will utilize 1584 MW to pump 0.35 TMC of water to the upper reservoir.
- vi. The Upper & lower reservoir for the Pumped storage scheme with Full Reservoir Level of El. +745.00 m & El. 300.00m with a Minimum draw down levels of El. 728.00m & El. 270.00m respectively. The live storage capacity for pumped storage scheme required is 9.95 MCM (0.35 TMC).
- vii. The water from the upper reservoir will be diverted through Power House and TRT to the proposed lower reservoir. The water will be pumped back to the upper reservoir through TRT-reversible turbines-pressure shaft-HRT to upper reservoir.
- viii. The project also comprises of a lower intake in the lower reservoir to pump the water to upper reservoir. The project comprises of the following structures based on PFR studies:
 - 48m high (from NSL), 1035 m long and 10m wide at top upper rock fill dam.
 - 53m high (from NSL), 421 m long and 10m wide at top lower rock fill dam.
 - 43 m(L) x40 m (W) x 13.0 m (H) Diffuser Intake
 - 11 m diameter, 484.35 long HRT designed for 374.58 cumec.
 - Two 7.7m dia, 594.5m (L) steel lined penstocks.
 - Six 5.5m dia, 135.3m (L) steel lined pressure shaft
 - Underground Powerhouse 135mx18mx50m
 - Six, 5.5m diameter and 89.47 m (L) Draft tube Tunnel.
 - 115.40 x 20.0 m (Rectangular) Surge Tank
 - 11m dia .794.5m (L)Horse Shoe TRT

- 73 m(L) x43 m (W) x 13.0 m (H) Diffuser Type Outlet structure
 - 6 number Francis type(250MW), vertical shaft reversible pump turbines
- ix. **Land requirement:** The total land required for construction of project components, reservoir area, muck dumping, construction camps and colony, etc., works out to be 228 Ha. out of which about 188.46 Ha is forest land area and 39.54 Ha is Private land.
- x. **Details on Submergence Area:** The construction of upper and lower dam will result in submergence of land 102.96 Ha and 47.57 Ha respectively. As per Seismic Zoning Map of India the project area falls under Zone III as per IS-1893 (Part 1) 2002, (Moderate risk Zone).
- xi. **Ecological Sensitive Area, if any within 10km of project site:** There is no National Park, Wildlife sanctuary, Biosphere reserve, Tiger/elephant corridor, Critically Pollute Area present in the 10 km study area of the project site.

As per Annexure-C of Para -2 para MoEF Notification. 5135(E), dated 3rd October, 2018, village Jamunde (Tehsil Igatpuri) of district Nashik and Kalbhonde (Tehsil Shahpur) of district Thane have been declared as the Western Ghats Ecologically Sensitive Area. Though, as per Annexure C of MoEF&CC Notification dated 3rd October, 2018, the project villages Jamunde and Kalbhnde fall within the ESZ of Western Coast, yet as per para 3, Note-(2 (a) of the Notification, New Hydropower projects shall be allowed provided they fulfill the stipulated conditions (i) through (iii) in respect of uninterrupted ecological flow. The PSP project is a hydro-electric project, which involves neither direct intervention of any river nor it attracts condition of uninterrupted environmental flows, due to reservoir operation is based on recycling of water once stored in the reservoir.

- xii. **Project Cost:** The total project cost has been estimated at Rs. 5723.30 Crores at June 2021 price level.
- xiii. **Employment:** The project will open new vista of employment and increase business which will lead to better living conditions. Project will uplift the economy of the local people by direct and indirect employment opportunity. About 7500 persons shall be employed during peak construction phase.
- xiv. **Status of other statutory clearances:**
- MOU Signed with Industries Department, Government of Maharashtra.
 - PFR submitted to CEA for review.
 - Application for Forest Clearance is yet to be submitted
 - Application made to Water Resources Department, Government of Maharashtra for one-time allotment of water and they have agreed in principle for supply of water.
- xv. **Inter-State/International Aspects:** All components of the Bhavali PSP are located within the administrative region of the state. The location of the project is approximately 100km radial distance from the Arabian Sea coastline. Hence forth the project area is not close to any international waters or boundaries and no international aspect is involved.

20.4.3 The EAC during deliberations noted the following:

EAC in the present meeting (20th meeting) deliberated on the information submitted (Form 1, PFR, etc.) and noted that the instant proposal for grant of terms of Terms of Reference (ToR) to Bhavali Pumped Storage Project (1500 MW), in an area of 228 Ha located at Village

Jamunde and Kalbhonde, Tehsil Igatpuri and Shahpur, District Nashik and Thane (Maharashtra) by M/s JSW Neo Energy Limited.

It has been noted that PP has informed that department of Water Resources agreed in principle that water is available and due process to be followed to obtain the water availability certificate.

EC further noted that PP has not done appropriate alternative site analysis in terms of the environment aspect. The energy required for lifting water 374.60Cumec is 1584 MW which is more than generating power 1500MW. The total land required for construction of project works out to be 228 Ha. out of which about 188.46 Ha is forest land area and 39.54 Ha is Private land. The total project cost has been estimated at Rs. 5723.30 Crores

20.4.4 *The EAC after detailed deliberations observed that the information submitted by PP lacks certain information which are required for further consideration of the project. It was desired that PP may submit the below mentioned information:*

1. *Alternative site analysis shall be carried out in terms of ecological aspects viz. loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity and its impacts on productivity of the ecosystem, water availability, water uses for generation of hydro power and Ecological flows in the small stream/Nallah and Thandava and preference shall be given to minimize forest land.*
2. *Location of monitoring stations for baseline data shall be submitted.*
3. *Pipelines alignment from Bhavali dam to reservoirs need to be access and shall be submitted.*
4. *Renewable energy to be consumed in pumping water from lower reservoir to upper reservoir need to be examined and shall be submitted.*
5. *Need to access the locations of renewable sources within proposed plant premises.*
6. *Arial view video of project site shall be recorded and to be submitted.*
7. *Possibility impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources (river /reservoir) shall be studied.*

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

Agenda No. 20.5:

Greenko WB01 Off-Stream Closed Loop Pumped Storage Project 1380 MW (8325 MWH), in an area of in an area of 496.57 Ha located at Village Bahalpur, Tehsil jhalda, Purulia District (West Bengal) by M/s Greenko Energies Private Limited – Terms of Reference - reg. – Terms of Reference

[Proposal No. IA/WB/RIV/242756/2021; F. No. J-12011/21/2021-IA. I (R)]

20.5.1: The proposal is for grant of Terms of Reference (ToR) for the Greenko WB01 Off-Stream Closed Loop Pumped Storage Project (OCPSP) near Bahalpur Village, Purulia District in State of West Bengal.

20.5.2: The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

- i. Greenko WB01 Pumped Storage Project envisaged as Off-Stream Closed Loop Pumped Storage Project (OCPSP) of 1380 MW / 8325 MWH storage capacity, located at Bahalpur Village, Purulia District in West Bengal State.

- ii. The project is a pumped storage scheme, no consumptive utilization of water is required for its operation and the water will be used cyclically for energy storage and discharge.
- iii. The Greenko WB01 OCPSP will comprise of two reservoirs which are to be constructed newly and is envisaged to utilize 0.655 TMC of water for power generation which will be pumped from the nearby Kasai Nadi located about 7.50 Km away to the proposed Greenko WB01 OCPSP lower reservoir. The Project is standalone in nature and both the reservoirs are located away from all existing river systems and have no/very small catchment area.
- iv. The geographical co-ordinates of the proposed Upper Reservoir are at Latitude 23°18'1.93" North and Longitude 86°4'0.13" East and that of Lower Reservoir are at Latitude 23°18'50.65" North and Longitude 86°5'14.38" East.
- v. The total capacity of proposed PSP is 1380 MW (8325 MWH) with 6.03 hours storage capacity. The total quantum of water required for initial filling of both reservoirs together is worked out to 0.862 TMC which will be pumped initially from the nearby Kasai Nadi. Evaporation losses, if any, will be recouped periodically from the nearby Kasai Nadi / Murguma Dam as well as through annual rainfall during monsoon period.
- vi. The upper reservoir is proposed to be located on flat / gradually sloping land which gross storage capacity of 0.779 TMC by doing excavation up to the desired level. Out of 0.779 TMC, the live storage capacity is 0.67 TMC and the dead storage capacity is 0.108 TMC by keeping FRL & MDDL at EL 535.00 m & EL 510.00m respectively. For creating this storage, it is proposed to construct rockfill embankment for the average height of around 27.00m (with maximum height of 53m) for the length of 3509m.
- vii. The lower reservoir is proposed to be located in the natural depression which is suitable for creating the desired gross storage capacity of 0.754 TMC by doing excavation up to the desired level. Out of 0.754 TMC, the live storage capacity is 0.655 TMC and the dead storage capacity is 0.099 TMC by keeping FRL and MDDL at EL 345.00m & EL 330.00m respectively. For creating this storage, it is proposed to construct rockfill embankment for the average height of 18m (with maximum height of 28m) for the length of 3772m.
- viii. **Power generation:** The proposed project will generate 1380 MW by utilizing a design discharge of 854.06 Cumec and rated head of 181.00m. The cycle efficiency of the project is expected to be around 80%. One 400 KV Double Circuit Transmission Line of length 78 KMs (appx.) from PSP will be connected to 400/220KV PowerGrid Sub Station, Namkum, Ulatu, Jharkhand State.
- ix. The Greenko WB01 Off-Stream Closed Loop Pumped Storage Project envisages construction of following:
 - Rock fill embankments of average height of around 27m with maximum of 53m height in upper reservoir and average height of around 18m with maximum of 28m in lower reservoir for creation of Greenko WB01 OCPSP upper & lower reservoir respectively with 0.67 & 0.655 TMC live storage capacity respectively.
 - 48.90m Hight of Power Intake Structure
 - 6 nos. each of 859.62 m long and 6 m dia. surface circular steel lined Penstock / Pressure Shaft (ie. consisting of 39.12m as intake tunnel, 660.22 m long surface penstock, 84.28 m long vertical pressure shaft and 76 m long Horizontal pressure shaft) to feed 6 units of 230 MW

- A surface Powerhouse having an installation of 6 nos. reversible Francis turbine each of 230 MW capacity (All 6 unit are fixed speed only) operating under a rated head of 181.00m in generating mode and 190.00m in pumping mode.
 - 6 nos. 7.00m diameter, 202.5m long Tailrace Tunnel.
 - 70 m wide and FSD of 5.00m Tail race channel of 1835 m long joining with the proposed lower reservoir.
- x. Murguma Dam is located at about 2.50 Km from the proposed lower reservoir with the available storage capacity in the Dam of about 0.45 TMC only. Since, the available storage capacity is sufficient to use only for irrigation and water supply purpose, an alternative source was explored for one-time filling of water in the proposed reservoirs which is about 7.50Km from the proposed lower reservoir. Accordingly, one-time water will be pumped from existing nearby Kasai Nadi to the proposed Greenko WB01 OCPSP lower reservoir and used cyclically for energy storage and discharge.
- xi. **Land requirement:** Total land required for construction of various components, including infrastructure facilities and muck disposal area is estimated to be around 496.57 Ha, involving 340.17 Ha of forest land and 156.40 Ha of non- forest land. Project cost estimates is Rs.7518.14 crores.
- xii. **Ecological Sensitive Area, within 10km of project site (WLS, Tiger/elephant corridor, Critically Pollute Area etc):** There is no Ecologically Sensitive Area (ESA) located within 10 km from the Proposed Project Site. The nearest Protected area is Dalma Wildlife Sanctuary, located around 39 kms in East Singhbhum district of adjoining Jharkhand State.
- xiii. **Employment:** at the time of peak construction work in the project, around 2800 persons may be engaged. Out of 2800 nos. the majority of about 950 nos. will be from the local population/surrounding Villages and balance persons of about 1900 nos. will be skilled /semiskilled from other area. After commission of the project, about 200 persons will be required for operations, which might be from local areas or migrated from another area.
- xiv. **Status of other statutory clearances:** Online application seeking forest land diversion for around 340.17 Ha will be submitted subsequently after TOR approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
- xv. **Alternative studies:** Three alternative layouts for this scheme were studied which are follows:

Alternative – 1: The surface powerhouse involves deeper excavation since the pumped storage project is placed much below the Minimum Draw Down Level of lower reservoir because of technical requirement during pumping operations. In this case the powerhouse location is fixed based on suitable topography where it requires minimum excavation. For this location of Powerhouse the slope protection measures required will be minimal thus making it technically suitable location. However, since the powerhouse including pressure shaft and outfall structures are very close to the populated area, this will cause disturbance and dislocation of large number of population creating social and environmental issues. Also, the Tail Race Channel is located in steeply sloping area thus requiring deep cutting and lot of slope stability measures which may not be safe. The underground excavation involved in this layout is minimum because part of penstock and tail race tunnel are only two underground components.

Alternative – 2: The underground powerhouse requires Adit tunnels viz., Main Access Tunnel to Powerhouse Service Bay and Transformer Hall, Adit to Powerhouse cavern top, Adit to Transformer cavern top, Bus duct tunnels etc. Most of the components of this alternative are in underground except for reservoirs, intake and outfall structure. The total length of all adits are worked out to be around 3000m. Secondly, the outfall structure is located in steeply sloping area thus requiring deep cutting and lot of slope stability measures which is not desirable and unsafe as well. Considering the works involved as mentioned above, the investigation time and completion of DPR for this alternative will take about 2 to 3 years. The total physical construction time for the project is estimated to be around 54 months after completion of DPR. Further the cost of the project will be higher because of most of the components being underground. The construction duration and the cost of the scheme is very important which will impact the overall financial viability of the project adversely.

Alternative – 3: The surface powerhouse involves deeper excavation since the pumped storage project is placed much below the Minimum Draw Down Level of lower reservoir because of technical requirement during pumping operations. In this case the power house location is fixed based on suitable topography where it requires minimum excavation. For this location of power house the slope protection measures required will be minimal thus making it technically suitable location. Moreover, since the powerhouse location and outfall structures are located far away from the populated area there will not be any social and environmental issues are envisaged. Keeping the same in view, the Tail Race channel is also so aligned without interfering with any existing roads or houses resulting in more length but there is no social or environmental issues are involved. Investigation time and preparation of DPR will take about 1 year only and construction time for completion of this Alternative is estimated to around 36 months excluding preconstruction works.

Accordingly, Alternative – 3 is adopted.

20.5.3 The EAC during deliberations noted the following:

EAC in the present meeting (20th meeting) deliberated on the information submitted (Form 1, PFR, etc.) and noted that the instant proposal is for grant of Terms of Reference (ToR) to Greenko WB01 Off-Stream Closed Loop Pumped Storage Project 1380 MW (8325 MWH), in an area of in an area of 496.57 Ha located at Village Bahalpur, Tehsil jhalda, Purulia District (West Bengal) by M/s Greenko Energies Private Limited.

The EAC noted that due to less water availability in Murguma dam (located at 2.5 Km from proposed site), one-time filling of water and evaporation losses will be fulfilled from Kasai Nadi (located at 7.5 Km from proposed site). The water will be filled in the reservoir during monsoon season only. The available rated Net Head in Turbine mode is 181 m for generation of 1500 MW.

EAC noted that as the proposed project is Off Stream Closed Loop Pumped Storage Project (OCPSP), therefore, some of items such as CAT Plan, Reservoir RIM Treatment. U/S and D/S projects and L-section of river, Discharge monitoring and Environmental Flows and Fisheries Management Plan shall not be included in EIA/EMP studies.

Total land required for construction of various components, including infrastructure facilities and muck disposal area is estimated to be around 496.57 Ha, involving 340.17 Ha of forest land and 156.40 Ha of non- forest land. Project cost estimates is Rs.7518.14 crores.

During deliberation it was also noted by the EAC that the project site is located 39 km from Dalma Wildlife Sanctuary which is an important habitat for wild elephants. Migration pathways of wild elephants from Dalma Wildlife Sanctuary may be studied before deciding the project location to avoid associated environmental and social concerns like natural habitat destruction of elephants due to disturbance in pathways and man-animal conflict.

20.5.4 *The EAC after detailed deliberations observed that the information submitted by PP lacks certain information which are required for further consideration of the project. It was desired that PP may submit the below mentioned information:*

- i. Alternative site analysis shall be carried out in terms of Environmental aspects to minimize the forest land.*
- ii. Elephant Path ways and corridor shall be studied in consultation with locals and forest department so that their habitat is not disturbed.*
- iii. Possibility impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources (river /reservoir) shall be studied.*

*The proposal was **deferred** on above line.*

Agenda No. 20.6:

Greenko UP01 Off-Stream Closed Loop Pumped Storage Project (3000 MW), in an area of 688.14 Ha located at Village - Gurar, Tehsil - Robertsganj, District – Sonbhadra, Uttar Pradesh by M/s Greenko Energies Private Limited - Terms of Reference - reg.

[Proposal No. IA/UP/RIV/242704/2021; F. No. J-12011/22/2021-IA. I (R)]

20.6.1: The proposal is for grant of Terms of Reference (ToR) for the develop Greenko UP01 Off-Stream Closed Loop Pumped Storage Project (3000 MW), in an area of 688.14 Ha located at Village - Gurar, Tehsil - Robertsganj, District – Sonbhadra, Uttar Pradesh by M/s Greenko Energies Private Limited.

20.6.2: The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

- i.** The Greenko UP01 Pumped Storage Project envisaged as Off-Stream Closed Loop Pumped Storage Project (OCPSP) of 3000 MW/ 18360 MWH storage capacity, located at Gurar village, Sonbhadra District, Uttar Pradesh State.
- ii.** The proposed scheme involves creation of new upper reservoir & lower reservoir. The total capacity of proposed PSP is 3000 MW (18360 MWH) and envisages non-consumptive utilisation of 0.733 TMC of water from Sone River by re-circulation with 6.12 hours storage capacity.
- iii.** This Project envisages non-consumptive reutilization of 0.733 TMC of water for recirculation among two proposed reservoirs.

- iv. The geographical co-ordinates of the proposed Upper Reservoir at Latitude 24°31'41.77" North and Longitude 83°17'45.61" East and that of Lower Reservoir at 24°30'56.96" North and 83°18'40.62" East.
- v. This Project is envisaged as Off-Stream Closed Loop project in nature and both the reservoirs are located away from all existing river systems and have no/very small catchment area. Water will be lifted one time from nearby Sone River to the proposed Greenko UP01 OCPSP lower reservoir and used cyclically for energy storage and discharge. Losses due to evaporation will be recouped periodically from Sone River.
- vi. The upper reservoir is proposed to be located on flat / gradually sloping land which is suitable for creating the desired gross storage capacity of 0.879 TMC. Out of 0.879 TMC, the live storage capacity is 0.733 TMC and the dead storage capacity is 0.146 TMC by keeping FRL & MDDL at EL 590.00m & EL 567.00m respectively. For creating this storage, it is proposed to construct rockfill embankment for the average height of around 26 m (with maximum height of 48m) for the length of 4118m.
- vii. The lower reservoir is proposed to be located in the natural depression which is suitable for creating the desired gross storage capacity of 0.824 TMC. Out of 0.824 TMC, the live storage capacity is 0.738 TMC and dead storage capacity is 0.086 TMC by keeping FRL and MDDL at EL 223.00m & EL 209.00m respectively. For creating this storage, it is proposed to construct rockfill embankment for the average height of 12 m (with maximum height of 21 m) for the length of 1450m.
- viii. Water conductor system consists of Five number of independent penstocks and each penstock will get bifurcated into two numbers near to powerhouse to feed water for 10 units of turbine which connects the powerhouse located at about 1136 m from intake structure. As such, the proposed project will generate 3000 MW by utilizing design discharge of 942.65Cumec with rated head of 356.50 m.
- ix. The cycle efficiency of the project is expected to be around 80%. It is proposed to use two 400KV Double Circuit Transmission Lines of length 105km (appx). The line will be connected to 765 / 400KV PGCIL Substation, Vihana, Uttar Pradesh State for evacuation of generated Power and for Supply of power during pumping mode.
- x. The Greenko UP01 OCPSP will utilize 3300 MW to pump 0.733 TMC of water to the upper reservoir in 6.82 hours
- xi. The Greenko UP01 Off-Stream Closed Loop PSP envisages construction of following:
 - Rock fill embankments of average height of around 26m with maximum of 48m height in upper reservoir and average height of around 12m with maximum of 21m in lower reservoir for creation of Greenko UP01 OCPSP upper & lower reservoir with 0.733 TMC & 0.738 TMC live storage capacity respectively.
 - 44.85 m high Power Intake Structure.
 - 5 nos. each of 1156.68 m long and 6.5 m dia. surface circular steel lined Penstock / Pressure Shaft (i.e. consisting of 193.09 m as intake tunnel, 805.27 m long surface penstock, 91.22 m long vertical pressure shaft and 67.1 m long Horizontal pressure shaft) bifurcated in to 2nos. each of 101.67m long to feed 10 units of 300 MW.

- A surface Powerhouse having an installation of 10 nos. reversible Francis turbine each of 300 MW capacity (All 10 unit are fixed speed only) operating under a rated head of 356.50m in generating mode and 369.50m in pumping mode.
 - 10 nos. 5.50m diameter, 233m long Tailrace Tunnel.
 - 75 m wide and FSD of 5.00m Tail race channel of 1530 m long joining with the proposed lower reservoir.
- xii. **Land requirement:** Total land required for construction of various components, including infrastructure facilities and muck disposal area is estimated to be around 688.14 Ha, involving 656.28 Ha of forest land and 31.86 Ha of non-forest land. Project cost estimates is 13085.17 crores.
- xiii. **Details of Ecological Sensitive Area, if any within 10 km of project site (WLS, Tiger/elephant corridor, Critically Pollute Area etc):** There are no Ecological Sensitive Area's located within 10 km from the Proposed Project Site. The nearest Protected area is around 11.32 Km from outside notified ESZ boundary of Kaimur WLS.
- xiv. **Employment Generation:** At the time of peak construction work in the project, around 7500 persons may be engaged. Out of 7500 nos. the majority of about 2500 nos. will be from the local population/surrounding Villages and balance persons of about 5000 nos. will be skilled /semiskilled from other area. Then after commission of the project, about 300 persons will be required for operations. GEPL envisages to complete the construction of project within a period of 4 years.
- xv. **Status of other statutory clearances:** Forest Clearance: Online application will be submitted subsequently thereby seeking forest diversion for around 656.28 Ha. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
- xvi. **Alternative studies:** Two alternative layouts for this scheme were studied which are follows:
- Alternative -1:** The surface powerhouse involves deeper excavation since the pumped storage project is placed much below the Minimum Draw Down Level of lower reservoir because of technical requirement during pumping operations. In this case the power house location is fixed based on suitable topography where it requires minimum excavation. For this location of power house the slope protection measures required will be minimal thus making it technically suitable location. The underground excavation involved in this layout is minimum because part of penstock and tail race tunnel are only two underground components. Investigation time and preparation of DPR will take about 1 year only and construction time for completion of this Alternative is estimated to around 36 months excluding preconstruction works.
- Alternative – 2:** The Alternative – 2 layout is proposed with underground power house which is located just beside the East side of Alternative -1 layout. The underground powerhouse requires Adit tunnels viz., Main Access Tunnel to Powerhouse Service Bay and

Transformer Hall, Adit to Powerhouse cavern top, Adit to Transformer cavern top, Bus duct tunnels etc. Most of the components of this alternative are in underground except for reservoirs, intake and outfall structure. As both the reservoirs are separated by near vertical rock the lateral cover to the power house (the largest underground component) is expected to be lower than the required.

Secondly, the outfall structure is located in steeply sloping area thus requiring deep cutting to the extent of 160 to 180m which is not desirable and unsafe as well. Considering the works involved as mentioned above, the investigation time and completion of DPR for this alternative will take about 2 to 3 years. The total physical construction time for the project is estimated to be around 54 months after completion of DPR. Further the cost of the project will be higher because of most of the components being underground.

Accordingly, Alternative – 1 is adopted.

20.6.3 The EAC during deliberations noted the following:

EAC in the present meeting (20th meeting) deliberated on the information submitted (Form 1, PFR, etc.) and noted that the instant proposal for grant of terms of Reference (ToR) to Greenko UP01 Off-Stream Closed Loop Pumped Storage Project (3000 MW), in an area of 688.14 Ha located at Village Gurar, Tehsil - Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Greenko Energies Private Limited.

It was noted that water will be lifted one time from nearby Sone River to the proposed project and it will be operating under a rated head of 356.50m in generating mode and 369.50m in pumping mode.

It was further noted that the nearest Protected area is around 11.32 Km from outside notified ESZ boundary of Kaimur WLS. Total land required for construction of various components project is estimated to be around 688.14 Ha, involving 656.28 Ha of forest land and 31.86 Ha of non-forest land. Project cost estimates is 13085.17 crores.

20.6.4 *The EAC after detailed deliberations observed that the proposed The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR to Greenko UP01 Off-Stream Closed Loop Pumped Storage Project (3000 MW), in an area of 688.14 Ha located at Village Gurar, Tehsil - Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Greenko Energies Private Limited, under the provisions of EIA Notification, 2006 and as amended along with the following additional/specific ToR:*

[A] Environmental Management and Biodiversity Conservation

- (i) *Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Indian Council of Agriculture Research (ICAR) and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/EMP report.*
- (ii) *A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone)*

based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.

- (iii) Baseline data as mentioned in Standard ToR shall be collected for preparation of EIA/EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.*
- (iv) Fisheries Management Plan shall be prepared along with other Environmental Safety Measures for Sone River and shall be incorporated in the EIA/EMP report.*
- (v) Environmental Cost Benefit Analysis shall be done in terms of water availability, water uses for generation of hydro power and Ecological flows in the Sone River.*
- (vi) Undertaking regarding water allocated to this scheme shall not be diverted to other purpose such as lift irrigation scheme etc.*
- (vii) Environmental matrix during construction and operational phase needs to be submitted.*
- (viii) Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report.*
- (ix) Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.*
- (x) Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature required to be cut for reservoir creation and other project component.*
- (xi) Ground water depth in project vicinity area to be collected and to be incorporated in EIA/EMP report.*
- (xii) Impact along with measures on aquatic ecosystem due to quantity of water to be lifted for power generation be incorporated in EIA/EMP report.*
- (xiii) Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report.*
- (xiv) Project impact on avi fauna shall be studied and incorporated in EIA/EMP report.*

[B] Socio-economic Study

- (xv) Declaration by the project proponent by way of affidavit that “No” Inter-state issue / policies issue is involved with any state in the project. Consent from other state for drawing of water from Sone River, if required.*
- (xvi) All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/EMP report in the relevant chapter. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry’s OM F.No.22-65/2017-IA.III dated 30th September, 2020 shall be submitted.*
- (xvii) Tentative no. of project affected families shall be identified and accordingly appropriate*

Rehabilitation & Resettlement plan shall be prepared.

[C] Disaster Management

- (xviii) Details of quantity of muck generation component wise (Excavation in tunnels, pressure shaft and powerhouse etc) and disposal site/ transportation to be provided.*
- (xix) Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly approved by CWC /CEA shall be submitted.*
- (xx) Techno-economic viability of the project must be recommended from CEA/CWC.*

[D] Miscellaneous

- (xxi) The PP shall explore the possibility of fulfilling the entire power requirement to pump the water from the lower reservoir to the proposed upper reservoir from renewable sources except under exceptional unforeseen situations.*
- (xxii) Both capital and recurring expenditure under EMP shall be submitted.*
- (xxiii) The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.*
- (xxiv) Inter-state issues shall be examined in consultation with CWC.*
- (xxv) Arial view video of project site shall be recorded and to be submit.*

Agenda No. 20.7:

Rana Pratap Sagar Off-Stream Closed Loop Pumped Storage Project (2000 MW), in an area of 1376.44 Ha located at Village - Semaliya, Tehsil Rawatbhata, District – Chittorgarh, Rajasthan by M/s Semaliya Energy Private Limited - Terms of Reference - reg.

[Proposal No. IA/RJ/RIV/243510/2021; F. No. J-12011/23/2021-IA. I (R)]

20.7.1: The proposal is for grant of Terms of Reference (ToR) for Rana Pratap Sagar Off-Stream Closed Loop Pumped Storage Project (2000 MW), in an area of 1376.44 Ha located at Village - Semaliya, Tehsil Rawatbhata, District – Chittorgarh, Rajasthan by M/s Semaliya Energy Private Limited.

20.7.2: The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

- i. The Proposed Project is an Off-Stream Closed Loop Project (OCPSP) being developed by Semaliya Energy Pvt. Ltd in Rawatbhata Tehsil, Chittorgarh District of Rajasthan. The scheme will involve construction of rock fill embankment of maximum height of 52m for creation of Rana Pratap Sagar OCPSP upper reservoir of 3.610 TMC gross capacity.

- ii. The geographical co-ordinates of the proposed upper reservoir are at Latitude 24°51'7.70" North and Longitude is 75°41'9.48" East and that of lower reservoir are at 24°51'50.21" North and 75°42'2.24" East. Proposed rating of Pumped Storage Project is 2000 MW.
- iii. This Project is envisaged as Off-Stream Closed Loop in nature and both the reservoirs are located away from all existing river systems and have no/very small catchment area. The Rana Pratap Sagar OCPSP is proposed in between two reservoirs i.e., Rana Pratap Sagar OCPSP Upper & Lower (to be constructed newly).
- iv. The total quantum of water required for initial filling of both reservoirs together is worked out to 3.64 TMC which will be pumped initially from the nearby Rana Pratap Sagar Reservoir and used cyclically for energy storage and discharge. Evaporation losses, if any, will be recouped periodically from the nearby existing Rana Pratap Sagar Reservoir as well as through annual rainfall during monsoon period
- v. For creating the desired gross storage capacity of 3.610 TMC. Out of 3.610 TMC, the live storage capacity is 1.427 TMC and the dead storage capacity is 2.183 TMC by keeping FRL & MDDL at EL +504.00m & EL +495.00m respectively. For creating this storage, it is proposed to construct rockfill embankment for the average height of around 29.00m (with maximum height of 52m) for the length of 9452m.
- vi. Similarly, the lower reservoir is proposed to be located on flat / gradually sloping land which is suitable for creating the desired gross storage capacity of 1.461 TMC. Out of 1.461 TMC, the live storage capacity is 1.431 TMC and the dead storage capacity is 0.030 TMC by keeping FRL and MDDL at EL +382.00m & EL +364.00m respectively. For creating this storage, it is proposed to construct rockfill embankment for the average height of 18m (with maximum height of 20m) for the length of 7860m.
- vii. This Project envisages non-consumptive re-utilization of 1.427 TMC of water for recirculation among two proposed reservoirs. The cycle efficiency of the project is expected to be around 78.77%.
- viii. Two 400 KV Double Circuit Transmission Line of length 41 KM (appx.) from PSP will be connected to 400KV PGCIL Sub Station, Kota, Rajasthan State for evacuation of stored power during generating mode and for supply of power during pumping mode.
- ix. **Project envisages following components:**
 - 34.8m Hight of Power Intake Structure
 - 8 nos. each of 582.44 m long and 7.5 m dia. surface circular steel lined Penstock / Pressure Shaft (ie. consisting of 339.25 m long surface penstock, 98.19 m long vertical pressure shaft and 145 m long Horizontal pressure shaft) to feed 8 units of 250 MW
 - A surface Powerhouse having an installation of 8 nos. reversible Francis turbine each of 250 MW capacity (All 8 unit are fixed speed only) operating under a rated head of 122.50m in generating mode and 131.50m in pumping mode.
 - 8 nos. 9.00m diameter, 196.00m long Tailrace Tunnel.

- 120 m wide and FSD of 6.00m Tail race channel of 874.45 m long joining with the proposed lower reservoir.
- x. The Rana Pratap Sagar OCPSP is proposed with a Storage Capacity of 12280 MWH with Rating of 2000 MW. This project is comprising of 8 units of 250 MW each. The Project will generate 2000 MW by utilizing a design discharge of 1828.87 Cumec and rated head of 122.50m. The Rana Pratap Sagar OCPSP will utilize 5403 MU to pump 1.427 TMC of water to the upper reservoir in 7.08 hours.
 - xi. **Land requirement:** The total land required for the construction of various components including land required for infra item like road, job facilities, muck disposal area etc. are tentatively estimated to about 1376.44 Ha, involving 871.40 Ha of forest land and 505.04 Ha of non-forest land. Out of 1376.44 ha land 1186.3 Ha used as reservoirs (Lower/Upper) for project.
 - xii. **Project Cost and Employment Generation:** The Project cost is estimated at Rs 10356.68 crores. Around 4000 persons may be engaged at the time of peak construction work. Out of 4000 nos. the majority of about 1500 nos. will be from the local population/surrounding Villages and balance persons of about 2500 nos. will be skilled /semiskilled from other area. Then after commission of the project, about 250 persons will be required for operations.
 - xiii. **Ecological Sensitive Area, if any within 10km of project site (WLS, Tiger/elephant corridor, Critically Pollute Area etc):** The nearest PA is Mukundara Hills Tiger Reserve in Chittorgarh district of Rajasthan and the project is outside the notified ESZ and is around 2.1 kms from the ESZ boundary. Proposed Project is not located within any area notified under WLPAs.
 - xiv. **Alternative studies:** Three alternative layouts for this scheme were studied which are follows:

Alternative -1: The power house location is fixed based on suitable topography where it requires minimum excavation. Moreover, since the powerhouse location and outfall structures are located far away from the populated area there will not be any social and environmental issues are envisaged. However, the Tail Race Channel which is to be connected with the lower reservoir is crossing the existing village road for which the existing village road will have to be realigned suitably and a bridge is to be constructed over the Tail Race channel for crossing the same. Because of this additional structure, there will be some minor increase in project cost. The underground excavation work is minimum in this alternative layout because part of penstock and tail race tunnel are only two underground components. The investigation time and preparation of DPR required will be about 1 year only and construction time for completion of this Alternative is estimated to around 36 months excluding pre-construction works.

Alternative -2: As both the reservoirs are separated by a near vertical to steeply sloping cliff the lateral cover to the power house (the largest underground component) is expected to be lower than the required. Secondly, as per detailed study, it is expected that the proposed area

of power house has Shale rock which is not geologically suitable for underground power house. In addition to this the outfall structure is located in steeply sloping area considering L/H ratio to be less than 6 for avoiding downstream Surge Chamber thus requiring deep cutting and lot of slope stability measures which is not desirable and unsafe as well. Also, the outfall structure is crossing the existing village road which will require realignment of road and construction of bridge across the structure for crossing.

The Tail Race Channel alignment is also interfering with the populated area which will cause social and environmental issues and in addition to this the Tail Race Channel is crossing the village road in two locations for which realignment of road and two bridges for crossing the Tail Race Channel will be required therefore project cost for this alternative will be expected to be very high.

The investigation time and completion of DPR for this alternative will take about 2 to 3 years. The total physical construction time for the project is estimated to be around 54 months after completion of DPR. Further the cost of the project will be higher because of most of the components are in underground. The construction duration and the cost of the scheme is very important which will impact the overall financial viability of the project adversely

Alternative -3: The surface powerhouse involves deeper excavation since the pumped storage project is placed much below the Minimum Draw Down Level of lower reservoir because of technical requirement during pumping operations. In this layout, the power house location is fixed based on suitable topography where it requires minimum excavation. However, since the surface powerhouse involves deep excavation, the existing village road will get disturbed and need to be realigned by crossing the proposed Tail Race Channel for which a bridge is to be constructed over the Tail Race Channel. The powerhouse location and outfall structures are located away from the populated area and hence there will not be any social and environmental issues are envisaged. But the Tail Race Channel alignment is interfering with the populated area which will cause social and environmental issues and in addition to this the Tail Race Channel is crossing the village road in two locations for which realignment of road and two bridges for crossing the Tail Race Channel will be required therefore project cost for this alternative will be expected to be more. The underground excavation involved in this layout is minimum because part of penstock and tail race tunnel are only two underground components. For this alternative, the investigation time and preparation of DPR will take about 1 year only and construction time for completion of this Alternative is estimated to around 36 months excluding pre-construction works.

Alternative – 1 layout has been adopted

- xv. **Status of other statutory clearances:** Around 871.40 Ha of forest land is required for which online application is yet to be submitted and other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.

20.7.3: The EAC during deliberations noted the following:

EAC in the present meeting (20th meeting) deliberated on the information submitted (Form 1, PFR, etc.) and noted that the instant proposal for grant of terms of Terms of Reference (ToR) to Rana

Pratap Sagar Off-Stream Closed Loop Pumped Storage Project (2000 MW), in an area of 1376.44 Ha located at Village - Semaliya, Tehsil Rawatbhata, District – Chittorgarh, Rajasthan by M/s Semaliya Energy Private Limited.

The EAC noted that the water will be lifted one time from nearby Rana Pratap Sagar Reservoir to the proposed project and nearest protected area is Mukundara Hills Tiger Reserve in Chittorgarh district of Rajasthan and the project is outside the notified ESZ and is around 2.1 kms from the ESZ boundary. Proposed Project is not located within any area notified under WLPA.

The total land required for the construction of various components of the project is estimated to about 1376.44 Ha, involving 871.40 Ha of forest land and 505.04 Ha of non-forest land. The Project cost is estimated at Rs 10356.68 crores.

20.7.4 *The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** the proposal for grant of Standard ToR for conducting EIA study for construction of Rana Pratap Sagar Off-Stream Closed Loop Pumped Storage Project (2000 MW), in an area of 1376.44 Ha located at Village - Semaliya, Tehsil Rawatbhata, District – Chittorgarh, Rajasthan by M/s Semaliya Energy Private Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional ToR:*

[A] Environmental Management and Biodiversity Conservation

- (i) *Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Indian Council of Agriculture Research (ICAR) and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/EMP report.*
- (ii) *A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.*
- (iii) *Baseline data as mentioned in Standard ToR shall be collected for preparation of EIA/EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.*
- (iv) *Scientific based Integrated Fisheries Management Plan for conservation and livelihood improvement shall be prepared along with other Environmental Safety Measures for Rana Pratap Sagar Reservoir shall be incorporated in the EIA/EMP report. ICAR-CIFRI may be consulted to provide the technical guidance.*
- (v) *Environmental Cost Benefit Analysis shall be done in terms of water availability and water uses for generation of hydro power Rana Pratap Sagar Reservoir.*
- (vi) *Undertaking regarding water allocated to this scheme shall not be diverted to other purpose such as lift irrigation scheme etc.*
- (vii) *Environmental matrix during construction and operational phase needs to be submitted.*
- (viii) *Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report.*

- (ix) *Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.*
- (x) *Details of Flora and Fauna reported in submergence area, No.s of tree along with their density and nomenclature required to be cut for reservoir creation and other project component.*
- (xi) *Ground water depth in project vicinity area to be collected and to be incorporated in EIA/EMP report.*
- (xii) *Impact along with measures on aquatic ecosystem due to quantity of water to be lifted for power generation be incorporated in EIA/EMP report.*
- (xiii) *Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report.*
- (xiv) *Project impact on avi fauna shall be studied and incorporated in EIA/EMP report.*

[B] Socio-economic Study

- (xv) *Declaration by the project proponent by way of affidavit that “No” Inter-state issue / policies issue is involved with any state in the project.*
- (xvi) *All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/EMP report in the relevant chapter. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry’s OM F.No.22-65/2017-IA.III dated 30th September, 2020 shall be submitted.*
- (xvii) *Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.*

[C] Disaster Management

- (xviii) *Details of quantity of muck generation component wise (Excavation in tunnels, pressure shaft and powerhouse etc) and disposal site/ transportation to be provided.*
- (xix) *Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly approved by CWC /CEA shall be submitted.*
- (xx) *Techno-economic viability of the project must be recommended from CEA/CWC.*

[D] Miscellaneous

- (xxi) *The PP shall explore the possibility of fulfilling the entire power requirement to pump the water from the lower reservoir to the proposed upper reservoir from renewable sources except under exceptional unforeseen situations.*
- (xxii) *Both capital and recurring expenditure under EMP shall be submitted.*
- (xxiii) *The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and*

certificates of the labs which will analyze the samples.

(xxiv) Inter-state issues shall be examined in consultation with CWC.

(xxv) Arial view video of project site shall be recorded and to be submit.

(xxvi) NBWL clearance shall be obtained, if required, from chief wildlife warden as project boundary is located close to Mukundara Hills Tiger Reserve.

The meeting ended with vote of thanks to the Chair.

ATTENDANCE LIST

Sr. No.	Name & Address	Role
1	Dr. Uday Kumar R.Y.	Chairman
2	Dr. N. Lakshman	Member
3.	Dr. Narayan Shenoy K	Member
4.	Dr. Mukesh Sharma	Member
5	Dr. A. K. Malhotra	Member
6.	Shri Sharvan Kumar	Member
7.	Shri Amrendra Kumar Singh	Representative of (CWC)
8.	Shri Yogendra Pal Singh	Member Secretary

APPROVAL OF THE CHAIRMAN

Fwd: draft MOM of the 20th EAC (R.V&HEP) meeting held on 14.12.2021-reg.

2 messages

Yogendra Pal Singh <yogendra78@nic.in>
To: geetdeepbisht <geetdeepbisht@gmail.com>

From: udaykumary@yahoo.com
To: "Yogendra Pal Singh" <yogendra78@nic.in>
Sent: Thursday, January 6, 2022 11:47:46 AM
Subject: Re: draft MOM of the 20th EAC (R.V&HEP) meeting held on 14.12.2021-reg.

Dear Yogendra Ji,

I approve the corrected draft MoM of 20th EAC meeting for next action to be taken.

With Warm Regards
Udaykumar R.Y

Dr. Udaykumar R.Y, *SMIEEE*
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