



Terms of Reference (TOR)

Onboarding Consultant for Developing Training Package on Quality Control Procedures Solar PV System- (Installation & Commissioning)

Title	Engagement of an Individual Consultant / Agency to Create a Training Package on Quality Control Procedures Solar PV System- Installation & Commissioning.
Timeline	03 Months
Expected area of expertise	<ul style="list-style-type: none">• Solar Technical Training Content development• Solar Technical Training Content Writing, Module Development
Email and website	procurement@selcofoundation.org, www.selcofoundation.org
Apply Link	https://forms.gle/8ehvcKZJL2drArSq5 (Contact Procurement for Form Link)
Last Date of Application	26th January, 2025

About SELCO Foundation:

SELCO Foundation's mission is to create a platform of solutions that uses sustainable energy as a catalyst to link environmental sustainability and poverty alleviation. With holistic development as the primary focus, the organization strives to create equitable societies where all communities have access to essential services. SELCO Foundation's Agri & Allied program focuses on empowering farmers and rural communities through sustainable agriculture practices, thereby creating an impact in terms of improved energy-efficient technology, increased crop yields, enhanced livelihoods, and reduced carbon footprint. To know more about SELCO Foundation, visit www.selcofoundation.org.

1. Summary of the project:

With the current climate and energy crisis, the role of a clean, decentralised and sustainable energy source has become crucial. Not only does it provide accessible and affordable energy to off-grid areas, it also ensures a broad space for technological solutions and innovations to counter the current crisis and to work towards enabling the sustainable development goals. Yet there is a huge gap in the sector due to a lack of entrepreneurs/enterprises/organisations and skilled technicians across the world, to build and promote a holistic and sustainable energy ecosystem. Selco Foundation, therefore, has been developing programmes to support, train and guide clean energy entrepreneurs, enterprises and their technicians.

To help build the capacity of these enterprises and skills of the employees, in-depth training on Solar Photovoltaic Installation and its various aspects is necessary. However, there is a dearth of customised and easily understandable learning materials to deliver quality training in an engaging manner. With SELCO's open source policy and aim to develop solutions for the sector, this project focuses on developing customized training modules to impart training in a format that becomes usable, understandable and with little effort can be contextualised by anyone across the globe.

Solar photovoltaic (PV) systems are crucial for sustainable energy solutions. Ensuring the quality and efficiency of these systems through proper inspection is vital for their performance and longevity. This project aims to bridge the gap in quality inspection knowledge and practice among local technicians and enterprises by providing high-quality, visually engaging training materials.

2. Goal and Objective of the Project:

Goal:

The agency / consultant will be on-boarded to develop training modules on Quality Inspection of Solar PV Systems.

Objective:

The objective is to develop training modules on Quality Inspection of Solar PV Systems, which will enhance the knowledge of local technicians and enterprises in performing quality inspection of the Installed solar photovoltaic systems.

- Develop training modules that are pictorial, user-friendly, and engaging.
- Equip local technicians and enterprises with the necessary skills and knowledge to perform effective quality inspections of Solar PV systems.
- Enhance the overall quality and reliability of Solar PV installations through improved inspection practices.

3. Scope of Work:

The consultant will be responsible for creating comprehensive solar training modules focused on performing quality inspections of Solar PV systems across various capacities and applications, specifically within the context of decentralized renewable energy. These modules should address the unique requirements associated with different types of installations and diverse geographical conditions.

The onboarded consultant will be responsible for creating a detailed and user-friendly training package, which will include the following components:

a. Learners Manual:

A **detailed guide** for learners covering all aspects of quality inspection for solar PV systems. The content should include theoretical knowledge, practical inspection techniques, and best practices.

- Must be visually engaging with illustrations, diagrams, and pictorial representations to facilitate understanding.
- Relevant case studies from site visits must be included to provide real-world context and practical Insights.
- Clear and accessible language suitable for a diverse audience.

b. Facilitator Guide:

- A **comprehensive guide** for facilitators to effectively deliver the training. It should include session plans, key talking points, and tips for engaging participants. Must Incorporate interactive elements such as quizzes or discussion points to enhance participant engagement.
- It must be structured in a clear and concise manner with guidance on how to use the Learners Manual and Training Deck effectively.
- Additional resources or references link must be provided, that facilitators can use to supplement the training.

c. Training Deck:

- A **PowerPoint presentation** that summarizes key points from the Learners Manual. The deck should be designed to support instructor-led training sessions.
- Visually engaging slides with graphics, charts, and diagrams. The deck should be modular to allow for flexibility in delivery.
- Incorporate interactive elements such as quizzes or discussion points to enhance participant engagement.

d. Handouts: Checklist, Templates, Guidelines, Recording Formats etc

Key Details for Module:

Target Audience	Topic	Module details
	Brief overview of Solar PV System and components	Introduction to Solar PV System, Off-Grid system-DC & AC (To include different capacities) Grid tied System, Hybrid PV System, Applications with respect to Infrastructure & Livelihood applications.
	Introduction to Quality check	Quality Check- Purpose, Tiers & Quality control Mechanisms.
	Pre-Installation Quality Check	Specifications /Bill of Material Verification, Quality of Material being used, Mechanism to be followed during

Technical Students, Technicians, Clean Energy Enterprises		Transportation and storage of equipment's.
	Quality check –Project Procurement level	Guidelines & Quality check criteria for selecting Solar PV Modules Module mounting structure, Array Junction box DCDB Batteries, ACDB Inverter, charge controllers, Earthing protection, Lightning Protection, Cables, breakers, Isolators, Changeover switches, Bidirectional meter, Solar check meter, Surge protection devices, RMS, etc Check list for Vendors.
	Quality Check for Installation	Material verification at Warehouse, Quality evaluation of the Installed components, Verification of Installation as per the SLD, BOM Check of Physical conditions, Electrical Specification & Interconnections, Quality Inspection of MMS –Types of MMS, Material of Structure against BOM, Roof structural Integrity Foundation/Mounting requirements as per site, Orientation & Tilt, Shading, Load bearing capacity etc. Quality Inspection of AJB, DCDB, ACDB, SPD Interconnections, and internal components as per SLD. Quality Inspection of Inverters, Batteries and Cables (AC & DC) Inspection of Earthing Pit-, Earthing materials used, Down conductor termination, Components earthed as per guidelines, Number of Earth pits, etc. Earth pit setup-Vertical & Horizontal Earthing. Equipotential bonding above and below the earth. Lightning Arrestor-Check for Lightning Protection zone, Use of Appropriate Lightning Arrestor based on requirements, Height & coverage, Materials used etc. Setting up of the lightning arrestor.

	Measuring Equipment's	Tools & Instruments required, Purpose & Usage-Earth resistance meter, IV Tester, Megger, Thermography camera, Multimeter, Clamp meter, Insulation tester etc.
	Occupational & Safety Hazards	Electrical safety & Personal safety, Safety while Inspection. Safety procedures to be followed by Installers and Supervisors. Marking and signage etc.
	Pre-Commissioning and Post Commissioning tests	Pre-commissioning tests and procedures to be followed. Commissioning of the System, Sequence to be followed, Regulatory compliances, Recording formats.
	Documentation and handover formats	System documentation and handover formats, Checklists, IEC & NEC Guidelines.
	Standards/Certifications	List of suggestive standards (IS/IEC) pertaining to Solar PV Installation and components.

Note: The topics listed above are indicative and should be revised based on consultations with external experts, further research, and specific requirements.

Methodology and Approach for content development:

To ensure that the developed content is comprehensive, practical, and aligned with industry standards, the consultant should ensure the following process to be followed.

- **Literature Review & Secondary Research:**

Examine existing literature, standards, and guidelines related to quality inspection of solar PV systems and establish clear objectives for the training content, including key learning outcomes and competency requirements for quality inspection of solar PV systems.

- **Stakeholder Engagement:**

Engage with Industry experts, regulatory bodies and practitioners from across India (including the ones from SELCO's network) to gather Insights, best practices and specific requirements.

- **Site Visits and Field Research:**

Visit various solar PV installations to observe real-world inspection processes, capture practical examples and gather data. Document detailed case studies from the site visits, highlighting common issues, successful inspections, and integrate these findings into the content being developed.

- **Review & Feedback:**

Share draft materials with stakeholders for feedback and revise based on their input to ensure the content meets their needs and expectations. Implement multiple review cycles involving internal and external reviewers to ensure content quality and relevance.

- **Finalization and Delivery:**

Make final adjustments to the content based on feedback, ensuring clarity, coherence, and practicality. The final content should be designed with illustrations, graphics, and photographs to enhance visual appeal and simplify the content, making it easily understandable for a layperson.

4. Deliverables:

Deliverable	Required Number
• Preparation Plan	1
• Consultation with Stake holders & Field visit report	1
• Content Outline with Table of Content	1
• Learners Manual	1
• Training deck	1
• Facilitator Guide	1
• Handouts, Checklists & Formats	Multiple

5. Requirements:

- Agency/ Individual with an experience in content development and assignment writing.
- In-depth knowledge of quality inspection processes for solar PV installations.
- Experience in developing training materials for technical subjects, particularly in the field of solar PV systems.
- Excellent written and verbal communication skills.

6. Selection Criteria:

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

- Agency/ Consultant experience in the field of assignment
- Understanding of the aims and objectives
- The qualifications and relevant experience of the personnel.

- The financial proposal will be evaluated based on expertise, cost, lead-time and proposed payment terms.

7. Timelines:

The Consultant will be Onboarded for this project period of **03 months**, during which the Consultant is required to complete and deliver all the assigned tasks.

8. Payment Terms:

Payments will be made based on the completion of agreed deliverables. A payment schedule will be included in the contract and based on considered each party agrees.

9. Financial proposal:

Submit a detailed proposal including:

- Estimated days for each Deliverables
- Learners Manual, Training deck, Facilitator Guide and Handouts preparation charges.
- Design & Content creation charges
- Printing of one hardcopy
- Travel and lodging Expenses by the consultant / Agency

10. To apply

Interested individuals, with relevant experience (please include portfolio and links of relevant work) are requested to reach out with a Statement of Purpose giving a brief on how the opportunity aligns with their goals, including budgets (with break-ups and explanation), timelines and milestones and submit the same to the google form <https://forms.gle/148NyHxD2LFqejQG9> on before **26th January, 2025**.

Any further queries please write to procurement@selcofoundation.org with a subject line: Onboarding Consultant for “**Advisory support &Capacity Building to review the Cold storage Business/Business Model to make them a profitable venture**”

Note: The application will be evaluated on a rolling basis.

Refer Terms and Condition:

- 1. Sub-contracting:** In the event that the Consultant requires the services of subcontractors to perform any obligations under the Contract, the Consultant shall obtain the prior written approval of the Foundation. Any rejection or non-performance of the subcontractor shall not, in and of itself, entitle the Consultant to claim any delays in the performance, or to assert any excuses for the non-performance, of any of its obligations under the Contract, and the Consultant shall be solely responsible for all services, obligations and deliverables performed by its subcontractors

2. Quality Assurance

The data submitted to Selco Foundation should be accurate, complete, reliable and relevant. Consulting agency shall establish additional layers for data cleaning and submission.

3. Financials & Reporting

TDS will be deducted on the fixed amount as per Income Tax Act and Rate of Percentage. In accordance with the Central Board of Direct Taxes circular No. 7 of 2022 dated 30th March, 2022 in relation to the clarifications with respect to Section 114AAA of the Income-tax Rules, 1962, failure to link Aadhar number to the PAN card and/or failure by any person, who falls within the income tax bracket or otherwise, to file tax returns in relation to payment of TDS for any service (in accordance with Section 206AB and 206AA) and/or an inoperative PAN card will result in a 20% tax deduction.

4. Indemnification

Both parties shall indemnify and hold its Trustees, Directors and representative officers, employees, agents harmless from and against any and all claims, demands, actions, losses, liabilities, charges, damages, costs and expenses (including but not limited to reasonable attorney's fees) arising out of or resulting from (1) any claims arising in connection with activities undertaken by both parties in connection with the project or (2) Consultant's gross negligence or willful misconduct or breach of any undertaking, covenant, representation or warranty contained in this agreement and/ or the actual infringement of any patent, trademark, copyrights, trade secret or any other intellectual property right of the third party.

5. Patent, Copyright and other Proprietary Rights

- (i) Except as is otherwise expressly provided in writing in the Contract, the Foundation shall be entitled to all intellectual property and other proprietary rights including, but not limited to, patents, copyrights, and trademarks, with regard to products, processes, inventions, ideas, know-how, or documents and other materials which the Consultant has developed for the Foundation under the Contract and which bear a direct relation to or are produced or prepared or collected in consequence of, or during the course of, the performance of the Contract. The Contractor acknowledges and agrees that such products, documents and other materials constitute works made for hire for the Foundation.
- (ii) Subject to the foregoing provisions, all documents, reports, recommendations, documents, and all other data compiled by or received by the Consultant under the Contract shall be the property of the Foundation, shall be made available for use or inspection by the Foundation at reasonable times and in reasonable places, shall be treated as confidential, and shall be delivered only to the Foundation's authorized officials on completion of work under the Contract
- (iii) The Consultant will treat all information given to him/her as information with proprietary value and will not disclose the same to competitors or any outsiders. The Consultant will not at any time, except under legal process, divulge any trade or business secret relating to the Foundation or any customer or agent of the Foundation, which may become known to him by virtue of his position as consultant, save in so far as such disclosure shall be necessary in the interest and for the benefit of the said Foundation and will be true and faithful to the Foundation in all dealings and transactions whatsoever relating to the said Foundation.
- (iv) Reports or other data that are developed specifically for the performance of this Contract shall be the property of the Foundation and the Consultant shall deliver reports and data

to the Foundation as per the milestones. Dissemination of the reports and any information from the said contracts shall be done with written approval from the Foundation.

6. Publicity, use of name & Logo of the Foundation: The Consultant shall not advertise or otherwise make public for purposes of commercial advantage or goodwill that it has a contractual relationship with the Foundation, nor shall the Consultant, in any manner whatsoever use the name, emblem, logo or official seal of the Foundation or that of SELCO in connection with its business or otherwise without the written permission of the Foundation.

7. Observance of Law:

- (i) The Consultant shall comply with all laws, ordinances, rules, and regulations bearing upon the performance of its obligations under the Contract.
- (ii) The Consultant represents and warrants that neither it, its parent entities, partners or subcontractors nor any of its subsidiary or affiliated entities (if any) is engaged in any practice inconsistent with the rights set forth in the *Child Labour (Prohibition and Regulation) Act of 1986*, which, *inter alia*, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
- (iii) The Consultant represents and warrants that it shall adhere to the mandates prescribed under the *Sexual Harassment of Women (Prevention, Prohibition & Redressal) Act, 2013*, which requires all workplaces to have a Policy and Internal Committee to address complaints of sexual harassment that women may face at the workplace.

8. Termination:

Either party may terminate this contract by giving a notice in writing to the other party stating their intention to terminate the same on the expiration of Seven (7) days from the date of such notice. In addition, the Foundation may also terminate this contract forthwith in the event of any fraud, misconduct or neglect of duties on the part of the Consultant. Any notice to be given hereunder shall be sufficiently given to the Consultant if forwarded by registered post or by Courier Service to the last known postal address of the Consultant and shall be sufficiently given to the Foundation if similarly forwarded to the registered office. Upon the termination of this contract and payment of the said fees due up to such termination, and payment of all disbursements and out-of-pocket expenses incurred up to the date thereof (provided the same have been incurred after obtaining prior approval), the Consultant shall deliver all deeds, documents and paper in his possession relating to the business of the Foundation or as the Foundation shall direct, and shall continue to afford him all reasonable assistance for concluding pending matters at the date of such termination without making any charge thereof.

9. Force Majeure:

- (i) *Force majeure* as used herein means any unforeseeable and irresistible act of nature, any act of war (whether declared or not), invasion, revolution, insurrection, terrorism, or any other acts of a similar nature or force, *provided that* such acts arise from causes beyond the control and without the fault or negligence of the Consultant
- (ii) In the event of and as soon as possible after the occurrence of any cause constituting *force majeure*, the affected Party shall give notice and full particulars in writing to the other Party, of such occurrence or cause if the affected Party is thereby rendered unable, wholly or in part, to perform its obligations and meet its responsibilities under the Contract. The affected Party shall also notify the other Party of any other changes in condition or the

occurrence of any event which interferes or threatens to interfere with its performance of the Contract. Not more than fifteen (15) days following the provision of such notice of *force majeure* or other changes in condition or occurrence, the affected Party shall also submit a statement to the other Party of estimated expenditures that will likely be incurred for the duration of the change in condition or the event of *force majeure*.

- (iii) On receipt of the notice or notices required hereunder, the Party not affected by the occurrence of a cause constituting *force majeure* shall take such action as it reasonably considers to be appropriate or necessary in the circumstances, including the granting to the affected Party of a reasonable extension of time in which to perform any obligations under the Contract.
- (iv) If the Consultant is rendered unable, wholly or in part, by reason of *force majeure* to perform its obligations and meet its responsibilities under the Contract, the Foundation shall have the right to suspend or terminate the Contract on the same terms and conditions as are provided for in this Contract.

10. Both the Foundation and the Consultant fully and freely intend to create an independent Contractor relationship under this Contract. Nothing herein shall be deemed to establish a partnership, joint venture, association or employment relationship between the parties. Both parties agree that the consultant has the right to sole and exclusive control over the manner and means employed in performing their activities under this Contract.

11. Settlement of disputes:

- (i) The Parties shall use their best efforts to amicably settle any dispute, controversy, or claim arising out of the Contract or the breach, termination, or invalidity thereof.

Any dispute, controversy, or claim between the Parties arising out of the Contract or the breach, termination, or invalidity thereof, unless settled amicably, within sixty (60) days after receipt by one Party of the other Party's written request for such amicable settlement, the matter shall be referred by either Party to arbitration in accordance with the Arbitration and Conciliation Act, 1996. The venue of the arbitration shall be at Bangalore. Likewise, the jurisdiction will vest with courts in Bangalore.
