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INDUSTRIAL DEVELOPMENT ORGANIZATION



Terms of Reference
13 May 2024

For the Provision of Services for the Design and Development of a web-based Sustainable Energy Knowledge Hub for CEREEAC

UNIDO Project: First operational phase of the Centre for Renewable Energy and Energy Efficiency for Central Africa

Project ID No.: 200138, Grant No. 2000005190

Project Area: The member countries of the Economic Community of Central African States (ECCAS)¹

This assignment is financially supported by the European Union (EU)²



¹ They are represented (in alphabetical order) by: Angola, Burundi, Cameroon, Central African Republic (CAR), Chad, Democratic Republic of the Congo (DRC), Equatorial Guinea, Gabon, Republic of the Congo (RoC), Rwanda and São Tomé and Príncipe (STP).

² The EU is financing the preparation of this work under the Action Plan (entitled in French): « *Programme d'appui aux organisations spécialisées de la CEEAC pour l'opérationnalisation du marché régional et le développement des énergies renouvelables* ».



1. Introduction

Under the Global Network of Regional Sustainable Energy Centres ([GN-SEC](#)) program, UNIDO supports the Economic Community of Central African States (ECCAS) in the establishment of the Centre for Renewable Energy and Energy Efficiency for Central Africa ([CEREEAC](#)), which aims to accelerate the energy and climate transition by providing support “from the region for the region”. The geographic scope of the centre includes Angola, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Equatorial Guinea, Gabon, Republic of the Congo, Rwanda and São Tomé and Príncipe.

The technical and institutional design of the CEREEAC (hereinafter referred to as the “Centre”) is the result of a comprehensive consultative preparatory process, which was undertaken by UNIDO and ECCAS between 2020 and 2021. The centre was adopted by the Energy Ministers on 8 June 2021 and formally established by Decision No. 04/CEEAC/CCEG/XIX/21 of the 19th Conference of Heads of State and Government held on 30 July 2021 in Brazzaville. Following a competitive selection process, Luanda, Angola was designated as the host location of the CEREEAC Secretariat.

The centre received full legal identity with all rights and privileges upon the signature of the host country agreement between ECCAS and the Government of Angola on 3 November 2021. The centre was officially inaugurated on 10 March 2023 during a high-level ceremony, co-organised by the Government of Angola, ECCAS and UNIDO. The Start-Up Unit of CEREEAC has officially been established and operational at the centre’s premises since June 2023. The Start-Up Unit and the CEREEAC Secretariat streamline their operations through a network of National Focal Institutions (NFIs) and Thematic Hubs (THs) among all ECCAS countries. Among the identified THs, there is the Oyo Centre of Excellence for Renewable Energy and Energy Efficiency (CEO), located in the Republic of the Congo. The CEREEAC management operates under the guidance and oversight of a Ministerial Steering Committee and an Executive Board.

The CEREEAC aims to address demand and supply-side barriers for integrated and inclusive ECCAS sustainable energy product and service markets by promoting economies of scales, equal progress, joint learning and positive spillover effects between countries. Through cross-border approaches and methodologies, the centres will complement and accelerate national efforts in the areas of policy, regulation, quality infrastructure, qualification, knowledge and facilitation of investment and entrepreneurship. It will serve as a central hub for knowledge, counselling, as well as international and local partnerships.

The creation of the CEREEAC is an important contribution to the envisaged structural transformation in Central Africa. Global emergencies, such as climate change, the economic crisis and frequent oil price fluctuations are demonstrating the vulnerability of Central African countries, which are highly dependent on the export of raw materials, including oil and gas. The shift towards renewable energy and resource efficiency, as well as circular economy practices is an important prerequisite for the success of economic diversification, industrialisation, and climate actions. The expansion of higher added value manufacturing and servicing in Central Africa requires rapid investments in climate-resilient low-carbon energy infrastructure.

With the creation of the CEREEAC, the GN-SEC covers the entire African continent. CEREEAC is an important triangular capacity hub to accelerate the implementation of the industrialisation, energy and climate goals in the African Union (AU) Agenda 2063 “The Africa We want”. It contributes to the AU efforts to establish a harmonised continental electricity market and free trade area, as well as the implementation of the Third Industrial Development Decade for Africa (2016–2025). UNIDO will facilitate south-south and triangular cooperation between CEREEAC and the other African centres, including RCREEE (Egypt), ECREEE (Cape Verde), SACREEE (Namibia) and EACREEE (Kampala) on common energy issues and solutions.



From the very beginning, CEREEAC will operate according to local rules and within the ECCAS ownership and decision-making processes. UNIDO provides mentoring and technical services related to institution-building, technical program development, partnership building and fund mobilisation throughout the first operational phase of the centre. It is envisaged that the centre reaches full independence and financial and technical sustainability by the end of the project period. Currently, the centre is building up its technical and administrative staff capacities. The centre has started with a small, multicultural Start-Up Unit comprising technical and administrative experts. The Unit is expected to become gender-balanced and expand, depending on its performance and raised programmatic funding.

2. Background and objective of the required services

In order to boost knowledge management, networking, advocacy and strengthening of capacities on renewable energy and energy efficiency (RE and EE) in the ECCAS region, CEREEAC is proposing the establishment of a web-based Energy Community Portal for Renewable Energy and Energy Efficiency; otherwise known as the CEREEAC Sustainable Energy Knowledge Hub (SEKH). The development of the CEREEAC SEKH will be financially supported from the European Union (EU) under the action titled “Support Programme for ECCAS specialized organizations for the operationalization of the regional market and development of renewable energies”. This action aims to foster the establishment of a regional electricity market in Central Africa by developing the regional market and increasing the share of renewable energies in the energy mix, to contribute to greenhouse gas emissions reduction. Similar GIS based knowledge hubs were established under the GN-SEC by ECREEE, CCREEE, SACREEE and REEECH with varying scope and quality.

The CEREEAC SEKH is expected to address the existing knowledge and information barriers for RE and EE investments in the ECCAS region. The non-availability of reliable and updated energy information creates a major constraint for, among others, investors, project developers and decision makers in the sector. The existing country data is in most cases not updated and comparable with data of neighbouring countries. Different systems, resource maps exist with various models and data sources. This often becomes a challenge for investors and companies to identify cooperation partners due to the absence of specialised interactive platforms that facilitate exchanges of information and experiences. Information on good practices or successful (or even unsuccessful) projects is not readily available for decision makers and experts. Given this situation, significant opportunities are lost for sustainable energy development in the region.

The SEKH will contain and profile updated RE&EE market information / data on resources, geographic information system (GIS) maps, national policies, projects, financial and procurement notices in the ECCAS region. The Hub will support decision makers, project developers, investors and other market enablers with country level and region-wide information, data and planning strategies. The outputs and deliverables of all projects and programmes implemented by CEREEAC will be disseminated through the Hub.

Within the context of this project, CEREEAC is seeking the services of a qualified company to (i) restructure and up-grade the current CEREEAC website to an interactive community platform, and (ii) design and develop an integrated web-based CEREEAC SEKH portal and link it to the CEREEAC website. Further information on CEREEAC can be found at: <http://www.cereec.org>.

3. Scope of the contracted services and deliverables

The objective of the SEKH assignment is to upgrade the existing CEREEAC website (based on Drupal) to a visually appealing, easy to navigate and user-friendly comprehensive SEKH portal, adding a GIS based regional energy information system in line with international best practice and by allowing open-data exchange with other portals, including the ones under the GN-SEC umbrella (e.g. WB, ESMAP, UN and IRENA open data portals). This platform will provide targeted and timely statistical



information, country data and GIS map layers on relevant energy indicators, resources, infrastructure, projects and stakeholders (particularly but not exclusively in the field of RE and EE) in Central Africa. As part of the system, each ECCAS country will have its own page with key indicators and relevant information, also linked to documents in the CEREEAC library. The database system will allow the downloading of data, the launch of queries and will open up avenues for more complex analytics in a second step. Moreover, the system should be connected and allow data exchange with other portals under the GN-SEC. The SEKH is based on a CMS and GIS system, which can be operated fully independently by CEREEAC after handover.

Deliverable 1:

- An inception report in French and English (incl. a detailed work plan, execution methodology list of documents to be reviewed, interviews and meetings to be held).

Deliverable 2:

- A development and implementation report in French and English, including the conceptual design of the SEKH (content, modules / components, screen-design and technical specifications), to be reviewed and validated by the CEREEAC Technical team and UNIDO.

Deliverable 3:

- A final report about the development of the CEREEAC SEKH, including all the electronic data and documents in French and English. The service provider should also include guidance note on the annual running of technical maintenance services.

Proposed Development Stages & Tasks	Deliverables	Indicative Timeline & Expected Working Days	Tentative Payment Schedule
<p>Stage 1: Inception report and work plan</p> <p>a) Kick-off / inception meeting to agree on the implementation modalities and list of requirements in the inception report and time schedule.</p> <p>b) After the project is launched, the contractor will provide a list and format of necessary materials needed. UNIDO and CEREEAC will ensure the smooth implementation and overall coordination of the project.</p>	<ul style="list-style-type: none"> • An inception report in French and English (incl. a detailed work plan, execution methodology list of documents to be reviewed, interviews and meetings to be held, as well as the list and format of necessary materials needed). 	<p>Within three weeks from the contract signature</p> <p>– (Estimated 5 working days within the three weeks period)</p>	20%
<p>Stage 2: Creation of the data and indicator frameworks and conceptual design of the SEKH</p>	<ul style="list-style-type: none"> • Analysis on the scope of data and information 	<p>Within three months from the contract signature</p>	



<p>platform (content, modules / components, screen-design and technical specifications)</p> <p>The following phase will be undertaken in close partnership with the CEREEAC and Oyo staff. It includes the following steps:</p> <ul style="list-style-type: none"> • Analysis on the scope of data and information to be displayed on the platform in the best case. By this opportunity analyse and present existing best practice systems. • Development of the general data framework and a list of socio-economic, energy, renewable energy and energy efficiency indicators to be displayed on the system. • Analysis how the envisaged data will be displayed within the system, including through the GIS modules and layers. • Reality-check, which data is available and/or can be collected during the assignment through CEREEAC and the Oyo staff, and what is available by open data in other systems (e.g. ESMAP, IRENA); this includes also an analysis for which items geo-referenced layers are available; • Develop policies on the use, access, and security of the data. • The consultant will work with the CEREEAC and Oyo teams in putting together the available energy data and analyze it for publishing as a Link Open Data (LOD). 	<ul style="list-style-type: none"> • Data framework and a list of socio-economic, energy, renewable energy and energy efficiency indicators • Analysis how the envisaged data will be displayed • Reality-check, which data is available and/or can be collected during the assignment • Development and implementation report linked to Stage 3 of the assignment, available in both French and English. 	<p>– (Estimated 30 working days within the three months period)</p>	
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<ul style="list-style-type: none"> • Conceptual Design of the SEKH (content, modules / components, screen-design and technical specifications) as part of Stage 2 deliverables. <p>The contractor proposes a cost-effective and secure root server solution, for hosting and maintaining the website, which will be paid for by CEREEAC. The contractor should provide cost effective and secure options for the interim hosting of the CEREEAC platform.</p>			
<p>Stage 3: Development and Implementation</p> <ol style="list-style-type: none"> CEREEAC and UNIDO will provide the contractor with the necessary materials outlined in ‘Stage 2’. Creation of the website engine, SEKH management and the GIS functionality in accordance with the identified functionality and screen design in the first stage. Inclusion of modules as described under detailed requirements. Discussion on the test version of the already existing CEREEAC website. Implementation of the physical database attributes, including database keys and data element content, data constraints and domains and table the relationships. Implementation of the spatial database component to support 	<ul style="list-style-type: none"> • Conceptual Design of the SEKH (content, modules / components, screen-design and technical specifications) as part of Stage 2 deliverables. • Development and implementation report linked to Stage 2 of the assignment, available in both French and English. 	<p>Within six months from the contract signature – (Estimated 30 working days within the six months period)</p>	<p>50%</p>



<p>GIS data management and query.</p> <p>g) Integration of available data-sets to be provided by CEREEAC and Oyo into the database / GIS technology.</p> <p>h) Definition of appropriate symbols, labels and scale for the map document.</p> <p>i) Implementation of LOD, including cleaning, modeling, choosing a Resource Description Framework (RDF) vocabulary that best suits CEREEAC's application, specify license for data, convert to RDF format, link to other data and then publish the Centre's data.</p> <p>j) Migration of existing coverage/shape files (spatial datasets) into the spatial database.</p> <p>k) First testing and rectification of any fault.</p> <p>l) Finalization of all amendments</p>			
<p>Stage 4: Acceptance procedure, capacity building trainings and hand over</p> <p>a) Operational testing, clearance procedure and acceptance of system (see below) and capacity building workshop for CEREEAC staff.</p> <p>b) Preparation and final presentation of the website for handover.</p> <p>c) Organization of training sessions sufficient for a seamless handover and future effective handling of the whole system</p>	<ul style="list-style-type: none"> • Acceptance procedure, a capacity building plan and handover of a user-training manual in French and English. • A final report in French and English, including all the electronic data and the documents developed under this assignment. 	<p>Within nine months from the contract signature</p> <p>– (Estimated 20 working days within the nine months period)</p>	<p>30%</p>



<p>(development of self-explanatory interfaces and user manuals included).</p> <p>d) Increase the visibility of the CEREEAC website on the web (through search engines).</p> <p><u>Acceptance procedure of the system</u></p> <p>The contractor, in consultation with CEREEAC, will develop a user manual on operating and administering the web resource. Before the beginning of the operational testing of the website, the contractor will hand over the user manual to CEREEAC and conduct trainings for designated CEREEAC staff-members (one mission to Luanda and two complementary webinars online) and focal points from the CEREEAC member states. During the operational testing period CEREEAC should test the performance of all the modules via control cases, as well as real data information, and enter the data / content into the databases.</p> <p>Failures and/or bugs detected in the system during the operational testing period should be fixed by the contractor at no additional cost. Failures or limitations revealed during the operation and maintenance of the system should be eliminated by the contractor within the framework of a warranty period of twelve (12) months at no additional cost to CEREEAC.</p> <p>The completion of the operational testing period is formalized with the completion test report and subsequently by transferring the system for the operation and maintenance of CEREEAC. The report should</p>			
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be signed off by the management of the contractor and CEREEAC.			
TOTAL	85 working days (spanning over nine months)		

4. Time Schedule

The activities under this contract should be completed within a period of nine (9) months from the effectiveness of the contract. A total amount of 85 working days within this period is foreseen, which includes home based work and at least one travel within the ECCAS region. The proposed plan for the implementation of activities and deliverables:

Deliverables	Months								
	1	2	3	4	5	6	7	8	9
Deliverable 1: Inception Report in FR & EN.									
Deliverable 2: Report on the conceptual design of the CEREEAC SEKH.									
Deliverable 3: Final report on the development, testing and full hand-over of the CEREEAC SEKH.									

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

- Item: High-resolution photographs (min. 3 MB, at least 30) – that illustrate the undertaken activities. The consultants will cede all appertaining rights to unlimited use of the respective pictures to CEREEAC, ECCAS and UNIDO.
- Item: All used raw files and calculation sheets in editable form (e.g., xlsx. etc.)

5. Coordination and Reporting

Under the guidance of the HSU of CEREEAC, and in close coordination with the UNIDO Project Manager and his team in UNIDO HQs, the contractor will be responsible for developing the of the CEREEAC SEKH, as per the above-mentioned deliverables. This work will be closely coordinated with the NFIs in ECCAS Member States and other partners, including the Oyo Centre. The CEREEAC SEKH will be presented in French and English to the CEREEAC, the ECCAS and UNIDO technical teams, for discussion and adoption. All developed products under this assignment (incl. raw files and editable forms) will become property of CEREEAC, ECCAS and UNIDO. The main languages for the assignment will be French and English. As indicated, the deliverables will have to be provided in French and English.

The contractor should be available to start working immediately after the contract is signed, and should complete the assignment within the proposed duration of the assignment. The contractor will be provided with necessary information, report templates and other documents, which will be required during the development of the website.

Ad hoc reports and meetings may be requested as and when necessary. In the mid-term, it is planned to extend the geodatabase through several energy project planning tools (e.g., wind calculator, photovoltaics (PV) roof-top planner, PV plant planning tool). The planning tools should be geared towards providing tailored information to investors, decision makers and other relevant bodies by evaluating and assessing all relevant criteria for planning energy systems, to help arrive at better



conclusions. While the planning tools will not be part of this assignment and, thus should not be included into the technical and financial bids, provision for an extension that includes this component should be taken into consideration in the overall design of the SEKH.

6. Language requirements

The working languages for this assignment will be English and French.

7. Qualification Requirements and Evaluation Criteria

Bidders shall submit their written proposals in English, providing the following:

- Evidence of being recognized and/or registered as a legal entity;
- Evidence of being a consulting company or institution with at least three (3) years of public and private consulting experience in the relevant field;
- Completed and signed UNIDO Statement of Confirmation form (Appendix 5 of the Bidding Documents).
- Please refer to the Appendix 2 “Qualification Requirements and Evaluation Criteria” of the Bidding Documents for the full list of qualification requirements.

8. Technical Evaluation Criteria

Please refer to the Appendix 2 “Qualification Requirements and Evaluation Criteria” of the Bidding Documents for the full list of technical requirements.

9. Commercial Evaluation Criteria

The financial proposal in Euros (EUR) and shall be comprehensive of all all costs (including a detailed work-time-expert-diagram indicating daily rates for individual team members according to their level of expertise). Offers without clearly stating the all-inclusive price will be rejected. UNIDO is exempt from all direct taxes, customs duties and charges of a similar nature. Proposals must be exclusive of VAT and other applicable taxes.

Please refer to the Appendix 2 “Qualification Requirements and Evaluation Criteria” of the Bidding Documents for the full list of commercial requirements.

The commercial proposal must follow the instructions provided in Appendix 3 “Preparation of Financial Proposal” of the Bidding 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.

10. Further information

- <https://open.unido.org/projects/M2/projects/200138>
- <https://www.unido.org/>
- www.gn-sec.net/
- www.cereecac.org/
- <https://ceeac-eccas.org/en/>
- The CEREAC Project Document/



11. Annex 1: Main information to be included on the SEKH platform

The SEKH should include both spatial and non-spatial information and data for each ECCAS country. Each country will have its profile displaying key data and information related its general socio-economic and environmental context, as well as specific renewable energy and energy efficiency data, as well as key policies, legislation, stakeholders and projects within the country. The profiles will also link to relevant documents in the CEREEAC online library. It is understood that the availability of comparable data will be a challenge. However, the system shall have the overall scope and structure, which will allow the incorporation of further data at any later stage. The system shall be established in a way that it allows download of data, queries (in various formats) and shall open up avenues for upgrading it to a portal for analytics at a later stage. The system shall be based on best practice and link to other systems established under the GN-SEC. Recently, UNIDO also supported Sao Tome and Principe in the creation of a very basic energy information system, which could be linked. This information shall be integrated as layers as much as possible in the integrated Geographic Information System (GIS) will be used to store, analyze and share the spatial information. It will include (but not limited to) varies layers:

- General socio-economic and environmental information on the region and the Member States including demographics, population density, urban and rural population, poverty, average income, air pollution, GHG emissions (mainly by using open data)
- General supply-side and demand-side energy indicators (rural and urban electricity access, generation capacity by technology and costs, transmission and distribution grid, tariffs, cooking fuels, heating and cooling, transport)
- Renewable energy data (e.g. installed capacity and potential by type of technology)
- Energy efficiency data (e.g. energy intensity, grid losses and fuel economy)
- Maps (static and dynamic) on renewable energy resources and technical and economic feasible potential in the region;
- General and specific information on the energy technologies, and applications in different sectors and contexts;
- Specific energy production sites, projects, or plans, shown on map and include links to document files for more information or sites;
- Transmission and distribution networks visualized on the map;
- Publications and communication documents: news, events, reports, leaflets, brochures, presentations, energy development proposals, energy implementation strategies, rural electrification strategies, productive use of energy and rural industrialisation, scientific literature, etc.;
- Existing energy and particularly RE and EE policies, targets, laws, and regulations in the ECCAS countries;
- Investment information, financial RE and EE support schemes (loans, grants, credit facilities) in Central Africa (provided for example by governments, institutions or international donors), taxes, business start-up procedures and costs, economic information, infrastructure information, price overviews and general market information;



- Infrastructure that will support project development such as roads, pipelines, electrical grids etc.;
- Best practice, good practice guidelines, link to planning tools and toolkits, historical information based on for example review of past projects, educational online features;
- State of the art technology report including statistical and measured data;
- Major local to international actors involved in the energy sector;
- RE and EE publications, data and other graphical material to be published by CEREEAC and other energy institutions; and
- Historical information on the Energy Sector for all Member States.

12. Annex 3: Selected Useful Websites

Links	Description
http://www.ecowrex.org/	ECOWAS Observatory for Renewable Energy and Energy Efficiency for the West Africa region.
http://www.renenergyobservatory.org/	Observatory for Renewable Energy in Latin America and the Caribbean.
http://www.solar-med-atlas.org	The "Solar Atlas for the Mediterranean" is a portal for global horizontal and direct normal irradiance data for the southern and eastern Mediterranean region. It has a good visual and framework. It also has a planning tool yet to be implemented.
www.repowermap.org	Repowermap.org is a non-profit NGO founded in Bern, Switzerland, in 2008. Its objective is to contribute to a more widespread use of renewable energies and energy efficiency.
http://re.jrc.ec.europa.eu/pygis/index.htm	Photovoltaic Geographical Information System (PVGIS) for geographical assessment of Solar Resource and Performance of Photovoltaic Technology. It has a solar planning tool which can be looked into when designing our planning tool.
www.ren21.net	Renewable energy policy network for the 21 st century.
https://www.iea.org/ https://www.iea.org/fuels-and-technologies/renewables https://www.iea.org/topics/energy-efficiency https://www.iea.org/regions/africa	International Energy Agency Since 2015, the IEA has opened its doors to major emerging countries to expand its global impact, and deepen cooperation in energy security, data and statistics, energy policy analysis, energy efficiency, and the growing use of clean energy technologies.
https://au-afrec.org/	The African Energy Commission (AFREC) is a specialized agency of the African Union (AU), under



	the Commission for Infrastructure and Energy, in charge of coordinating, harmonizing, protecting, conserving, developing, rational exploitation, commercializing and integrating energy resources on the African continent.
www.irena.org	International Renewable Energy Agency. Has a good website implementation and section for country information.
https://africa-energy-portal.org/	The Africa Energy Portal (AEP) is a one-stop-shop for energy sector news, insights, data and more. Launched in November 2018, the AEP focuses exclusively on Africa, serving as a repository for accurate and relevant information and data across the energy value chain. The AEP also provides a platform for knowledge-sharing on the African energy sector and seeks to create an enabling environment for vibrant community discussion on the most pressing issues impacting the African energy sector today.
https://gis.sacreee.org/ https://gis.sacreee.org/Analysis	The Sustainable Energy Knowledge Hub (SEKH) of the SADC Center for Sustainable Energy is a platform that has the different energy and related sectoral statistics of the different countries in the region.
https://cekh.creec.org/cekh-resources-2/	The CARICOM Energy Knowledge Hub (CEKH) of the Caribbean Center for Sustainable Energy is a central place for all energy-related information about all the countries in the Caribbean
https://lib.icimod.org/search?page=1&size=20&q=REEECH	The Knowledge portal for Renewable Energy and Energy Efficiency Center for the Hindu Kush Himalaya (REEECH) is a platform with all information on both the clean energy resource potential and access rates in the region
www.reeep.org	Renewable Energy and Energy Efficiency Partnership. Has implemented an observatory at www.reeegle.info using LOD.
http://en.openei.org/wiki/Main_Page	Includes energy resources information and data implemented using the LOD.
https://www.creec.org/cekh/	Caribbean Community and Common Market (CARICOM) Energy Knowledge Hub (CEKH)