EU-India webinar on utility scale storage- Event Proceedings

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EU-India webinar on utility scale storage

On 24th May 2022, the EU-India Clean Energy & Climate Partnership (CECP) project in cooperation with Solar Energy Corporation of India (SECI) and the European Association for Storage of Energy (EASE) successfully organized webinar on utility scale storage project. The webinar included a presentation by SECI on the 1000 MWh storage tender, policy & regulatory framework for Battery Energy Storage System (BESS), developments in storage energy and offered platform for exchange of information from EU on innovation and best practices in storage and grid integration.

The webinar was attended by more than 350 participants that included stakeholders from the European Commission, MNRE, SECI, Florence School of Regulation (FSR) Global, representatives from EU and Indian companies, renewable project developers, financial institutions, research bodies, academia, not for profit, etc. The detailed agenda is attached in Annexure-1.

Opening remarks and keynote address

Mr. Amit Kumar, Team Leader-EU CECP Project and Leader- Energy at PwC India introduced the speakers and discussed the objectives of EU–India CECP project. Under the partnership, the EU and India share views on policy and regulatory approaches, promote business solutions, support joint innovation activities and closer cooperation for combating climate change, speed up the deployment of renewable energy, promote energy efficiency, collaborate on smart grid and storage technology and modernize the electricity market.

Mr. Edwin Koekkoek, First Counsellor – Energy & Climate Action, Delegation of the European Union to India welcomed the participants from Europe as well as from India. He stated that the aim of CECP is to strengthen the cooperation between India and the European Union in the field of clean energy and climate change. He conveyed that Government of India already has a focus on clean energy and believes that joint action in the areas of renewable energy and energy efficiency will be instrumental in helping achieve the targets. In addition to renewable energy comprising of solar energy, including floating and thermal solar, wind, including offshore wind, , etc. the next important focus area whould be grid integration, smart grids and energy storage.

The workshop focuses on the 1000 MWh tender by SECI . He thanked SECI for their cooperation in taking this initiative further.

Sh. Lalit Bohra, Joint Secretary, Ministry of New and Renewable Energy, started by highlighting the previous targets by Government of India to achieve 40% of installed capacity from non-fossil resources by the year 2030 and 175 GW of renewable energy by 2022. In order to achieve the targets, various initiatives were undertaken by the Government of India that include declaration of long-term Renewable Purchase Obligation (RPO) trajectories, removal of Interstate transmission charges, development of solar power and ultra-mega solar parks, promotion of decentralized energy applications through PM KUSUM scheme, etc. With the help of these initiatives, India has been able to achieve 112 GW of RE installed capacity as on date and the projects of about 90 GW are in the various stage of installation. Recently, India has announced target of 500 GW RE by 2030 and to reach this target there is a need to add 30 to 35 GW RE capacity every year. Since most of the capacities would come by solar and wind, the development of energy storage has become very important in order to ensure the availability of power during peak hours. For development of energy storage in the country, government is already taking various steps and the bid by SECI is a step in this direction to provide electricity during peak hours. During recent months the rate of power in the exchange has touched and breached INR 12/unit and the government had to come out with a regulation to keep the upper limit to INR 12/unit. States with adequate RE capacities could get enough power and could meet their purchase obligations, however states with inadequate renewable capacities are bound to purchase power at INR 12/unit from the exchange. Storage is going to play a key role in accommodating larger RE capacities in the grid and with increase in the number of storage projects, the prices will also fall down.

Ms. Suman Sharma, Managing Director, SECI welcomed the participants and conveyed that in order to achieve a target of 500 GW of non-fossil fuel-based energy capacity by 2030, there is a need to develop storage infrastructure to ensure non-intermittent supply. In this direction battery energy storage system can definitely serve as the backup. India has already been working on new and upcoming areas like energy storage, green hydrogen, Electric vehicle charging infrastructure, etc. In the past SECI has come out with tenders like Round the Clock (RTC), peak hour supply and solar-battery storage projects, however this recently announced tender of 1000 MWh 'storage on demand' tender is a key milestone as this is a first of its kind standalone storage tender through SECI.

Presentations (Moderator: Mr. Amit Kumar, Team Leader-EU CECP Project and Leader- Energy at PwC India)

Ms. Swetha Bhagwat, Head- Florence School of Regulation (FSR) Global, presented the regulatory framework for Battery Energy Storage System (BESS) in India. She started the presentation by discussing the need of storage in RE sector and shared that India needs 27 GW/108 GWh of BESS by 2030 (source: CEA). In order to promote this sector, the Government of India is incentivizing domestic manufacturing through Production Linked Incentive (PLI). The scheme was launched and approved in 2021 at a budgetary layout of INR 18,100 Crore (2.2 billion Euros) over a 5-year period. Under the scheme, the government seeks to boost local manufacturing of advanced chemistry cell to bring down prices of battery in the country, which will reduce the cost of electric vehicles as well. She also discussed the survey on energy storage systems from an Indian power perspective, covering:

- Dedicated policy and regulation for storage
- Linking storage to the network:
    - Ownership of the storage: Improved operations and risk of distortion
    - Grid connection standards: Need for establishing grid connection standards for BESS and concerns for impact on BESS
    - Provision of ancillary services
    - Grid investment deferral: level of regulatory oversight on the next grid expansion process
- Linking to the market: we already have the robust system in place
- Innovative regulation and policy: regulators should take steps to enable regulatory and technological innovations in BESS

The detailed presentation can be accessed here.

Mr. Ganesh Das, Chief - Strategy, Collaborations, Innovation & R&D and Chief Sustainability Officer at Tata Power-DDL and CEO- Clean Energy International Incubation Centre, presented the relevance of storage for India and shared experience on TPDDL's 10MWh grid integrated BESS. He mentioned that TPDDL is the first company to setup a storage project in India and better grid connectivity is still a challenge. Also, with current grid setup, there is a possibility of putting coal fired plants under pressure to operate as low as 26% load factor that will lead to intermittency, stabilization issues and higher costs. In this case, BESS will help to provide flexibility and effective grid management. He also discussed the needs of grid, challenges and options from Indian perspective and the way forward by covering the need for policy advocacy, business scaleup and operations perspective.

The detailed presentation can be accessed here.

Mr. Jacopo Tosoni, Policy Officer, European Association for Storage of Energy (EASE) presented theEuropean storage market, status of Energy storage in Europe and key developments. He discussed that:

- Energy storage markets are deeply influenced by European Union policies
- The international political situation has a deep impact on European Union energy policies
    - The EU has decided to commit to renewables, supported by hydrogen
    - The EU is pushing for more decentralized energy production (e.g. solar+storage)
- Energy storage potential in Europe:
    - There will be the need of wide variety of solutions apart from existing Lithium ion batteries
    - There is a need to store excess wind and solar energy otherwise that would be wasted
    - Storage can minimize curtailment by shifting and storing excess renewable generation and using it to cover energy shortfalls
- Energy storage uptake in the different market segments changes dramatically from country to country
    - **Front of the Meter:** This is the biggest segment and will continue to grow. Lithium-ion battery technology dominates today but as the need for longer duration storage grows, other technologies may emerge
    - **Commercial & Industrial:** This segment has the very low installed base today, but has high potential
    - **Behind the Meter:** Cost reductions, emerging innovative business models and growing customer awareness continued growth across Europe

The detailed presentation can be accessed here.

Mr. Julian Jansen, Growth & Market Development Director (EMEA), Fluence and **Ms. Sanskriti Dubey**, Market Appliances Manager, Fluence presented the role of BESS in grid integration from EU experience. They discussed:

- The evolution of the European energy storage market:
    - Annual installations of front-of-the-meter BESS in Europe (MW)
    - Development curve of European energy storage markets
- Future outlook for storage in Europe: 5 Challenges Transmission System Operators will face in 2022 and beyond
    - **Intermittency and congestion:** Changing generation mix and load patterns
    - **Weakening system stability:** Decrease of rotating mass and increase of inverter-based generation
    - **Reduced visibility of grid assets:** More activity is taking place on lower voltage levels, including system management
    - **New asset investment amidst decreased capital availability:** Trapped between low grid tariffs and need to invest into the grid
    - **Integrating new technologies under old policies and processes:** New and disruptive technologies not in line with existing regulatory framework
- Lessons for India:
    - Create revenue streams for storage
    - Design storage for MW
    - Create a level playing field with exemptions on tax and import duties
    - Repeat successful tenders
    - Standardise the procurement process and put stringent safety measures

The detailed presentation can be accessed here.

Mr. Thomas Gulden, Siemens Energy and **Mr. Ara Panosyan**, Team Leader, Siemens Energy presented impact of BESS in grid management. They also discussed he role of advanced inverter control in grid integration of renewables:

- Conventional power generating plants are gradually displaced by Inverter-Based Resources (IBR), such as wind plants, solar plants and BESS.
- Grid services, such as voltage and frequency support, which were previously provided by synchronous generators need to be provided by IBRs
- Unlike conventional synchronous generators, IBRs are not physically synchronized to the grid and hence do not inherently respond to disturbances on the grid, as synchronous machines do
- Almost all IBRs today are grid-following (GFL)
- Grid following inverters however require a relatively "stiff grid" with a somewhat stiff voltage and frequency to follow

The detailed presentation can be accessed here.

Mr. A.K Sinha, Additional General Manager, SECI and **Mr. Pratik Prasun**, Manager, SECI gave presentation on 1000 MWh SECI's BESS tender. They discussed on:

- Salient features of the RfS
- Project Performance Criteria
- Qualification Requirements
- Important Timelines

The detailed presentation can be accessed here.

Q&A

Q. Mr. Amit Kumar, Team Leader-EU CECP Project and Leader- Energy at PwC India asked *"What in your opinion is the biggest challenge the industry is facing at this point of time and how do you compare it to the EU perspective?"*

A. Ms. Swetha Bhagwat, Head- Florence School of Regulation (FSR) Global replied *"any emerging technology at its nascent stage needs to pay initial costs and in order to make the technology viable for India, there is a need of active players to come in. Also, each technology has it's the natural building curve and the same is applicable for battery storage."*

Q. Mr. Imran, participant asked *"What are the peak time zones in Delhi from power supplier perspective and how does it vary in summer & winter?"*

A. Mr. Ganesh Das, Chief - Strategy, Collaborations, Innovation & R&D and Chief Sustainability Officer at Tata Power-DDL replied *"In summers the peak is from afternoon 2pm to 3pm and in night between 10:30 pm-11 pm. However, in winters the peak load is from early morning & late night due to heater and geyser load. This becomes the challenge for Discoms to balance the grid in summers and winters due to different peak timings".*

Q. Mr. Amit Kumar asked "there are many tenders coming and in terms of tariff that is being discovered under the RTC with the application of BESS and also keeping in mind the manufacturing of batteries happening in India under PLI scheme. So, in the next three five years later where do you see the tariff going?"

A. Mr. Ganesh Das, Chief - Strategy, Collaborations, Innovation & R&D and Chief Sustainability Officer at Tata Power-DDL replied *"considering an example: there is a lot of evolution seen in automotive sector,*

but the electricity sector has not evolved to that extent. For instance, if we start looking at everything as a cost benefit, there is no answer, because the tariff does not change on one side and we are not going to cover the AT&C losses. India stands as one of the best in AT&C losses in world. The idea is to look at grid stability vs tariff"

Q. Mr. Amit Kumar asked *"How do you think the increase in battery prices going to impact the growth of BESS?"*

A. Mr. Julian Jansen, Growth & Market Development Director (EMEA), Fluence *replied "The supply chain of raw materials is constrained across world due to external factors. However, they are not impacting the storage sector due to the importance of BESS in RE and economies of scale"*

Closing Remarks and Vote of Thanks

Mr. Amit Kumar concluded the session by thanking the speakers and participants. He said that with mainstreaming of renewables and considering importance of grid integration, storage is going to play an important part. There is a need of policies and regulations, technological development, investment and safety aspects in place.

Mr. Vaibhav, Director, PwC conveyed that we have large volumes of renewable energy coming in and without storage, it poses significant concerns to the grid stability. The BESS plays an important role in the future of RE to achieve the government target of 500 GW RE by 2030. There are innovations already going on in RE from plain vanilla solar tenders to hybrid tenders to peak tenders and now storage tenders. In future large-scale projects such as storage parks will be seen (storage as a service) and SECI tender is a big step in this direction. The good news is that DISCOMS have already agreed to offtake the energy from this tender. He thanked everyone and wished SECI success with this tender.

Annexure 1: Agenda

Webinar on utility scale energy storage systems and 1000 MWh storage tender

24 May 2022 (10:00AM – 12:00PM CET / 01:30PM – 03:30PM IST)

Time (EU- CET)	Time (India- IST)	Agenda
10:00 – 10:05 AM	**1:30- 1:35 PM**	**Welcome of participants** *Mr. Edwin Koekkoek (First Counsellor- Energy and Climate Action, Delegation of the European Union to India)*
10:05 – 10:10 AM	**1:35 – 1:40 PM**	**Keynote address** *Sh. Lalit Bohra, Joint Secretary, Ministry of New and Renewable Energy*
10:10 – 10:15 AM	**1:40 – 1:45 PM**	**Keynote address** *Sh. Sudhendu J. Sinha, Adviser, NITI Aayog*
10:15 – 10:20 AM	**1:45 – 1:50 PM**	**Keynote address** *Ms. Suman Sharma, Managing Director, SECI*
10:20 – 10:35 AM	**1:50 – 2:05 PM**	***(Moderator:** Mr. Amit Kumar, Team Leader-EU CECP Project and Leader- Energy at PwC India)* **Presentation on Regulatory framework for BESS in India** Ms. Swetha Bhagwat, Head- Florence School of Regulation (FSR) Global
10:35 – 10:50 AM	**2:05 – 2:20 PM**	**Presentation on Relevance of storage for India and Experience sharing TPDDL's 10MWh grid integrated BESS** Mr. Ganesh Das, Chief - Strategy, Collaborations, Innovation & R&D and Chief Sustainability Officer at Tata Power-DDL and CEO- Clean Energy International Incubation Centre
10:50 – 11:05 AM	**2:20 – 2:35 PM**	**Presentation on European storage market, status of Energy storage in Europe and key developments** Mr. Jacopo Tosoni, Policy Officer, The European Association for Storage of Energy (EASE)
11:05 - 11:20 AM	**2:35 – 2:50 PM**	**Presentation on role of BESS in grid integration from EU experience** Mr. Julian Jansen, Growth & Market Development Director (EMEA), Fluence Ms. Sanskriti Dubey, Market Appliances Manager, Fluence
11:20 – 11:35 AM	**2:50 – 3:05 PM**	**Presentation on impact of BESS in grid management** Mr. Thomas Gulden, Siemens Energy Mr. Ara Panosyan, Team Leader, Siemens Energy
11:35- 11:50 AM	**3:05 – 3:20 PM**	**Presentation on 1000 MWh SECI's BESS tender** *Mr. A.K Sinha. Additional General Manager, SECI and* *Mr. Pratik Prasun, Manager, SECI*
11:50- 11:55 AM	**3:20 – 3:25 PM**	**Q&A from participants**
11:55-12:00 AM	**3:25 – 3:30 PM**	**Closing Remarks/Vote of Thanks** *Mr. Vaibhav Singh, Director, PwC India and Team member- CECP project*