EU-INDIA
CLEAN ENERGY & CLIMATE PARTNERSHIP

EU-India-FICEP: Workshop on Best Practice Manual for standalone solar-based cold storages

Workshop on Best Practice Manual on Standalone Solar-based Cold Storage

On 23rd March 2022, the European Union (EU) – India Clean Energy and Climate Partnership project hosted a workshop on standalone solar-based cold storage in the context of the "EU-India Financing Investment in Clean Energy Platform (FICEP)" program. The objective of this workshop was to bring across the best practices that could be adopted by investors and borrowers for availing finances for the standalone solar-based cold storage systems along with discussing the key drivers of the growth of the standalone solar cold storage market in India.

The online workshop was organized on the topic "Best Practice Manual on standalone solar-based cold storage", which was attended by close to 30 participants, representing DRE service providers, project developers, think tanks, innovators, project promoters, entrepreneurs, and the European and Indian financing community.

1.1. Inaugural Session

Mr. Edwin Koekkoek, Counsellor, Energy and Climate Action, Delegation of the EU to India welcomed the participants and set out the close cooperation between the EU and India in the area of the clean energy transition and climate change. He mentioned that this workshop had been organized in the context of the FICEP platform which aims at mobilizing investments for the clean energy transition in India.

1.2. Session 1 - Introduction to the Best Practice Manual for standalone solar cold storage sector

Mr. Vibhash Garg, Director, PwC India, started the discussion with a presentation about the "Best Practice Manual for standalone solar cold storage". He presented the state of solar cold storage market in India. He explained that the solar cold storage market has grown rapidly over the last decade with a CAGR of 20-25%. Although the sector has a very high potential, it is yet to receive significant investment and as such, it should be one of the primary areas of intervention from the DRE side in the energy value chain. He mentioned that the purpose of the manual is to bring across the best practices to be adopted by investors and borrowers availing finances for the standalone solar-based cold storage systems in India.

Thereafter, he set out the key drivers for cold chain growth in India:

- The growth in organized food retail. The major growth in the imported food market (growing at ~35% per annum) and gourmet food market (growing at ~20% per annum) has ensured a promising future for both online and offline food delivery services and partnerships.
- The increased demand from the healthcare sector which became very prominent during the COVID-19 pandemic. The vaccines, bio-pharmaceuticals, clinical trial materials are heat sensitive and must be stored at very low temperatures, and as such healthcare market is now expected to grow threefold by 2022.
- Growth in the processed food sector is also one of the drivers for cold storage as the Indian packaged processed food industry is estimated at EUR 9.83 billion - EUR 11.81 billion, including chocolates, ice cream, snacks, confectionery, cheese, and butter.
- The growing export of processed food such as mangoes, cucumbers, gherkins, juices, etc. to Europe, Middle-East, Japan, Korea, etc. due to India's locational advantages

- Due to increasing risks and investments in grain crops, farmers are moving towards the cultivation of fruits and vegetables and as most of these crops require refrigeration, this shift towards fruits and vegetables is expected to encourage the development of cold storage facilities.

Next, he discussed the prevalent business models in the standalone solar cold storage sector in India. He stated that over 2000 standalone solar cold storage systems / deep freezers running on solar energy have been set up in India, operating on three major business models: cash sale model, solution bundled with financing, and storage as a service model. He explained that the cash sale model is one in which the end-user pays an upfront capital cost for the system and is free to use generation benefits over the life of the system. In the 'solution bundled with financing' model the service providers (RESCO companies) tie-up with local financing partners to offer solar agri-pump solution / cold storage units bundled with financing to farmers. Finally, in 'storage as a service' model, the system is set up in distribution centers to address the cold storage needs of small farmers.

1.3. Session 2 – Indian and EU funding options in the solar cold storage sector

Convening the session, **Mr. Vibhash Garg,** started by giving some examples of investments in the standalone solar-based cold storage market in India. He then presented the investment potential of the standalone solar cold storage sector in India. He mentioned the total addressable market and immediately serviceable market for five segments of solar cold storages, namely, farm-gate, healthcare, dairy, residential and micro-enterprises. He discussed that these five markets present a total investment potential of over INR 27,000 crores / EUR 3 million.

He explained the need for developing a technical quality system (TQS) to fund the standalone solar cold storage sector in India. He mentioned that financing is becoming available to standalone cold storage service providers and project developers for on-balance sheet and off-balance sheet solutions; however, institutional investor appetite for investments in such projects is still partially hindered by deal size, off-take risk, and technical performance risk management. Further, performance risk, related to quality, reliability of the entire technical solution, and the operation and maintenance (O&M) procedures hinders the loan off-take. He stated that from an investor's perspective, intervention could result in the form of developing a comprehensive TQS through a sustainable technical and financial due diligence process that can act as guidelines/framework for sector-specific funding.

Next, he briefly discussed the existing funding options in India namely, debt (from banks), equity (private or from venture capital), and other supporting enablers (mezzanine financing, rural off-grid financing, grant). He also discussed the existing European funding options available in India, for example, The Green Climate Fund that has set up the private sector facility (PSF), a dedicated division designed to fund and mobilize private sector actors, including institutional investors, project sponsors, and FIs; KfW-IREDA Access to Energy Line of Credit wherein standalone solar cold storage is one of the technologies being promoted as part of this credit line and lastly, the Indo-German Energy Programme – Access to Energy in Rural Areas II (IGEN-ACCESS II) which builds upon three strategic pillars – private sector development and innovation, access to finance and public support programs.

Providing feedback on the session, **Mr. Ravindra Gupta from Ecozen Solutions** mentioned the market sizing of 5 MT standalone solar cold storages. He explained that it is paramount to consider the proportion of small or medium holder farmers and segregate FPOs and individual farmers in that market size. To this point, he wanted to understand if this market segment has been taken into consideration. Mr. Vibhash Garg explained that this segment of the market has been accounted for while estimating the immediately serviceable market.

Next, **Dr. Saroj Nayak from Kalinga Renewable Energy Manufacturers Pvt. Ltd. (KARMA)** discussed the estimation of standalone solar cold storages for the dairy segment. He talked about his experience with individual farmers whereby customers in his operational geographies have started to procure milk directly

from farmers. As such, the market size for dairy segment could be higher than the estimates provided in the Best Practice Manual. Mr. Vibhash Garg mentioned that the estimated market size is based on reports that have already been published by different agencies; however, as mentioned that the current market numbers can be higher than what is depicted in the report, the team shall revise the market estimates accordingly.

1.4. Session 3 - Best practices that should be adopted by the lenders in providing loans to the sector

Mr. Vibhash Garg introduced the next section about the best practices that could be adopted by lenders in providing loans to the sector. He started by discussing debt which can come in many forms, from traditional instruments, such as term loans and lines of credit, to more novel variations, such as securitization of accounts receivable, etc.

He stated that debt financing can typically be divided into five stages: application, project appraisal, loan sanction, loan disbursement stage, and loan monitoring stage. One-by-one he explained the best practices and documentation requirement at each of the stages. He then invited a representative of Indian Renewable Energy Development Agency Limited (IREDA) and services providers in the market to discuss their point of view about the best practices for debt financing defined in the manual.

Mr. Shravan Kumar Bojjam, from IREDA, talked about how IREDA is actively funding renewable energy projects in the country. He addressed that the major concern during loan sanction stage is about security as the security requirement for off-grid projects include standalone solar cold storage projects are different from grid-connected projects. As it is very difficult to create proper security for these projects, IREDA has specified a need for at least a 10% bank guarantee in their guidelines along with several other conditions and clauses to get a better security deposit matrix. He mentioned that during loan disbursement stage, third-party assessment is required from a reputed organization to disburse the funds in time unlike in the case for other projects wherein the commissioning certificate is sufficient. He also mentioned that the monitoring of the projects and flow of funds is a major task for these kind of projects as there is no definitive flow of funds and frequent project monitoring exercises in the form of site visits, monitoring of revenues through the companies records, etc. have to be undertaken.

Dr. Nitin Goel, from Inficold India Pvt. Ltd., talked about how they, as a manufacturing company, are selling solar cold storage, solar conditioners and milk coolers. He mentioned that Inficold is at a stage where there are directly selling their equipment to their partners and their partners are using these under the renting model (storage-as-a-service model). As such, for them, procuring debt financing at this stage becomes a difficult task since they are an early stage company and investors find the business more appropriate for equity financing at this stage. Further, the need for multiple rounds of financing, and the potential for a trade sale and, generally, for scaling up and business expansion, Dr. Goel mentioned that equity is more appropriate than debt financing for them at present. He also mentioned that how milk chilling and dairy is a very big market in India with over 190 million metric tons annual production of milk. He mentioned that 20% of annual milk production gets cooled which has resulted in 100 thousand milk coolers of 5000 liters capacity already in place in the country.

Mr. Ravindra Gupta from Ecozen Solutions mentioned that the company manufactures a different range of solar cold storages and use business models such as leasing and direct selling of systems. He stated that debt financing helps not only to scale up leasing as a business model in India but also maintain a healthy working capital required for manufacturing several types of equipment. He mentioned that one of the major challenges is the interest rate that is generally offered under debt financing to the manufacturers to make the model financially viable. He believes it is on the higher side and can be re-looked at. He also mentioned that the five stages of debt financing mentioned in the manual present a good picture of what is required by the developer when approaching a financing institute for funds.

1.5. Session 4 - Best practices to be adopted by the equity investors in infusing investments in the sector

Mr. Vibhash Garg, then introduced the next session, i.e., best practices to be adopted by the equity investors in infusing investments in the sector. He started the topic by discussing the key factors considered by investors while planning to invest equity in a company such as the profile of the founding members and the advisors along with experience, investments in the company from the promoters, scalable and replicable business model adopted, etc. He highlighted the key tenets of equity financing and how it helps companies raise capital beyond the debt component, while also providing an opportunity for high returns. Next, he described in detail the five stages of equity financing namely, preparatory, due-diligence, partnership agreement, equity approval, and investment stage. He then invited Mr. Karthik Chandrashekhar from Sangam Ventures (seed and early stage venture fund in India) and services providers in the market to discuss their point of view about the best practices for equity financing defined in the manual.

Mr. Karthik Chandrashekhar from Sangam Ventures added that it is important to think more about standalone solar cold storage market in terms of the demand and supply being met i.e., sufficient demand is generated for the product coming out of cold storages (such as fruits, flowers, vegetables, etc.) and sufficient supply that is being lined out. He mentioned that many times evaluation or assistance provided by venture funds to companies that are setting up solar cold storages focus more around seeing if they have meaningful contracts or relationships to secure both the demand & supply of produce and all the investments that are required to manage the supply chain and logistics of getting the produce to the customers is being met. That whole piece together needs to demonstrate value for the investment to make sense and that includes utilization ratios, different uses of the solar cold storages, etc. He mentioned that these points are well covered in the manual.

Next, **Dr. Saroj Nayak from KARMA** shared his views regarding equity financing. He mentioned that when a service provider has a product in the market and when demonstration of the product is undertaken in terms of deployment and respectable demand for the product then the chances of getting the equity are boosted dramatically. Having debt on the books of the company before raising equity also helps sometimes since this instils a feeling of trust in the investor to see that other credible brands / financiers in the market have also funded the product.

Mr. Ravindra Gupta from Ecozen Solutions explained the major challenge affecting the equity financing for this sector. He mentioned that although the demand for standalone solar cold storage technologies has increased globally and many equity investors are showing interest, it is however difficult to instill confidence in the investors regarding the futuristic projections in the industry and to convince that there is a growth of these industries as the entire investment in solar cold storages in India is still at a very nascent stage, especially the decentralized solar cold storages. He also mentioned that even though there are a lot of prototypes that have been developed by different developers, it is important for the entire process to create that kind of confidence. However, nowadays, there is a global interest in this kind of technology and the equity investment seems to be a promising avenue considering the traction that the sector is getting.

1.6. Session 5 - Avenues of the EU and India collaboration in the solar cold storage sector

Mr. Vibhash Garg discussed the avenues of the EU and India collaboration in the solar cold storage sector. He mentioned three fronts wherein collaboration between EU Member States and India could take place, namely, financial front, technical front, and knowledge exchange. On the financial front, he discussed about the possibility of foreign direct investment and foreign institutional investments along with funding through bilateral and multilateral organizations by the means of alternative financing. On the technical front, he talked about the possibility of bringing in materials that are more environmentally friendly while manufacturing refrigerants. Lastly, from the knowledge exchange point of view, he discussed the idea to set up a forum for EU-India knowledge exchange with support from Industry associations in key areas along

with hosting the forum digitally on the IT-enabled FICEP platform. He then invited feedback from the audience on the possible avenues of collaboration between India and the EU.

Mr. Shravan Kumar Bojjam, from IREDA mentioned that a knowledge exchange with the EU on policy support could be further explored. He explained that MNRE has recently implemented the DRE policy to support livelihood development through off-grid renewable energy technologies; however, there is a dearth of specific policy environment for standalone solar cold storages. Separate policy stipulation for standalone solar cold storage is likely to benefit the development of this sector in India in an advance way. He also added the need for a technology transfer between the EU and India to improve the technology innovation within India. Lastly, he stated the need for developing innovative business models that can aid in capturing a larger market as remote and inwards locations in India still face the problem of limited knowledge about standalone solar cold storages that can benefit them economically.

1.7. Closing Remarks

Mr. Vibhash Garg, Director, PwC India thanked all the participants for attending the workshop and providing their inputs. He mentioned that the discussion will aid in further improvement of the manual. He expressed the need to organize similar sessions in the future once the manual is uploaded to the FICEP platform which could help entrepreneurs and investors to understand the best practices that should be adopted for the standalone solar-based cold storage systems in India.