



## Terms of Reference (TOR)

### Development of training materials for solar powered cold storage - post harvest management

<b>Title</b>	Consultant - Training content development - Agri cooling
<b>Contract Supervision</b>	Program Manager - Global SDG7 Hubs., SELCO Foundation
<b>Timeline</b>	3 months : October 2022 - January 2023
<b>Expected area of expertise</b>	Content development, Content Writing, Module development, Training, Media
<b>Email and website</b>	<a href="http://www.selcofoundation.org">www.selcofoundation.org</a>

#### About SELCO Foundation

SELCO Foundation is an NGO established in 2010 is working on building a holistic ecosystem for sustainable energy access. In this regard SELCO Foundation engages in technical, financial and social innovation, enterprise development, skill building and financial inclusion. The organisation works on demonstrating and catalysing the role of renewable energy across verticals of well- being, health, education, livelihoods and the built environment.

#### Context

Indian farmers incur loss of INR 92,651<sup>(1)</sup> crore per year in post-harvest losses alone, the primary cause of which are poor storage and transportation facilities. Other issues include limited technical know-how on good agricultural practices, lack of market knowledge and inadequate market access. In the absence of proper storage facilities, farmers of perishable commodities such as fruits and vegetables have been rendered devoid of their livelihoods in both the immediate and the long term.

Within the agriculture vertical, Agri cooling has emerged as one of the primary priorities for the organisation in terms of building replicable and scalable models across different geographies. Along with the technology developing customised training modules (region-wise, commodity wise) for end-users, technology providers and ecosystem actors will be utmost importance. With SELCO's open source policy and aim to develop solutions for the sector, this project focuses on developing the training modules for technical and non technical aspects of agri cooling in a format that becomes usable, understandable and with little effort can be contextualised by anyone across the globe.

#### Objective

- To improve the practices of setting up of decentralised renewable energy powered cold storage system
  - Pre - installation, installation and post- installation - Preparations and best practices for end users and tech vendors.
  - Improve skills & knowledge of end-users / vendor on usage, operation and maintenance
  - To maximise the utilisation of the cold storage facility up to its full potential.
  - To create a complete understanding of troubleshooting of the cold storage technology.
  - Capacity building of CEEs, tech enterprises
- Enhancing capacity of human resources by capacity building and training.

#### Scope of the work

Under this work the consultant/ agency is expected to develop training modules, facilitators guide and training tools (PPT, Posters, IEC materials) for the following.

1. **End user training :**
  - a. **During Installation- on day of installation -**
  - b. **During installation- within a month of the installation**
  - c. **Post Installation trainings**

#### A brief about each of the above training requirements



<p><b>End user</b></p>	<p><b>During Installation- on day of installation</b></p>	<p><b>A checklist of best practices to cover the prep on the day of installation:</b></p> <ul style="list-style-type: none"> <li>• to identify and get an operator/ manager hired before the site preparation and installation</li> <li>• Always have the owner of the cold storage be present to get trained on the usability and maintenance of the cold-storage (he/she can then be the master trainer for any manager/ operator coming next)</li> </ul> <p><b>During installations, the stakeholders from end-user's side should:</b></p> <ol style="list-style-type: none"> <li>1. Understand the roles of tech vendors and other technical support stakeholders locally and otherwise- making sure the line of communication, service support process and timelines are understood</li> <li>2. Understand the warranties given and how &amp; when they can be availed (any free services and check-ups to be clarified and understood by end-user and tech vendors)</li> <li>3. Understand their roles and responsibilities from the tech vendor</li> </ol> <p><b>Live Demo to understand:</b></p> <ol style="list-style-type: none"> <li>1. Commissioning of Tech- Live demo showcasing different parts of the cold storage + explaining functionality of each part</li> <li>2. How the parts needs to be operated and what regular maintenance they need</li> <li>3. Test run of the technology- show different scenarios (create different troubleshooting scenarios- battery, water tank, etc.), show dos and don'ts</li> </ol> <p><b>How to operate a cold storage:</b></p> <ol style="list-style-type: none"> <li>1. Dos and don'ts- before storage, what happens during overcast, door operating best practice, storage best practice, pre-cooling, cleaning, etc.</li> <li>2. Should be able to prepare a chart during this time basis of the commodities locally- which temp for which commodity and for how many days</li> <li>3. Safety components and explaining that- what needs to be done in these cases (fire, thunder storm, overcast, flood, etc.)</li> </ol> <p><b>Checklist of quality for end-user/ promoting NGO (QA by end-user):</b></p> <ol style="list-style-type: none"> <li>1. Understand and check the BoM and quality of material received</li> <li>2. Quality of installation: earthing, Thunder arrestor (where is it installed), MMS quality and panel placement and tilt angle, and site preparation</li> <li>3. Documents (wannaty card, bills, service records, other FAQs and documents- on site videos, posters, etc.)</li> </ol>
	<p><b>During installation- within a month of the installation</b></p>	<p><b>Understanding of running of a cold storage: (for operator and Manager)</b></p> <ol style="list-style-type: none"> <li>1. Owner cum operator (same person)</li> <li>2. FPO is owner but operator is a staff (different owner and operator)</li> <li>3. Have some non-negotiables on type of person who will be the cold storage manager/ operator (HR/ operator- type and resosining, roles and responsibilities of everyone involved from end-user's side- manager/ operator selection criteria- to train the FPO on this- be considerate of the placement of the cold storage and the local availability of the manager/ operator- be mindful of the preferable criteria from the field)</li> </ol> <p><b>Training for owner in 2nd case - ( if different owner and operator) :</b> (best practice is to train the president sc. or one of the key constant representative from owner's side too)</p> <ol style="list-style-type: none"> <li>1. Understanding my cold storage's capacity, temperature ranges, commodities it can store, how to do combination of different commodities</li> <li>2. Understanding its operational need from profitability perspective (unique to a particular unit/site)- create of chart on what is needed out as an earning for next 6-12 months</li> </ol>



		<ol style="list-style-type: none"> <li>3. Different models of using cold storage: as a service models and others, dos and don'ts, next practices</li> <li>4. Understanding short term storages vs. long term storages and its impact on business</li> <li>5. Best practices of daily operations: loading and unloading, how to minimise the power consumption, etc.</li> <li>6. How to maintain temp vs relative humidity- to read sensors- how to set diff. temps to control humidity</li> </ol> <p><b>Agri-business perspective:</b></p> <ol style="list-style-type: none"> <li>1. How to plan for lean months of operations</li> <li>2. Best practices to aim for maximum utilisation of the space</li> <li>3. Which commodities can be used in these times and for what purpose (for seeds, betel leaves, other commodities)- link it to other planning- marketing, etc.</li> <li>4. Train the end-user to understand the combination of commodities for a particular temp range- to help store different commodities together- this to help for planning of storing different commodities in combination throughout year (post harvest commodity management)</li> </ol> <p>*ex.: Ecozen has an app to show temp range with different temp ranges- but the shelf life of commodities will come down in avg. temp ranges- how does the end-user understand this</p>
	<p><b>Post Installation trainings</b></p>	<p><b>Non-technical related to cold storage:</b></p> <ol style="list-style-type: none"> <li>1. usage- do's and don'ts</li> <li>2. Utilisation plan for the maximum profits- how to make sure their plan coincides with the RoI requirements and required profits from the unit (review of the business plan)</li> <li>3. Storage space planning (pics, references, etc.) + best practices (this to include- kind of infra required beyond cold storage- ex. cooling vehicles, subzi cooler, chillers, storage space with relatively low ambient temp. etc.)</li> <li>4. Record keeping (utilisation) for business model development</li> <li>5. Bookkeeping (financial) to create templates for the same</li> <li>6. Price list- no. of days and different commodities (to be put on a board outside cold storage)</li> <li>7. For awareness among farmers and local producers- Marketing materials and how to convince farmers to use cold storage- for promotion of tech in the region</li> </ol> <p><b>Non-technical related to managing business:</b></p> <ol style="list-style-type: none"> <li>1. Market linkages</li> <li>2. Utilisation reviews</li> <li>3. Storage best practices- maximum utilisation and commodity and price planning</li> </ol>

### Training target audience

- End users: Different types of end users, (individuals- farmers or Micro entrepreneurs, SHGs, FPOs; PWDs, women or youth, Govt.)/ owners, managers and operators of the cold storage
- Operator / manager of the cold storage
- End user who in using the cold storage
- Implementing agencies: promoting NGOs, FPOs, CBOs, local partners, etc.
- Internal organisational / partner HR

### Methodology and approach

The methodology includes, but is not limited to secondary research, stakeholder consultations, field visits, etc..

1. **Secondary research:** in-depth understanding and review of the existing program documents, reports, program-specific information, any other relevant training materials and ongoing training.
2. **Stakeholder consultations:** Meeting and interacting with stakeholders from across India (including the ones from SELCO's network) to verify the information and get feedback on the process, documentation and modules.



3. **Field visits:** This includes sample sites visits to a few cold storage implementations to understand about the technology and need of the target audience.
4. **Focus regions:** This project is focused on creating modules which can be easily understandable and usable by anyone in the world. The document can cover examples of Indian states where SELCO have installed the cold storages.
5. **Review and feedback :** Two rounds of review and feedback.
6. **Testing:** On field testing /piloting of the training modules *with relevant stakeholders of SELCO* and training of trainees on the training modules and plan a workshop with stakeholders of SELCO and its partners to pilot the modules and training documents. *This should help in getting feedback and improving the final documents and modules.*
7. **ToT :** Training for potential trainers

#### **Deliverables:**

- Submit of detailed work plan and timelines
- Training modules / booklet - 3 nos
- Training deck / ppt - 3 nos
- Training handouts / posters/tools - one set of hard copies and the softer version.
- Concept and script support for 5 technical training videos
- Testing / pilot : 1 each of 3 modules
- ToT : 5 trainers

#### **Expertise Required**

- Individual/ Agency with an experience, preferably in content development and assignment writing.
- Experience on compilation of qualitative information.
- Excellent written and verbal communication skills.
- Agri based business development / post harvest management knowledge is preferable.
- Technical knowledge and familiarity with solar energy is desirable.

#### **Selection Criteria**

The technical proposal will be evaluated based on the following general areas:

1. Agency/ Contractor experience in the field of assignment
2. Understanding of the aims and objectives
3. The qualifications and relevant experience of the personnel.
4. The financial proposal will be evaluated on the basis of expertise, cost, lead-time and proposed payment terms.

\*\*\*It is recommended that the consultant depute one representative with documentation and project management skills to be stationed at SELCO Foundation office in Bangalore during the duration of this project to work closely for this project. The consultant's representative will have to follow SELCO's working hours and holidays during the period that they work from the SELCO office. The modalities can be further discussed and finalised at the time of signing the contract.

Interested consultants / organisations, with relevant experience (please include samples and/or references of the previous similar work as proof of experience) and based out of India are requested to reach out with a detailed proposal giving a brief on the methodology and the process they will uptake for this project, including budgets (with break-ups and explanation), timelines and milestones and send the same to [knowledge@selcofoundation.org](mailto:knowledge@selcofoundation.org) marking [sikha@selcofoundation.org](mailto:sikha@selcofoundation.org) in cc with a subject line: "Proposal for designing and developing non technical training materials for solar cold storage" on or before 25th of October 2022.