PWCET Series – 9th Event
Sustainable Decentralised Renewable Energy Interventions in Cooling solutions for Food and Health – Best Practices
Introduction

Under the new joint initiative ‘Paving the way for Clean Energy Transition with Decentralised Renewable Energy (PWCET) Series’, the Alliance for Rural Electrification (ARE) and the Green People’s Energy (GBE) organised the eighth event titled “Sustainable Decentralised Renewable Energy Interventions in Cooling solutions for Food and Health – Best Practices” on 7th June 2023. The webinar had 678 registrations and attracted more than 230 attendees, worldwide.

Event Summary

The webinar was opened by Mr. Deepak Mohapatra, Senior Officer – Business & Market Development, ARE who introduced ARE, the PWCET series and the topic of the webinar to the audience.

Mr. Mohapatra carried on with the proceedings of the session as the moderator.

Ms. Ruth Kimani, Senior Associate, Clean Energy Access, CLASP started her keynote speech by pointing out the commitments of CLASP, particularly in the global cold chain challenges. The keynote address built a perfect foundation for the subject of the webinar. Ms. Kimani listed out some of the notable reasons why cooling actually matters in both agri and health sectors respectively.

Based on the works of CLASP related to the subject i.e. the implementation of Global Leap Off-Grid Cold Chain Challenge and market research from Kenya, Nigeria and India, it has been observed that generally the off-grid cooling market remains in its infancy however, the technological advancement is happening at a slow and steady pace. These technologies are adaptable and usable across different market segments. The overview of the market situation is that there are emerging business models that are aimed to increase the access to cooling for communities who cannot afford these solutions using new models like cooling as a service. Ms. Kimani also emphasised the requirement of onsite development and scale up of cooling technologies locally to address the cost and supply chain challenges which will ensure sustainable deployment of cooling services.

Lastly, Ms. Kimani touched up on the financing requirement and the role of public sector in this aspect followed by summarising the below challenges for consideration.

Summary of Challenges

<table>
<thead>
<tr>
<th>Technology</th>
<th>Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Design-related challenges</td>
<td>• Long payback periods and delayed returns on investment</td>
</tr>
<tr>
<td>• Lack of operational monitoring technology</td>
<td>• High-interest rates of debt facilities</td>
</tr>
<tr>
<td>• Limited technical skills to provide after-sales services</td>
<td>• Low usage rates of the assets</td>
</tr>
<tr>
<td>• Lack of consumer awareness about post-harvest cooling requirements, technologies, and its benefits</td>
<td>• Limited consumer financing</td>
</tr>
<tr>
<td>• Lack of access to financing due to perceived credit risk</td>
<td>• Lack of awareness about the available financing support</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial Markets &amp; Operations</th>
<th>Public Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Less developed business models to serve domestic markets</td>
<td>• Lack of awareness among cold chain actors around existing government policies to support cooling solutions</td>
</tr>
<tr>
<td>• Unreliable power supply and access to grid electricity</td>
<td>• Lack of standards and regulations to guide cooling product development across different use cases</td>
</tr>
<tr>
<td>• Lack of connectivity/access to consumer markets</td>
<td>• Weak linkages among cold chain stakeholders and government</td>
</tr>
<tr>
<td>• Lack of market linkages</td>
<td>• No additional incentives for the users who cold-store their produce</td>
</tr>
<tr>
<td>• Import taxes on cooling components</td>
<td>• High capital investment – low-profit margins</td>
</tr>
</tbody>
</table>
The first speaker was Ms. Norah Magero, CEO, Drop Access who began by citing the facts and figures related to the global lack of access to cooling.

After highlighting the problem, Ms. Magero went on explaining the work of Drop Access in bringing the cooling services in Kenya and rest of Africa by manufacturing and distributing solar refrigerators that are locally developed, portable, smart, plug&play, and affordable.

Ms. Magero presented their VacciBox solution to store vaccines and provide access to cooling in the healthcare centres. Followed by that Koyo refrigerators were presented which are instrumental in the food/dairy/fishery sectors. Followed by that, Ms. Magero presented the learning outcomes of their experience in this work.

The following speaker was Mr. Ayoola Dominic, CEO, Koolboks who started by iterating the main goal of his company i.e. to provide affordable cooling solutions to all. Mr. Dominic commenced with the story of one of their first customers using their Koolboks solar freezer and associated the story with the lack of refrigeration issue in sub-Saharan Africa. Followed by that, he went on describing the cooling solution developed by Koolboks using the unique properties of water and sun. Their system can provide cooling for the period of four days in absence of sunlight and power given that energy is stored in form of ice.
Mr. Dominic mentioned that different customers have different cooling needs and hence the Koolboks solutions are customised accordingly so that they usable across all segments of the customers depending on the capacity and needs. Pay as you go process is in place to ensure affordability among the customers by use of a token system. Lastly, Mr. Dominic walked the audience through the overall impacts of Koolboks.

The next speaker in line was Dr. Ana Salvatierra Rojas, Project Manager, and Expert on Agricultural Value Chains, Solar Cooling Engineering / SelfChill. Ms. Rojas began with introducing her company and its journey in solar cooling targeting to increase the milk value chain for a small producer. She went on explaining the schematics of the technology developed by Solar Cooling Engineering and the value chain it has employed in collaboration with other stakeholders. A case study from Kenya was presented where the farmers are using the cooling services to store and transport milk.

The following challenges were observed based on their experience. A modular cooling solution called SelfChill approach was introduced where the systems are engineered by Solar Cooling Engineering and are distributed by the company Phaesun.

Ms. Rojas follow through with some practical use cases of their modular cooling solutions i.e. cold rooms and milk tanks along with the overall impact that company has created.
The final speaker for the webinar was Mr. Emmanuel Beau, Founder & President, On.Capital. Mr. Beau began by introducing On.Capital which is dedicated to do advisory, fundraising, and investments in Africa and worldwide. He went on introducing their investment portfolio where a key portion of investment has been allocated to cold storage and energy access. Currently On.Capital is raising a new fund which will be closed next year and one significant investment will be dedicated to the cooling or cold chain spectrum. The example of Inspira Farms and Bboxx were provided to the audience and experience from the learning outcomes were shared by Mr. Beau.

From an investor perspective, the exit strategies must be critical to check. All equity investors are quite careful in this aspect compared to the debt lenders. Based on the collective experience, Mr. Beau pointed out that the grant funding could be better utilised to make the cost of asset financing more concessional rather than having a) very high interest rates to get your assets financed and b) pure grants. He further added an open debate question on how can we best invest in equity? Is it in equipment manufacturing or the customer acquisition or both. In conclusion, Mr. beau laid out some open questions as food for thought for the audience and other speakers alike.

Mr. Mohapatra thanked the speakers for their presentations and facilitated the panel discussion with questions from the audience. Some notable questions are highlighted below:

**Audience interaction and moderated discussion**

**Q1: How do you ensure the affordability of your cooling solution for local small-scale farmers?**

Ms. Ruth Kimani: “One of the programmes that we are implementing is productive use financing facility that extends procurement subsidies for companies distributing these kinds of solutions for farmers. Through that process, we enable them to take advantages of the economies of scale to increase affordability.”

Ms. Norah Magero: “We are currently piloting cooling as a service to try and see what is the most affordable. I look forward to learning myself what could be an appropriate financial model considering some of the models didn’t work well for us in the past.”

Mr. Ayoola Dominic: “So, firstly, we use pay as you go technology so that our farmers can utilise our systems at about 10 to 15 USD a month. On the second step, we are building a facility of about 70,000 capacity assembly plant which will reduce the cost by 15% and then we will be having tax exemptions in some countries of operations. So, these are the ways we are looking at to increase affordability.”

Dr. Ana Salvatierra Rojas: “Based on our experience, on one hand, we always strive to decrease the costs. On the other hand, from the side of the users, we are trying to create more demand by spreading awareness, organising workshops & training, ensuring availability of local technicians, etc. all of which are helping to reduce the costs.”

Mr. Emmanuel Beau: “We look at how companies can finance those assets to make the equipment affordable. So, we are working on different business models, working on syndicating concessional money. Additionally, we are also looking at initiatives like CLASP as an investor making sure we have blended finance approach with different stakeholders in the market and help cooling service companies scale, industrialise and achieve economies of scale.”

**Q2: Is the price of the Koyo fridge including the 15 hour battery?**

Ms. Norah Magero: “Yes, it includes the 15-hour battery from 800 USD, it’s a 102 litre capacity refrigerator.”

**Q3: PayGo increases the cost of a product overall. How are you managing defaulting customers?**
Mr. Ayoola Dominic: “Yes, indeed that increases the costs of the products overall. However, we can’t deny the fact that it also reduces the barrier to have access to cooling and that’s where we are actually aiming. We get the funds from the partners to get the refrigerators to the market and we strive to reduce the barriers to allow people to gain access to it. When a customer defaults, it is often because they are incapacitated to pay due to loss of business and other factors. However, that happens rarely but when it does, we give first month warning and repossess the system and pass over to another customer in case of no payments.”

To conclude the webinar, Ms. Dorothea Otremba, Senior Advisor, GIZ thanked all the panellists for their contributions and the audience for their active participation. She also suggested the audience to follow ARE and GBE webpages to be updated on the latest information on the topic.
### Annex: Webinar Programme

<table>
<thead>
<tr>
<th>Programme 90 Minutes</th>
<th>Opening and welcome remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mr. David Lecoque, CEO, ARE</td>
</tr>
</tbody>
</table>

**Moderator**

Mr. Deepak Mohapatra, Senior Officer – Business & Market Development, ARE

**Keynote speech**

Ms. Ruth Kimani, Senior Associate – Clean Energy Access, CLASP

**Speaker interventions and dialogue**

- Ms. Norah Magero, CEO, Drop Access
- Mr. Ayoola Dominic, CEO, Koolboks
- Dr. Ana Salvatierra Rojas, Project Manager, and Expert on Agricultural Value Chains, Solar Cooling Engineering / SelfChill
- Mr. Emmanuel Beau, Founder & President, On.Capital

**Closing remarks**

Ms. Dorothea Ottremba, Senior Advisor, GIZ

---

**Partners:**

**About GBE**

Dr. Gerd Müller, the Federal Minister for Economic Cooperation and Development, announced a new initiative, named Green People’s Energy for Africa (GBE) in June 2017. This initiative aims to enable, expand and secure the supply of sustainable energy in rural Africa. It is part of the Marshall Plan with Africa and relies on the broad participation of small and medium-sized enterprises, municipalities, cooperatives, public associations and citizens.

**Contact:** Dorothea Otremba ([dorothea.otremba@giz.de](mailto:dorothea.otremba@giz.de)), Senior Advisor, GIZ

**About ARE**

Established in 2006, the Alliance for Rural Electrification (ARE) is the global association for the decentralised renewable energy industry, catalysing private sector driven markets for sustainable electricity services, creating jobs and powering equitable green economies.

**Contact:** Deepak Mohapatra ([d.mohapatra@ruralelec.org](mailto:d.mohapatra@ruralelec.org)), Senior Officer - Business & Market Development, ARE