



Terms of Reference (TOR)

For provision of services related to the development of regional solar energy qualification frameworks and curricula in ECOWAS, EAC and the Pacific Community

UNIDO Project Title

Structuring of an International Network of Solar Technology and Application Resource Centres
(UNIDO Project ID: 190370)

Date: 18 November 2022

1. INTRODUCTION

Quality infrastructure (QI) builds the credibility necessary for the creation of healthy, efficient and rapidly growing solar technology markets and ensures that expectations from investors and end-users for technology performance, durability and safety are met. Product and service quality standards are an important prerequisite for the long-term sustainability of solar markets and investments, as well as trust of consumers, suppliers and financiers. QI is also a key requirement for an inclusive energy transition, which creates local solar jobs, income and empowers domestic companies to participate in global or regional value chains of solar manufacturing and servicing.

In the growing markets of developing countries, assurance of product quality is crucial for all components and throughout the value chain of solar photovoltaic (PV) and solar thermal heating and cooling (SHC) systems. Particular challenges in least developed countries (LDCs) and small island developing states (SIDS) arise also due to the lack of qualification, know-how and experience regarding quality installations. A study by TÜV Rheinland identified that, throughout the world, installation faults were the cause of more than 50% of serious defects in PV plants.

Incorrect installation, often due to minor errors such as loose screws or incorrectly inserted connectors, can thus have devastating effects on plant performance and financial returns. Also the installation of SHC systems requires solid knowledge and can result in complete failure of the system if carried out incorrectly. A number of countries had negative experiences with solar thermal water heaters. There is need to invest in reliable and specialised qualification and certification schemes targeting various enablers of the solar value chains, including consumers. The availability of training institutes and curricula, which meet the needs of the solar energy market and minimum standards are integral part of national QI.

However, particularly in LDCs and SIDS, the qualification frameworks (QF) for PV and SHC are often weakly developed and there is a lack of institutions providing quality curricula and training tailored to the various needs of experts working along the solar energy value chain (e.g. planners, installers, plumbers, financiers, policy makers regulators, consumers). It is common that in SIDS, experts need to go to other islands or regional universities (such as the University of South Pacific) to receive academic training on renewable energy. The area of solar energy qualification remains often uncoordinated between countries and leads to duplication of efforts or gaps.

Therefore, there is a strong added value to address the challenge of solar energy qualification regionally and in a harmonised manner. The example of the European Union has demonstrated that harmonised regional qualification frameworks (RQF) can be a facilitator for cross-border solar energy learning, business and quality services. They contribute to the comparability, quality, and transparency of qualifications and facilitate the recognition of diplomas and certificates. This also

applies for most regional economic communities (RECs) in Africa, which have started to address the issues through regional harmonisation of qualification and certification standards.

Qualification bodies within the targeted regions include the African Continental Qualifications Framework (ACQF) accounting for the EAC and ECOWAS while in the Pacific Qualification Framework covers SPC. Several countries within these regions have an already existing National Qualification Frameworks (NQFs), thus the development of a RQF will in its initial stage serve as a meta-framework, and its related policies, and operational procedures will be informed by global best practices from regions with advanced qualification frameworks.

Regarding certification, multiple schemes to create a qualified solar workforce do exist in the three regions with the varying success of integration and recognition. Each certification scheme usually aims to accelerate solar energy deployment regionally by creating a regional standard certification for solar developers, installers and technicians. Regional certification schemes for solar PV and SHC systems have been planned and, in some cases, rolled out in the ECOWAS, EAC, and SPC regions. No substantial information is available concerning the outcomes, sustainability, and continuation of these certification programs.

A harmonization of certification schemes has a direct impact on regional solar skills developed. It ensures quality training is delivered to professionals capable of the preparation, implementation, operation, and maintenance of solar energy. Certifications are linked to solar skills and solar products. In terms of solar products certification, the IEA and ISO have worked extensively to develop internationally acceptable certification standards. This certification relates to how solar product testing must be conducted. While for solar services studies reveals that a lack of solar skills accounts for approximately fifty percent of defects in PV systems globally, hence reemphasizing the need for advanced training and certification.

2. OBJECTIVE OF THE STAR C PROJECT

To address these constraints the United Nations Industrial Development Organization (UNIDO) and the International Solar Alliance (ISA), with funding of the Government of France, are implementing the project “Structuring of an International Network of Solar Technology and Application Resource Centres”. The overall objective is to create a strong network of institutional capacities within ISA Member States to enhance qualification and certification frameworks of solar energy product and service markets, particularly in LDCs and SIDS.

The first phase of the STAR C project will focus on the Economic Community of West African States ([ECOWAS](#)), the East African Community ([EAC](#)) and the Pacific Community ([SPC](#))/Pacific Island Forum ([PIF](#)). To have more impact and to create economies of scale, the STAR C has adopted a regional approach, which aims at cross-border harmonisation of solar qualification frameworks.

Previous interventions of UNIDO on QI and qualification programmes within the regions have demonstrated the added value and benefits of regional approaches. In this context, UNIDO has supported several economic communities, including ECOWAS, EAC and SPC, in the establishment of QF and certification policies, procedures, and development of solar skills within the regional energy centres under the Global Network of Regional Sustainable Energy Centres ([GN-SEC](#)) program. The STAR C is part of the south-south and triangular activities of the centres under the GN-SEC platform. The STAR C implementation will benefit the established institutional infrastructure and lessons learned from these interventions.

The STAR C project builds a strong partnership with the GN-SEC centres and regional QF bodies and their national focal institutions (e.g. energy ministries and national standardisation bodies). [ECREEE](#) in Cape Verde, [EACREEE](#) in Uganda and [PCREEE](#) in Tonga are already involved to some extent in regional solar qualification and certification programs with the involvement of training institutions, ministries in the respective region.

Table 1 highlights some already existing training and certification schemes within the regions.

Table 1: List of Proactive Training Instructions, Programmes or Initiatives in Targeted Regions¹

Training Institute or Program Implementers	Region	Activities/Technology focused	Frequency
RES4africa , (Initiatives focused on East Africa and Sahel)	East Africa	All Solar technologies and other RETs Efforts to establish a regional solar academy	Quarterly
Strathmore University (Energy Research Centre), Kenya	East Africa	Top-notch energy training programs offered in all RETs, partners with Enel	Bi-yearly Solar training organized special programmes upon request
2IE Burkina WASCAL , West Africa Green Solar Academy , Ghana ECREEE ²	West Africa	Solar mini-grids, Solar Thermal, Flex-energy hybrids, regional scheme and trainings for solar PV installations, regional trainings on PV stand-alone equipment	Conduct training periodically and in Cohorts
PCREEE, University of the South Pacific (USP), Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) and the Pacific Power Association (PPA), ³ UNIDO online training on sustainable energy solutions for islands ⁴	Pacific	Solar HS in Vanuatu , Tonga, Certified solar training of the Pacific Technical and Vocational Education and Training (PacTVET) and the Educational Quality and Assessment Programme (EQAP) ⁵	Periodically

The three regions have attained varying progress in terms of qualifications and certification schemes. As an outcome, the establishment of a trusted QF which facilitates certification will help to create a level playing field for solar energy professionals in the regions to compete, mover and work within regions. Regional cooperation may decide to designate regional bodies with mandates related accreditation and certification and convene intergovernmental directives. There can also be arrangements for the supporting a regional training and certification centre. Such initiatives can assist countries to cost-effectively and sustainably address their needs related to qualification frameworks.

3. SPECIFIC ISSUES ADDRESSED BY THE ASSIGNMENT

In this context, UNIDO and ISA are seeking international advisory support for the development of regional certification and qualification frameworks to strengthen the regional integration and mobility of solar professionals within ECOWAS, EAC, and the Pacific Community. The Contractor will also support the development of a training course on solar technology. This assignment is complementary to another that focuses on the development of regional QI frameworks and management systems for solar energy products and services in the same regions. A competitive tender is being launched simultaneously. Interested bidders can participate in both procurements.

All three concerned regions are highly interested in meeting the increasing demand for solar energy professionals. The regions want to develop and strengthened (where existing) the qualification

¹ The list in the table is provided simply to guide the selected service provider without implying endorsement of/by UNIDO to an organization or the activities it conducts.

² For example, the adoption of regional standards for solar PV installations and regional training schemes

³ <https://www.ppa.org.fj/publications-2/>, published by the Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) and the Pacific Power Association (PPA)

⁴ <http://training.gn-sec.net>

⁵ <https://www.spc.int/updates/news/2018/03/newly-accredited-regional-certificates-for-resilience-and-sustainable-energy>

frameworks as a tool to interpret national qualifications. They also share significant solar potential and high interest in utility-scale, off-grid, and distributed renewable energy systems, including stand-alone, mini-grids, and solar thermal applications. They are also strengthening efforts for local sustainable energy entrepreneurship and innovation.

This assignment, will serve as the building blocks for a long-term solar qualification process to be implemented in partnership with the regional economic communities (RECs) within their Regional Qualification Frameworks (RQF) or Nation Qualification Frameworks (NQFs) committees. Due to the limited financial scope, the assignment will not include the development of new regional qualification committees but will endeavor to improve the transparency, recognition, comparability, and portability of people's qualifications throughout the region by working with RQFs in the assigned regions.

The proposed approach of the qualification and certification framework shall consider the extent of solar penetration, market maturity, training and certification within each region. Instead of creating new committees of RQFs, it would be expedient to work with already existing continental, regional or national QFs and have an integrated QFs which aligns national qualifications. This can be monitored by adopting a minimum set of requirements, based on international best available practices to establish efficient training curricula, installation guidelines, lists of accepted equipment, and certification. The eight leveled [European Qualification Framework \(EQF\)](#), ten levels New Zealand Qualification Framework (NZQF) or the African Continental Qualification Framework (ACQF) could be a model examples for designing regional frameworks to the three region's respective situation.

The regional solar energy certification and qualification frameworks will be subject to the approval of the respective economic communities, RQFs, energy ministerial and dedicated committees. These committees comprise public and private sector key stakeholders and groups. The contractor will assist in identifying relevant training institutions, private and industry experts to take part in the technical committee on solar energy.

The contractor can base its work on a previous consultancy assignment with very limited scope regarding the development of a "regional model qualification and certification framework on solar energy in various GN-SEC regions", which has been launched during the preparatory phase of the STAR C project. The assignment included also a very "rough" and "fragmented" baseline assessment of ongoing activities in the three target regions. The assignment is currently in its final stages.

Once the regional frameworks are established, UNIDO and ISA will facilitate the implementation in selected pilot countries, including Burkina Faso and Tonga. It is envisaged to extend the frameworks to other GN-SEC regions during the 2nd phase of the STAR C project.

4. SCOPE OF THE PROPOSED CONTRACTED SERVICES AND DELIVERABLES

Specifically, the scope of the assignment will include the following:

1. The contractor will undertake an assessment of solar skills, certification, and qualification frameworks in all three regions. The assignment includes the evaluation of existing QF legislation, standards, capacities and needs on national, regional and in the case of Africa also continental level. It provides key recommendations for the improvement of the existing regional framework by considering the individual maturity of the solar market and climate conditions.
2. Informed by the findings of the baseline assessments, the contractor will develop three documents on solar qualification and certification frameworks which will further guide the work of the three economic communities ECOWAS, EAC and SPC/PIF over the next years. The framework will include concrete recommendations for actions, improvement of capacities and processes, as well as PV/SHC standards suitable to be adopted on a regional level for further implementation on national level. In line with UNIDO policies, cross-cutting areas such as gender, digitalization and climate change adaption will be considered during the design of the quality frameworks. All documents are

subject to the review and approval by the respective RECs and qualification boards. The contractor will provide technical advice and insights into international best practices.

3. Moreover, based on a solar skills and trainings needs assessment, the contractor will design training materials (curricula and modules) on solar PV and SHC to facilitate training in the respective regions, and deliver accompanying user-friendly guidelines. The contractor shall develop these training materials considering the unique situations in each region. For example, climate consideration of typhoons, tsunamis, and other mild natural occurring disasters in the Pacific region while desertification, Sahelian windstorms, and dust surfacing of solar panels, solar collectors or other essential parts of the solar PV/thermal systems should account for and guidelines prepared on a regional approach. *Annex 1*, proposes recommendations of designed curricula modules in line with the approved project document. It is envisaged that the model training curricular will be adopted by various institutions in the three STAR C regions.
4. Finally, the contractor will provide training on solar photovoltaic and solar thermal qualification and certification schemes in all three regions by online means (or physical if feasible). The contractor will also propose a RQF within each region and work with regional bodies for its adoption or harmonization. UNIDO will be able to facilitate the online platform as required.

To achieve activities international bidders are encouraged to cooperate with local partners (preferably training or research institutes, academia, and companies) with a reputation and demonstrated experience in conducting training activities on solar photovoltaics and solar thermal. Contractors with experience in developing curricula on solar energy technologies will have a comparative advantage.

The direct beneficiaries of the assignment are the RECs, RQF bodies, training institutions at regional and national level. The final beneficiaries are the pool of certified energy professionals having job mobility opportunities due to the harmonized valuation of their certificate. Key stakeholders of the energy and power sector, ministries, rural electrification agencies, regulators and financiers will also benefit from the increased mobility and professional development within regions.

The assignment has a duration of 12 months after effectiveness of the contract. Since the assignment builds strongly on existing QA processes in the respective regions, the contractor needs to demonstrate flexibility regarding the provision of services. There might be longer breaks due to multi-country review processes of documents or rescheduling of meetings. The detailed scope of work is described in the table below.

Table 2: Tasks, Deliverables and Payment Schedule

Tasks/Activities	Deliverables	Tentative Working Days	Location	Tentative Payment Schedule
<p>1. Inception meeting and work plan validation</p> <p>The contractor will provide an inception report, incl. detailed work-time diagram, applied methodology, list of key literature, stakeholders, schedule of consultations, indicative tables of content for the assessment report and regional frameworks. The inception report and commencement of the assignment requires approval by UNIDO and ISA. At least two online inception meetings will be required, which will include also the participation of the concerned GN-SEC centers</p>	<p>Deliverables:</p> <ul style="list-style-type: none"> ▪ Inception report incl. detailed activity plan, time schedule, list of key literature, applied methodologies, schedule of stakeholder consultations, indicative tables of content of assessment report, qualification frameworks, and curricula in English; French is required for ECOWAS reports. 	5 WDs	Virtual	20% upon approval of inception report/work plan
<p>2. Assessment report on qualification and certification frameworks and needs</p> <p>The contractor is expected to:</p> <ol style="list-style-type: none"> a. Asses the existing PV and SHC certification and qualification frameworks ECOWAS, EAC and SPC by using the well-established international Qualification framework and methodologies; assess existing regulations, actors, capacities on national, regional and in the case of Africa continental level; and identify gaps; the assessment will provide recommendations for the potential design of an effective solar QF framework based on best practice. b. The work requires extensive review of QF publications and technical documents of continental, regional and national qualification frameworks and certification including key stakeholders of the energy sector. An online survey and interviews with key Qualification and certification players in the GN-SEC regions are envisaged, it will be facilitated by UNIDO, ISA and the GN-SEC centers. 	<p>Deliverables:</p> <ul style="list-style-type: none"> ▪ Designed online survey with key solar QA questions. ▪ Analytical report of max. 50 A4 pages, excl. annexes. This document will be provided by the contractor fully edited, designed (incl. graphs) and ready to be published in English; An executive summary shall be provided in English and French. The documents are subject to several rounds of quality reviews and feedback loops 	15 WDs	Home based and international travel as required	40% upon approval of the tangible deliverables

<p>c. The analysis of the assessment shall include local best practice conformity checks. The analysis needs to take into account the different climate and market maturity conditions for solar energy, as well as well as traditional linkages to international QF practice</p> <p>d. The assessments shall provide an overview on contacts of key players involved in the solar RQF and processes on national, regional and in the case of Africa also continental level. It shall also highlight suitable centers, universities, training institutes, building solar skills each region;</p>				
<p>3. Development of curricula and training modules</p> <p>a. Assess solar PV and SHC skills and training needs, covering MV&E mechanisms implemented for solar technology curricula and training</p> <p>b. Identifying suitable training centres /institutes to host the STAR C center in each region considering accessibility, convenience, and associated costs of the identified sites. Provide “partnership” reports on accredited training institutes, evaluating historic trend of training delivered and success rates, and laying out partnership approaches for ISA and UNIDO.</p> <p>c. Design a solar curricula module, and training sessions for the for ECOWAS, EAC and SPC/PIF based on need assessment recommendations</p> <p>d. Develop specific online solar technologies curricula with modules on PV and SHC that are tailored to the conditions the regions (see Annex 1 within TOR) for further details on proposed content of the solar modules. Design necessary tools and teaching aids to assist in training delivery</p> <p>e. Conduct at least one practical training session(s) in each region (general curricula) and in the targeted pilot countries (PV and thermal)</p> <p>f. The curricula shall also include a check-list which can be applied by</p>	<p>Deliverables:</p> <ul style="list-style-type: none"> ▪ A 30 A4 pages detailed report covering assessment of solar skills, an engagement strategy on existing regional solar competency trainings, ▪ Development of solar modules online and in-person delivery ▪ Checklist to asses the quality of solar energy curricula ▪ The documents will be provided by the contractor fully edited, designed (incl. graphs) and ready to be published in English; An executive summary shall be provided in English and French. The documents are subject to several rounds of quality reviews and feedback loops, 	<p>20 WDs</p>	<p>Home based and international travel as required)</p>	

<p>Governments to assess the quality of solar PV and SHC curricula on national level</p>	<p>which might take some time.</p>			
<p>4. Three (3) regional solar PV and SHC qualification and certification frameworks for ECOWAS, EAC, and PIF/SPC</p> <ul style="list-style-type: none"> ▪ Based on the baseline findings and in line with international QF and Certification practice, the contractor will develop three documents on the regional solar certification and qualification frameworks, which will further guide the work of the three economic communities ECOWAS, EAC and SPC/PIF over the next years. ▪ The contractor will develop concrete recommendations for solar qualification and certification actions, improvement of capacities and processes, including the regional adoption for further implementation on national levels. ▪ In consultation with the relevant regional bodies, the contractor will draw up clear roadmaps for 	<p><i>Deliverables:</i></p> <ul style="list-style-type: none"> ▪ Three documents on regional Certification & Qualification frameworks for ECOWAS, EAC and SPC/PIF are available and validated. The documents will be provided by the contractor fully edited, designed (incl. graphs) and ready to be published in English; an executive summary shall be provided in English and French. The documents are subject to several rounds of quality 	<p>30 WDs</p>	<p>Home based</p>	<p>40% upon approval of the provided assessment report</p>

<p>regional solar qualification and certification processes, including governance, and enforcement, and information dissemination on national level.</p> <ul style="list-style-type: none"> ▪ The contractor will consider cross-cutting areas such as gender, digitalisation and climate change adaption in the design of the quality frameworks. 	<p>reviews and feedback loops, which might take some times.</p>			
<p>5. Three (3) Capacity building training on Qualification and Certification Frameworks</p> <ol style="list-style-type: none"> a. Plan and deliver workshops on key aspects of, and raising awareness for RQFs. b. Partner with local institutions, conducting the following training in the regions: c. Train educators, and permanent trainers in each center that ensure sustainability of the training programs d. Train at least 100 experts in each region e. Form a network of solar professionals in the regions, and pilot countries (considering marker enablers) f. Clarification of the roles, and actions required of involved stakeholders. <p>Partner with a local institution, university, VTIs, or companies to conduct training for solar PV and solar thermal installers</p>	<p>Deliverables:</p> <ul style="list-style-type: none"> ▪ Training manual and reports provided fully edited and designed to UNIDO in English ▪ A list of participants and certificates. ▪ Results and feedback survey undertaken after the training; 	<p>20 WDs</p>	<p>Home based and international travel as required</p>	<p>40% upon receipt and approval of report and documents</p>
<p>6. Stakeholders' consultation</p> <p>This assignment require extensive stakeholder's consultation with QF bodies conducting regional certification or delivering competency training schemes for solar photovoltaics. It also requires the participation in online meetings and the presentation of results of the assignment to relevant committees, including the project steering committee. The assignment includes at least one international travel to the respective regions for data collection or execution of trainings. The costs for flights and per diem shall be covered by the contractor through its provided budget. In case travel is not possible due to a pandemic or not required, UNIDO</p>	<p>Deliverables:</p> <ul style="list-style-type: none"> ▪ Mission reports ▪ Evidence on Stakeholder consultations 	<p>10 WDs</p>	<p>Home based and international travel as required</p>	

and the contractor can earmark the time and resources on other capacity-building activities.				
Total		100 w/d		100%

In addition, the contractor will be required to deliver the following:

All used raw files and sheets in editable form (e.g. xls). UNIDO will receive the editable design documents including the translated versions. This will allow UNIDO to incorporate future changes. UNIDO will receive also high-resolution photographs in electronic form showcasing relevant meetings with stakeholders, energy infrastructure, or project sites.

5. GENERAL TIME SCHEDULE

The activities under this contract shall be completed within a period of twelve (12) months from the effectiveness of the contract. The proposed plan for implementation of activities and deliverables:

Table 3: Deliverables Time Distribution

Deliverables	Months												
	1	2	3	4	5	6	7	8	9	10	11	12	
Deliverable 1: Inception report, including annexes													
Deliverable 2: Assessment report on Certification and Qualification Framework needs													
Deliverable 3: Development of Curricula and training modules													
Deliverable 4: Three (3) regional solar qualification and certification frameworks for ECOWAS, EAC and PIF/SPC													
Deliverable 5: Three (3) Capacity building training on qualification and certification frameworks													
Deliverable 6: Stakeholder Consultation and participation of Qualification and Certification committee.													

6. COORDINATION AND REPORTING

The contractor will report to the UNIDO Project Manager (GN-SEC Coordinator) and his team in the UNIDO Headquarters (Vienna) and will closely coordinate with ISA, EAREEE, ECREEE, PCREEE and regional QI institutions and committees as required. The assignment will include monthly meetings with the UNIDO/ISA team and the GN-SEC centres.

The contractor will be assisted by ECREEE, EACREEE and PCREEE in the convening of relevant meetings/workshops, dissemination of surveys and will take care of the regional quality assurance processes and approvals. The STAR C project includes the recruitment of local part-time experts in the three centres.

From time to time the contractor will join the meetings of the project steering committee (PSC) and report on major findings of their assignment. The PSC comprises of relevant partners, national and international stakeholders. By this opportunity, the contractor will strengthen the expertise of the PSC

to guarantee the participation of industry, professional associations, government, trade union, and other stakeholders. The assignment requires close cooperation and coordination with regional training institutions, academia, regulators, customs and relevant standard bodies.

7. PERSONNEL IN THE FIELD

The presence of personnel in the assigned regions ECOWAS, EAC and SPC is not mandatory for this assignment, but will be considered an advantage. Nevertheless, the bidders are encouraged to partner with already established local organizations.

8. LANGUAGE REQUIREMENTS

The working language for this assignment will be English. Fluency in French of at least one team member is mandatory. Many qualification and training modules might also be available only in French.

9. AVAILABLE BUDGET

The available all-inclusive budget for this assignment is Euro 120,000.00 (incl. all taxes and travel costs).

10. EVALUATION AND QUALIFICATION CRITERIA

Received proposals need to comply with and will be evaluated according to the following criteria:

Table 4: Minimum Qualification and Technical Evaluation Criteria

MINIMUM QUALIFICATION REQUIREMENTS		VALUE	SCORE
MANDATORY			
1	Registered company, training institution or university as a legal entity with at least seven (7) years of public and private consulting experience on key aspects of qualification frameworks, designing training modules on renewable energy technologies. (Please provide a copy of the Certificate of Incorporation).	Yes	qualify
		No	does not qualify
2	Immediate availability of the contractor; ability to implement the assignment despite the COVID-19 travel restrictions;	Yes	qualify
		No	does not qualify
3	Financial Strength of the company. Please provide the completed and signed <u>UNIDO Financial Statement Form</u> . Profitability Profit Margin Ratio or Return on Assets Ratio should be preferably positive. Solvency A solvency ratio should be preferably more than one (1). In case of negative profit margin ratio or solvency, UNIDO may request additional documents and/or adapt payment terms and conditions. Turnover The average annual turnover for the past three (3) years (or for the period of time the bidder has been in business, if it has not yet reached three (3) years) should be at least 1 time more than anticipated value of the contract.	Yes	qualify
		No	does not qualify
4	Completed and signed Statement of Confirmation.	Yes	qualify
		No	does not qualify

5	Completeness of the technical and financial offer (e.g. CVs, track-record of previous assignments/projects, legal and financial documents, all-in price including all taxes).	Yes	qualify
		No	does not
TECHNICAL EVALUATION CRITERIA		VALUE	SCORE
1	Quality of the overall technical offer and efficiency of the proposed team set-up and execution modality; technical offers shall reflect the analytical capacity of the project team and avoid just a repetition of the text in the TOR.	good	20%
		regular	10%
		poor	0%
2	More than fifteen (15) years of accumulated work experience of the project team and quality track-record of assignments and work experience in delivering training and drafting certification and qualification training for solar energy technology issues, including in Sub Sahara Africa; at least one team member needs to have working knowledge in French. The Team Leader holds at least a master's degree in relevant academic field and demonstrates at least ten (10) years of consulting/advisory experience of training certification, and qualification within renewable energy sector; the Team Leader needs to demonstrate relevant experience with similar complex assignments in developing countries. The work-time diagram reflects substantial Team Leader involvement.	good	20%
		regular	10%
		poor	0%
3	At least three (3) years of work experience and provided track-record of the project team regarding training, curricula development, qualification and certification on solar energy technologies.	good	15%
		regular	5%
		poor	0%
4	The bidder offers two (2) samples quality curriculum on solar photovoltaics and solar thermal heating and cooling, which can be easily adapted for the assignment and meets international standards; the curricula includes the provided aspects in Annex.	good	15%
		regular	5%
		poor	0%
5	Five (5) years minimum provided track-record regarding conducted trainings on solar photovoltaics and solar thermal heating and cooling.	good	15%
		regular	5%
		poor	0%
6	At least three (3) years of relevant work experience in Sub-Saharan Africa and/or Pacific Islands countries; employment of local experts from/in both regions is a comparative advantage.	good	15%
		regular	5%
		poor	0%
MAXIMUM SCORE			100%

In accordance with UNIDO procurement rules the technical acceptable bid with the lowest (**all-inclusive**) price will be awarded. Only technical proposals with a quality score of 70% or more will qualify. UNIDO reserves the right to request additional information from bidders if necessary.

11. APPLICATION PROCEDURE

Interested and qualified bidders shall submit their written proposals in English:

- **Technical Proposal** (including proposed approach and methodology, work and activity plan, detailed CVs of experts, copies of university degrees, certifications, licenses as well as a proven track record of implemented translation assignments);
- **Financial Proposal** in EUR including all costs and taxes; offers include a work-time diagram indicating the rates of the different experts; offers without clearly stating the all-in price will be rejected; the offer shall indicate the price per translated page;
- Documents demonstrating the quality of the track-record of the team with regard to previous assignments, curricula developed, training delivered and other supporting documents.

Bidders are requested to submit their proposals by registering on the UNIDO e-procurement portal (<https://procurement.unido.org/>). In case of difficulties, please contact the UNIDO Help Desk at procurement@unido.org.

12. FURTHER INFORMATION

- www.gn-sec.net
- <https://open.unido.org/projects/M0/projects/190370>
- <https://isolaralliance.org>
- <https://training.gn-sec.net>
- www.ecreee.org
- www.pcreee.org
- www.eacree.org

Annex 1: Solar technologies curricula and the modules under thematic clusters

Solar PV Technology	Solar thermal technologies with special focus on Solar Heat for Industrial Processes (SHIP)
a) Introduction to solar PV technology: basic concepts and applications (e.g., solar resource functionality of PV technology, inverters operation, converters, storage systems, Solar Home Systems, mini-grids, hybrid mini-grids, large scale projects, standards, etc.) and electrical security	a) Introduction to SHIP technologies and system: non-concentrating and concentrating collectors linked to necessary system components as storage, field hydraulics, heat exchangers, piping, etc.
b) Energy planning: PVsyst, PVsol, HOMER Energy, Retscreen, oemof python-library (Open Energy Modelling Framework) for design and optimizations of off-grid and grid-connected projects (e.g. mini-grids, hybrid mini-grids, distributed generation, etc.)	b) Introduction to integration concepts of SHIP on process and supply level; identifying and evaluation the most feasible temperature levels (linked to solar technologies), processes and existing supply systems (demand), complete and partly coverage, assessment of SHIP system performance based on most influencing parameters
c) Data collection for energy planning: demand identification and characterization by the application of open software (e.g. ODK – Open data kit)	c) Industrial demand assessment: evaluating the energy system status quo, identifying optimization potentials on supply and demand level as well excess (waste) heat recovery as basis for SHIP design
d) Data treatment for energy planning: demand forecasting by application of private and/or open softwares, such as Matlab, R, eviews.	d) SHIP design methodology: identification of integration points, energy audit as basis for demand assessment, load profile definition, pre-design and basic design, system optimisation based on yearly simulation, storage integration, feasibility studies and assessment (economic, technical, ecologic)
e) Technical quality assurance: Application and compliance of international standards to ensure safety and technical quality of the technology for off-grid and grid connected projects under the IEC 62257 series: “Recommendations for Renewable Energy and Hybrid Systems for Rural Electrification” and its updated standards.	e) Application of simulation and support tools as Polysun, T*sol, open-source tools and others, linking to weather data as Meteonorm and others
f) Applications for productive purposes:, solar pumping to phase out utilization of diesel gensets, solar cooling, solar powered workshops, grinding, milling etc.	f) Data analysis for energy planning: demand forecasting by application of private and/or open-source software, such as Matlab
g) Overview of the current regulation and electric market	g) Technical quality of SHIP system design and operation based on necessary steps in pre- feasibility study (e.g. EN16247, ISO 50001) as operation, monitoring and optimization of the system
h) Business models for sustainability of projects and entrepreneurship: Microfranchises, Public Private Partnerships for Development, Energy Services Companies, Cooperatives, and Pay as you Go.	h) Economic and financial project assessment and project development including forms of financing, business models for sustainability of projects and entrepreneurship: Microfranchises, Public Private Partnerships for Development, Energy Services Companies, Cooperatives, and Performance-Based Contracting
i) Field training: installations, commissioning, operation and maintenance, troubleshooting as applicable.	i) Field training: commissioning, operation, maintenance, monitoring and optimisation as applicable.
j) Management: financing, tariffs, taxes, business models, green procurement, promoting sustainability.	j) Management: bankable proposal, financing, tariffs, taxes and management, green procurements.
k) Development of Detail Project Reports: Introduce quality formats for development of DPRs for accessing finance.	k) Development of Detail Project Reports: Introduce quality formats for development of DPRs for accessing finance.
l) Financing: The kind of low-cost financing available in the region and introduce how financial institutions assess the economic viability of a solar project for financing.	l) Financing: The kind of low-cost financing available in the region and introduce how financial institutions assess the economic viability of a solar thermal project for financing.