



5TH EU-INDIA WORKSHOP SERIES ON "ENERGY REGULATION"

THE THIRD DEBATE ON
"WHAT IS THE FUTURE OF RENEWABLE SUPPORT MECHANISMS IN INDIA?"



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PROCEEDINGS

Webinar: Third online debate on “What is the future of renewable support mechanisms in India?”

On 18th June 2021, the EU-India Clean Energy and Climate Partnership (CECP) project in collaboration with the Florence School of Regulation (FSR) hosted the third of the six webinars, as part of the 5th EU-India workshop series on Energy Regulations. The theme of the series is 'Enablers for India's Renewable Energy Transition: Competition and Market Design for the Power Sector'.

The third online debate was organized on the topic “What is the future of renewable support mechanisms in India?”, which was attended by close to 140 participants, representing policy makers, regulators, power system operators, utilities, power producers, system integrators, think tanks, consultants and academia.

1.1. Inaugural Session

Mr. Edwin Koekkoek, Counsellor, Energy and Climate Action, Delegation of the EU to India welcomed the participants. He praised the cooperation between EU and India in the sector of clean energy and climate change and highlighted that this is the fifth workshop under the project in the area of energy regulation. He thanked the Indian stakeholders, including the Ministry of Power, Central Electricity Regulatory Commission (CERC) and Power System Operation Corporation Limited (POSOCO) for extending full support throughout the partnership and in the webinar series.

1.2. Welcome Address

Mr. Amit Kumar, Team Leader- EU India CECP project; and Leader (Power, Utilities & Mining), PwC India, opened the discussion by mentioning that the EU-India partnership is not only for Government-to-Government interactions but also to strengthen Business-to-Business interactions. Under this project, several thought-provoking and relevant discussions have been organized such as on off-shore wind, energy storage, green recovery post-COVID, etc. He welcomed all the participants to the discussion for the day and started his address by explaining the relevance of renewable energy (RE) in India. He mentioned that India's geographical position is a blessing for Renewable Energy (RE) as it has almost 300 sunny days which are a boon for the solar energy industry in India and a coastline of ~7500 KM for the installation of wind energy farms. He explained that not only will the investment in RE pay off, it will also decrease the burden on India's foreign reserves most of which are spent on purchasing fossil fuels, in addition to creating a massive amount of sustainable jobs for the youth of India.

He mentioned that of the 382 GW of installed power capacity in India, 95 GW comes from RE and if 46 GW of large-hydro is added to it, an overwhelming 37% of installed capacity is contributed by RE in India. He explained that RE in the country is supported by several policy initiatives such as the Solar Mission, Solar Park Policy and various regulatory mandates like Renewable Purchase Obligation (RPO), open access and benefits like accelerated depreciation, low GST, etc. He took the floor to mention that India has a thriving market for solar, housing some of the largest solar projects/parks globally. He cited the example of the recent Govt. of Gujarat initiative for development of 30 GW of solar-wind hybrid parks in Kutch region. He also mentioned about the evolving market-driven discovery of tariffs in India which have dropped down to INR 1.99/kWh for solar and that a continuous sustainable downward trend in solar tariff is being witnessed in the country which is good for the practitioners, consumers and for the sector as a whole.

Talking about the need for innovation in the sector to further increase RE penetration and involve a larger set of stakeholders, he explained that there is a need to explore innovative solutions like hybrid tenders, Round The Clock (RTC) power tenders, peak power tenders, etc. Another market trend, he mentioned, is the introduction of derivatives to India's short-term power market and green term-ahead market (GTAM) to optimize grid integration costs. He also briefed the audience about the open access market which has been attracting increasing investments in the renewable energy sector. With this, he concluded his address and opened the floor for panel discussion.

1.3. Panel Discussion

Mr. Anand Kumar, Former Chairman, Gujarat Electricity Regulatory Commission (GERC) started the discussion with brief on renewable support mechanisms in state of Gujarat and key developments in the state. He stated the importance of good governance, which played a part in improving the financial condition of DISCOMs in Gujarat and supported RE deployment. He mentioned that Gujarat, as a state, is committed to development of RE and by 2022, is expected to add 16 GW of RE. Of this 16 GW, 8 GW has been targeted to come from wind and 8 GW from solar. He appreciated Government of Gujarat for providing support to state DISCOMs and to developers in project implementation during the COVID period.

He mentioned that bids were invited for almost 4 GW during the last one year and the lowest tariff rate of INR 1.99 / kWh for 500 MW of solar was received as part of the bid; however, the project is yet to be commissioned. Further, he mentioned that 3 GW of RE has been added at a tariff ranging from INR 2.44 / kWh – INR 2.65 / kWh. Some of the projects are at advanced stages where projects are either commissioned or are ready to be commissioned. He concluded the status update by mentioning that Gujarat has always been a front-runner in development of RE projects in India. The state of Gujarat is committed to green energy and approach of the Gujarat Government is business oriented. As a result, they have come up with a new solar policy which allows for captive power for all equity holders and is encouraging industries to generate their own captive power. He also mentioned about the readiness of transmission systems for evacuation of power from remote places to the grid and that the state Government earmarks INR 2000 crores every year to strengthen the transmission network.

Some states are facing difficulties; however, some states are making tremendous progress in achieving their RE targets. He pointed out that to achieve the RE target of the country, intervention is needed from all major stakeholders like Central Government, State Governments, Regulators and the industry. Pressing on the importance of DISCOMs, he mentioned that they are the most important stakeholders in dealing with the power purchase contracts with developers. Financial position of DISCOMs can make or break a state’s journey to RE development because if DISCOMs are able to pay the dues of the developers, then only investment in RE is expected to flourish. Citing example of Gujarat, he mentioned that the DISCOMs have been profit-making since the last half decade and as a result, they have been able to pay off the dues of the wind and solar developers in a timely manner. The state has been promptly clearing all the dues on a monthly basis after receiving invoices by the developers; however, he pointed out that sometimes there are some disputes because of lack of clarity in the standard bidding documents, provisions related to change in law in the state, etc. This compelled the Gujarat Government to amend the bidding documents to include that any change in law taking place after the date of the tender shall be reflected in the tariff.

Thereafter, he highlighted the four key areas in the Electricity Act of India, 2003 where the Regulators and policy makers have a major role to play:

- **Tariffs** which are fundamental for developers – Gujarat had provided attractive tariffs till 2018 to developers and multiple projects were developed under the scheme. After the competitive bidding took place, the tariffs dropped to below INR 2.5 / kWh. For tariffs, the state has now considered two options – competitive bidding for wind and solar projects and feed-in-tariff for waste-to-energy, bio-energy projects. For decentralized solar projects, 4 GW has been allowed by GERC for small power producers (having less than 5 MW capacity) at INR 2.8 / kWh.
- **RPO** – He mentioned that Gujarat is lagging behind slightly in meeting its RPO targets set by the Central Government. The issue lies in the compliance of RPO because of delays / challenges in bidding results. He highlighted that non-compliance of RPOs results in delayed investment of RE in the states. The state has been meeting the Wind RPO target, while there has been a shortfall in solar RPO, which has been permitted to be fulfilled next year.
- **Grid connectivity** – Every regulator has a mechanism to review development of the transmission system for next 5-10 years. In Gujarat, there is practice that every year the transmission company has to appear before the Regulator to show their planning for the next 5 years. This provides an

estimation of the potential areas where RE could be developed. He also mentioned that grid connectivity is one of the key reasons why developers have favoured Gujarat for investment.

- **Market development** – He mentioned that Gujarat allows for third party sale for consumers and offers ample relaxation in open access charges. He also emphasized on the requirement of scheduling by the RE generators. Gujarat has adopted a practice of ensuring that all developers are getting the technical support in terms of weather conditions to help schedule RE power in advance. He also touched upon the issue of re-powering and mentioned that Gujarat Government has come up with re-powering policy in tandem with Govt. of India. He also highlighted that Gujarat is now exploring setting up of storage infrastructure to accommodate higher RE in the grid.

Mr. Vineet Mittal, Chairman, Avaada Group expressed his gratitude for opportunity to participate in the session and appreciated the selection of the topic which is relevant in the context of Indian renewable energy sector. He highlighted that Avaada Group also started its business with Gujarat where it got the first 40 MW solar project at INR 15 / kWh tariff and underwrote and subsidized the cost of doing solar in India. He stressed on the need for innovation and creation of a level playing field for developers for RE in India. Appreciating the biggest quality that solar, wind and hybrid has, he explained that these technologies have advanced so much that one can reliably supply 10-12 hours of power supply at very competitive prices using solar/wind plus battery. He highlighted that India needs very basic innovation when looking at achieving 450 GW of RE in the country. The country has 700+ districts and most of them are blessed with sunlight and more than 80% of these districts receive more sunlight than China where they are adding 50 GW of solar every year, whereas India has added only cumulative capacity of 42 GW in the last 10 years.

- Mentioning about the basic innovation, he explained that the benefit of RE should accrue to each and every citizen of the country. Citing example of Maharashtra, he mentioned that it has 65 GW grid connectivity available across various districts in the state. Maharashtra does not need to set up Inter-State Transmission System (ISTS) project in neighboring states when it can set up a plant within the state based on the local power requirement in every district / tehsil with capacity going up to 200 MW. This will not only enable those districts to have local employment generation but, at the same time, will ensure that local power is available without crisscrossing the whole country and thereby avoiding setting up of expensive transmission infrastructure.
- Moving on to his second point, he stressed on the need to create a level playing field with conventional power. He talked about India’s commitment for green and sustainable energy; however, he made a point that huge subsidy is provided for coal sector. He cited an example of coal linkage through Coal India where coal is sold at ~INR 1100 / ton whereas the same coal is sold at INR 2500 / ton to the private sector, steel & aluminum industry, etc. In such a situation, India is offering more than USD 10-12 billion worth of subsidy year-on-year to conventional power. He suggested that amount equivalent to the subsidy given to the coal sector be used to set up a fund which could guarantee payment security. This fund could support the developer to set up project wherever there is a lower radiation and higher cost of land. He emphasized on setting up a truly distributed clean energy set up in the country with the aid of this fund.
- His third point focused on EU-India collaboration. He mentioned that the long-term returns on deposits is around -0.37% in EU and there has been a lot of discussion happening around EU investment in India on energy infrastructure. He pressed on the need to find a conducive policy whereby European private companies can meaningfully invest in India. By that, he mentioned, he means that trade (in terms of goods and services) between India and Europe could potential reach USD 1 trillion within the next decade. To achieve this target, there could be huge synergies on European companies investing in India and the low hanging fruit in this regard is enabling currency swap and hedging in European currency directly to reduce the cost, which could amount to reduction of 1% point.

He mentioned that this is the time to leapfrog just as how US did in manufacturing sector for China whereby US invested heavily in Chinese manufacturing. As a result, China has emerged as a manufacturing giant the

world over. In a similar fashion, EU could look at India as a manufacturing hub and provide India the opportunity to establish itself as a manufacturing giant, while offering good returns on such EU investments. Returns could amount to 6-7% if investment is targeted at infrastructure development and if currency swap happens, double digit returns could be a possibility. This could be a global power balancing initiative between India and EU.

Further, he mentioned that Central Government and few State Governments have done some amazing work in promoting RE in the country and now it is time to promote more ease of doing business in India. He cited example of bidding for tender and change in taxation based on a Central Government policy such as safeguard and anti-dumping policy. Ideally, a developer should be able to deposit the money paid to customs with the Utility and get reimbursed for it. Other than this, Regulators could support the increase in cost of project by increasing the tariff accordingly.

He also insisted on bringing in the debate about environment to the fore-front. At present, solar, wind and other RE technologies are only looked at from the cost perspective, in the sense that they are cheaper than conventional power. He stressed that, in fact, this is the only way to live in the future. We can't continue to abuse the nature further. Now is the time to start assigning premium to RE because 33% of pollution today in India is happening primarily due to conventional power sources. He concluded his debate by mentioning about the need to take advantage of the advancement in RE technology happening across the world. He highlighted the need for research institutes like Fraunhofer ISI to partner with Indian companies in the RE space to bring innovation to the country.

Ms. Jenny Winkler, Researcher, Fraunhofer ISI started her discussion with briefing the audience about the AURES II project, funded by European Union, which will run till early 2022. She mentioned that the project aims at ensuring the effective implementation of auctions for Renewable Energy Sources (RES) in EU Member States. AURES II investigates auction design options in more detail to determine their policy performance depending on different policy objectives and offers recommendations on their use. She mentioned that in AURES II a multi-methodological approach is applied, including literature review, theoretical analysis, case studies, surveys, interviews, and empirical and quantitative methods such as econometric analysis and model simulations. She explained that this approach is accompanied by a strong involvement of relevant stakeholders, including policy makers, research institutes and industry representatives. The active dialogue of AURES II allows stakeholders to learn from the best practice and facilitates capacity building across borders in Europe. She also presented some examples on which she has worked on under AURES II project. She took the stage to mention the auction designer developed under AURES is an interactive online policy tool, deployed to support policy makers in designing auctions for renewable electricity. Thereafter, she highlighted the RES support mechanism available in Europe:

- She explained that RES in the many cases in Europe are now cheaper than conventional sources. She cited the examples of Spain and Germany where solar PV conditions are good and it is cheaper to invest in a solar PV plant than a gas-fired power plant.
- Next, she mentioned about RE integration into the grid depends a lot on the state of the grid but it is often expected to be easier to do than previously expected. She cited the example of Ireland where PSOs thought they won't be able to integrate more than 10% of variable RE like wind and solar and ended up adding 30% and mentioned that the grid is still up and running. She explained that some investment is definitely needed in infrastructure but it is doable. In fact, grid expansion in most cases in Europe has been cheapest option of integrating variable RE.
- Feed-in-premiums can incentivize better forecasting and system integration compared to feed-in-tariffs (FiTs). She mentioned this is only possible if there is a working wholesale market or a short-term market. This is something India could look into, instead of fixed PPA contracts. However, at the same time, the investment risks for renewable should be minimized because that will decrease the cost and enable participation of foreign and Indian companies in the auctions.

- Next, she explained that auctions can be a way to offer support but they have to be designed in the right way and are not a tool to create market. If there are no players in the markets, it won't help to have auctions.
- Finally, she mentioned, in Europe the next step in energy transition are integrated energy systems or sector coupling, that is, an electrification of other sectors (heating, mobility, etc.), signaling an even higher requirement for RE. At the same time, there needs to be some incentives to get the other sectors into the direction of electrification.

She also mentioned about the evolving trend of multi-technology auctions in the EU. However, she explained, that design of auctions to reach a level playing field between technologies is sometimes quite challenging. The technologies should ideally be similar (for example, in terms of cost) in order to avoid windfall gains but she did mention that changing winning technologies can be observed in some EU countries like Greece, Italy, etc. She concluded her discussion by talking about the assessment of multi-criteria auctions for off-shore wind. Keeping the auction as simple as possible is preferred, especially if foreign investors are to be attracted. She also mentioned that while looking at multi-criteria auctions, it is important to differentiate between pre-qualification criteria and scoring criteria whereby the pre-qualification criteria should ensure that auction participants shall be able to bid for the project and the scoring criteria can be used for things where achieving additional targets shall help. She mentioned that for off-shore in EU, only the Netherlands and France use scoring criteria.

Mr. Pierre Loaëc - Policy Officer, Renewables, DG ENER, European Commission took up the discussion on RE transition in Europe and India from a policy maker's perspective. He mentioned that the biggest trend visible in the RE space is that it is becoming increasingly cheaper which has become possible due to robust support schemes that were, in a way, very conservative for the project and ensured that they materialized. Thereafter, he mentioned about the competitive nature of RE in Europe. It is less about bridging a big gap in terms of economics but more about transition to a situation where renewables are the core of the energy market. In Europe, he mentioned, that is a lot of variety in energy markets and convergence is marked by conducive policies. Europe naturally moved away from quotas and FiTs to feed-in-premiums where it is essential to sell in the market and public support exists to provide some additional top-up, smartly designed to ensure that value for RE in the market is enough. Secondly, allocation of support has moved towards tendering in order to keep cost under control. He also mentioned that, in principle, it is a good practice to discover price and create some competition. This is where tendering comes into the picture.

Next, Mr. Loaëc discussed about technology specificity versus technology neutrality in auctions. He mentioned that, in Europe, there is this ideology that if you are technology neutral, you tend to bring benefits of competition and drive cost down. However, it is extremely difficult to design a technology neutral tender. Generally, there is also a debate in Europe, between picking a cost-efficient technology deployment versus picking the cheapest technology that allows for rapid deployment. He mentioned a decision of this sort shall depend on what a system should look like 20-25 years in the future and what it means in terms of overall balance of technologies. This is one of the most important regulatory and political decision taking place in Europe at the moment.

Europe is experiencing some real congestion issues across the production areas and it is extremely costly to manage, thereby indicating need for investment in grids. This is where regional planning is important in terms of the pace of generation and network deployment. One way, he mentioned, is to expose oneself to the market price but then there are questions around the right exposure to connection costs which depends on the technology being talked about. For example, for off-shore wind, does one want to completely socialize the initial deployment – site, location and cost of connection up to the off-shore site? Or if there is some scope of embedding some competition in the connection cost? He also discussed about the role of public support that ensures some guaranteed minimum price but one has to still go to the market for raising money. This is being undertaken in the form of hedging to ensure minimum price. A conjunction of PPAs with public support to undertake hedging is also being witnessed in Europe.

Lastly, he highlighted an issue Europe is facing in terms of the pace for committing for some technologies. This is not in terms of developing the appetite of investors for investing in projects but in terms of capacities that can be processed by the administrative authorities. Public acceptance issues are also coming to the fore. For example, France is experiencing political debates about development of wind projects in the country. Support is now moving away from FiTs and feed-in-premiums to other softer issues like public acceptance of the projects.

1.4. Questions and Answers

Based on the remarks received from participants, there were few questions for the panelists, asked by the moderator of the session.

- Question – Comments on India’s strategy to achieve 450 GW of RE and if State Electricity Regulatory Commissions (SERCs) are here to stay in the future?
 - Response by Mr. Anand Kumar – He mentioned that, in his experience, across all states in India, no uniform regulation exists. His suggestion was that standard / model documents shall be prepared for RE such as for RPO. Also, it is pertinent that a consolidated central level policy should come into play where recent feedback from developers and DISCOMs could be referred to and their issues could be resolved in a timely manner. Secondly, mentioning about the Regulators, he explained that they need to take a pro-active role since this does not concern only one state. Green energy is a subject of the whole country and there is a need to create awareness among policy makers and Regulators that they need to work as part of a team and adopt uniform regulations across the country. Small changes at the state level could still be made because ground realities could be different for different states. His third point pertained to R&D and technology advancements in India. He explained that India is a price sensitive country and new & expensive technologies won’t be easily adopted. He recommended that the institutions working in the RE space in India should work with European partners and they should come up with institutions like FSR, IITs and IIMs to take up R&D in the RE sector. This shall also ensure that technology advancement is taking place at a faster pace. Finally, he stressed on improving the health of DISCOMs and making them financially viable so they are able to clear the dues of developers in time.
- Question – How can ease of doing business be improved, regulatory uncertainties reduced and more promotion of innovative technologies be taken up in India?
 - Response by Mr. Vineet Mittal – India should definitely explore more technologies like wave technology and provide support for these technologies to become mainstream. For example, a subsidy structure for off-shore wind is a must in India. Currently, India is focusing primarily on low tariffs, however, if, say, Gujarat Government had not provided the apt tariff and state Governments had not given the necessary handholding, the sector would not have flourished the way it has today. This is also the time to support biomass, ocean wave technologies, off-shore wind, etc. Unless the country invests in them and supports them, India may not remain in the fore-front. Government of India’s decision around green hydrogen and green ammonia are very good step in this direction. It is expected that the Government will follow it through, with supportive policy interventions.
 - Talking about ease of doing business, he mentioned that first Government has to remove conflicts. Independent bodies need to be appointed as regulators and government representatives may not be free from conflicts. This is what the tariff policy is trying to address – there has to be a judicial member, a technical member and an independent panel as part of the regulatory body. Secondly, policy changes ideally should not affect the developer. The fundamental challenge is that under PPP in India, private sector expertise is not being used to solve the public problem. Most of the PPP projects are experiencing problems like disputes in existing contracts, regulatory hurdles, etc. What needs to be done is to ensure partnership is

honored and feedback is incorporated. India also needs to ensure that MSMEs are created and they have a huge role to play in RE generation in the country. They are the vital lifeline for country's prosperity. Monopoly for project development should not be encouraged. This is a must to reach the goal of USD 1 trillion economy.

- Question – Where does demand response fit in the RE transition? Where is the need for technology neutrality for auctioning?
 - Response by Ms. Jenny Winkler – She mentioned that, undoubtedly, more flexibility is needed in the electricity system if there are more variable renewables like solar PV and wind in the system. From the system's perspective there are several options to get at flexibility and demand response is one of them especially for industries, heating, cooling and service sectors. Huge demand response is also expected to be received from storage sector especially for electric car storage.
 - Talking about technology neutrality, she explained that flexibility requirements hold the key in terms of grid expansion where balancing effects are getting across countries. The question here is if the state is the better planner or whether the private sector can handle things better. Citing the example of solar and wind, she mentioned that for such technologies it makes sense to compete with each other since the cost difference is not significant; however, for other technologies it may not be the most feasible option right now. Once they reach maturity, they could be left to the market mechanism / sources to provide optimal solutions.
- Question – Where can India learn from European experiences and is there a possibility of leap-frogging?
 - Response from Mr. Pierre Loaëc – Europe has made a lot of mistakes in the energy sector transition and the biggest one probably is the lack of stability while designing the support schemes. It is important to pick a direction and give visibility to investors on how they will be supported. Especially important is to avoid retractive changes, in particular not honoring existing contracts. Some stability in financing of projects is also required. It is imperative to think about a stable source of funding that matches the companies' ambition from medium to long term. It is also pertinent to think about the grid. The pace of grid deployment is a very complex matter to handle for a number of technical and political reasons. It is also important to keep an eye on grid congestion from an early stage.

1.5. Closing Remarks

Mr. Matthieu Craye International Relations Officer, DG ENER, European Commission thanked all the panelists for the presentations and rich discussions, which brought out avenues for mutual benefit to India and EU. He highlighted that the importance of good governance & stability and financial position of the DISCOMs, especially in the Indian case, is an important aspect to avoid retractive changes. He also mentioned that some developments between EU and India are quite similar in terms of the increasing importance of competition. Some clear differences also exist in terms of Europe's inclination towards feed-in-premiums versus India's increased focus on PPAs and resulting guaranteed risk hedging. Touching upon innovations in technologies, he mentioned that having innovative projects to compete in technology neutral tenders would not make it feasible to develop well and lead to breakthroughs, especially in the Indian context. He concluded with highlighting the need for an increasing focus on distributed RES in India.