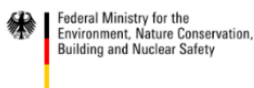


Summary report of IGEF Round Table Workshop on “Tapping the investment potential in Pumped Storage hydro space in India”

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Indo-German Energy Forum Support Office
c/o Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
1st Floor, B-5/2, Safdarjung Enclave
New Delhi
110 029, India
Email: info@energyforum.in
Website: www.energyforum.in
Tel.: +91 11 4949 5353

Nisheeth Srivastava
Anil Kumar Bellary

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Round Table Workshop on “Tapping the investment potential in Pumped Storage hydro space in India”

The Round Table Workshop on Pumped Hydro Storage was inaugurated by Mr. S.Selvakumar, Joint Secretary, DEA and Co-Chair of Sub Group 4 of the IGEF and Ms. Anju Bhalla, Joint Secretary, MoP from Indian side along with Mr. Peter Hilliges, Office Director-KFW, Dr. Winfried Damm Director-IGEN (GIZ), Mr. Stefan Hediger, Deputy Director-KFW and Mr. Tobias Winter, Director-IGEF. The Round Table Workshop was attended by more than 50 participants comprising policy makers, technical consultants, corporates in the hydro projects, and regulatory agencies.

During the inaugural welcome speech, Mr. Hediger mentioned that this workshop will be a starting point for more detailed analysis on the potential and investments in Pumped Storage Projects (PSP). Being a proven technology, KFW is ready to join hands with Government of India in looking for preparation of pre-feasibility and post feasibility studies for project location and potential of PSP. KFW can also offer concessional and long term funding to support Indian partners for PSP. KFW can also bring on board internal and external consulting expertise during construction stages. Joint Secretary MoP Mrs Bhalla asked the CEA to reassess the PSP potential, initially it was mentioned by CEA that the major potential was in Western Ghats, a protected bio-diversity zone which is un-exploitable because of forest clearance challenges. MoP advised the stakeholders to also focus on existing reservoirs with multi-purpose projects. Mr. Selvakumar JS-DEA mentioned about the FORUM held in Germany last year, and PSP as one of the important topics to be discussed in sub group 4. He asked all the relevant stakeholders to have a focused and comprehensive discussion from technical and market perspective. This technology should be looked purely as grid management asset instead of generation assets. Mr. Winter proposed a vote of thanks to all the guests and participants.

The technical presentation session started with the first one by Mr. Pradeep Shukla, Chief Engineer from CEA who presented the current scenario and future potential. The main challenge for PSP was mentioned that these projects need to feed energy to get energy and with increasing penetration of Renewables in the grid, interest in PSP will increase with an aim for grid stabilization. The CEA has identified 63 sites with total of 96 GW potential having maximum identification capacities in Western Ghats because of topographical features with steep gradients of the river originating from there. All the potential in Western Ghats are lost because the Supreme Court of India has banned all construction activities and most of the locations have been declared as Wild Life Sanctuaries.

The second presentation was a successful case study from WBSEDCL and was presented on Purulia PSP by Mr. Paul, Additional Chief Engineer. He requested the policy makers to examine the existing regulatory approaches for compensation or charges for ancillary services. The project has an overall cycle efficiency of 77.79%, which is higher than design value of 75.5%. He also mentioned that in the absence of PSP, more thermal power stations would be required for meeting the evening peak and again those plant needs to be backed down during non-peak hours, resulting in huge oil firing and having high frequency in the system resulting in wastage of power.

Mr. S.C.Srivastava Chief (Engineering) from CERC started his presentation with updates on the India Electricity act, 2003 sharing the regulatory framework and role of regulators. He also updated the current power scenario and mentioned that PSP are not taken as priority. The PSP tariff determination process lacks the adequate incentives for the developers to invest in this sector, so CERC urged Niti Aayog and CEA to look into PSP as a separate category with clear guidelines. He

asked stakeholder to promote PSP generations for provide adequate peaking reserves, reliable grid operation and integration of variable renewable energy sources.

Mr. Shuvendu Bose, Executive Director from E&Y India in his presentation discussed the need for PSP in India- types of reserves are required, the mechanism to determine the payload and recovery criteria. He shared the experience in the state of Rajasthan with different load profile; and also projected the demand curve to calculate the residual load. It was mentioned that Pumped Storage has advantages of providing large reactive capacity for regulation, availability of spinning reserve at almost no cost to the system and regulating frequency to meet the sudden load changes in the network.

The final presentation was by Dr. Thilo Heiberger from KFW Frankfurt sharing the views of PSPs from global perspective. He discussed the challenges coming from large renewable energy injections. He mentioned that PSP could be developed as a grid asset with socialized costs to have the economic benefits without pressure of a generation asset.

During the Panel discussion chaired by Mr. Dubey, Former Chairman, CEA it was discussed and concluded that PSPs are one of the key storage systems available in India with characteristics like higher efficiency and quick response to load changes. PSP is an ideal solution to the looming problem associated with integration of increasing amount of wind/solar generation in the coming years in India. This technique is currently the most cost-effective means of storing large amounts of electrical energy. A policy push with clear guidelines, support in terms of financial mechanisms and roadmap for creating capacities needs to be looked into by all relevant stakeholders.

