Terms of Reference

Relaunch: Consultancy to conduct studies on the potential benefits of green hydrogen relative to the West African Cooking Alliance and ECOWAS renewable energy facility.

I. Background:

The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) was established in response to the recommendation of the ECOWAS/UEMOA White Paper on access to energy services in rural and peri-urban areas issued in 2006. The specific objective of ECREEE is also to create favorable framework conditions for regional RE&EE markets by supporting activities directed to mitigate existing technology financial, economic, business, legal, policy, institutional, knowledge and capacity related barriers.

In October 2020, ECREEE signed a memorandum of understanding with WASCAL as a co-implementing partner of the H2 Atlas project. The main aim of this project is to assess the potential of green hydrogen production in Africa and how this can support sustainable development in the continent. The project will also explore the possibility of exporting green hydrogen from Africa taking into consideration all such factors as related logistic, political stability, environment and available infrastructure.

The ECOWAS Renewable Energy Policy aims to promote 60,000 mini-grids and 2.6 million autonomous systems throughout the region by 2020, with a total cost of 13.6 billion euros to serve 71.4 million people. The mini-grids will be powered mainly by a combination of the renewable sources: PV solar energy, hydropower, wind energy, biomass, biofuels. Autonomous systems will include a combination of solar home systems and pico-solar systems. In this context, special attention is given to the productive uses of electricity-generating activities as a fundamental service to promote rural electrification financially viable and economically beneficial for the rural population. Combined with an ambitious program of grid extension, ECOWAS is expected to be in step with universal access to electricity by 2030. The objectives of this program are to facilitate the achievement of these goals, the non-grid component of access to electricity in the region, focusing primarily on clean energy mini-grids.

The ECOWAS region continues to be plagued by a high level of unsustainable use of bioenergy energy resources, particularly firewood and charcoal for cooking, most often on inefficient cookstoves. Biomass constitutes about 80% of the overall energy consumption of the region. This has negative socioeconomic and environmental consequences such as indoor air pollution and deforestation, among others. The use of fuelwood is often on inefficient and unsafe stoves exposing users to burns and indoor-air pollution.

II. Purpose of the Study

In 2018, over 99% of hydrogen was made using fossil fuels, but hydrogen can also be produced cleanly using renewable electricity to split water in an electrolyzer, that is called green hydrogen. With the cost of wind and solar continuing to fall, many analysts have

predicted a fall in the production costs of green hydrogen in the years to come. Given ECREEE's program on ECOWAS renewable energy facility as well as the West African clean cooking alliance, the study aims to research on the existing resources and the possible linkages with green hydrogen in:

- The use of mini grids, for provision of electricity.
- The productive use of energy with focus in rural areas.
- Clean cooking technologies for various applications in urban and rural areas.

III. Scope of the assignment

The key tasks to be undertaken by the consultant include:

Task area 1:

a) Review the state of penetration of mini grids in ECOWAS member states.
b) Assess the viability of mini grids in meeting local electricity needs.
c) Explore the possibility of hydrogen production using mini grids in rural communities, factoring in mind the dual-purpose uses of these mini grids (for both electricity and hydrogen production) and also the possibility of using hydrogen to feed mini grids for improving electricity access
d) Analyze the possibility that green hydrogen can offer in terms of long-term storage in addition to or substitute for battery storage systems currently to improve the energy supply of mini grids in the region.
e) Research into the introduction of hybrid mini grids model in the region, using green hydrogen combined with other renewable energy technology (as against fossil fuels).
f) Research in the technical and financial viability of the added infrastructure in mini grids within the region (including electrolyzes).
g) Review and analyze water access in rural mini grids sites and the use of electrolyzes.

Task area 2:

a) Review the current state of the West African Clean Cooking alliance Initiative viz-a-viz the penetration of clean cooking in the region.
b) Research in into the usage of fuels as a source of cooking in the ECOWAS region.
c) Explore the potential use of green hydrogen as a source of clean cooking in the region, particularly in rural areas.
d) Research on the characteristics of H2 for cooking compared to LPG, biogas, and other cooking fuel Explore the potential use of green hydrogen in cylinders as energy sources and a potential replacement of liquified Petroleum gas (LPG).
e) Explore the potential use of green hydrogen as a source of energy for women groups in entrepreneurial ventures including fish-smoking and drying, tie-and-dye, grain crop milling and any other ventures that fossil fuels are used.

IV. Proposed Schedule of the assignment

PROPOSED ACTIVITY	ANTICIPATED NUMBER OF WORKING DAYS	IMPORTANT CONSIDERATIONS
1. Preparation and presentation of a methodology and work plan	1 day	This meeting is to be virtual one-day workshop with ECREEE.
2. Notification and engagement with ECREEE national focal points	3 days	Introduction of the Consultant to all our national focal points in member states for possible engagement and information needs/ requirements.
3. Preparation and submission of the draft document	23 days	Document to be submitted as a word document, to allow comments / contributions.
4. Comments on the draft document	2 days	ECREEE and other stakeholders to comment on the draft document
5. Validation of the draft document	1 day	This is a virtual-one -day workshop with the consultant to validate the draft document, which will be subsequently submitted to ECREEE.

V. Qualifications of the Consultant

In order to be eligible for consideration, the consultant should have work experience in the ECOWAS region. In addition, the consultant must have:

Lead Consultant (Renewable Energy Expert)

a) At least a master's degree in the Energy, Management, international relation or other related field.
b) A minimum of 10 years of experience in leading a consulting team to conduct related assignments in the areas of renewable energy and energy efficiency.

c) At least 5 Experience in working on projects/program with cross-cutting themes such as gender equality
d) At least 5 years' Experience in Clean Mini-Grid project development and implementation
e) Demonstrated experience in the energy sector of a member state.
f) Strong planning, organization and time management skills and ability to manage multiple tasks.
g) Proficiency in preparing and presenting professional reports and analytical papers;
h) Proficient communication in oral and written English. Knowledge in Portuguese and/or French will be an advantage.

Clean cooking Expert

i) At least a master's degree in the Renewable Energy, Energy Efficiency, or related field.
j) At least 5 years' experience in clean cooking devices and fuel projects development and implementation
k) Extensive knowledge on promoting clean cooking solutions in the ECOWAS region with more than 2 years' experience working within the ECOWAS Community.

Researcher

a) at least a master's degree in energy, economics or a related field.
b) a PhD holder or researcher in the field of energy in a training and/or research institution in the ECOWAS region
c) At least 2 publications in the thematic of hydrogen, clean cooking, mini grids, energy policy in the ECOWAS region

VI. Deliverables and reporting

The Consultant is expected to report on the following deliverables**:**

a) An inception report after the initial kick-off meeting.
b) **A** draft report of the consultancy assignment
c) A final report of the consultancy assignment

VII. Application requirements

In order to be eligible for consideration, the consultant should have work experience in the ECOWAS region. The Consultant's team must be fluent in both English and French. Fluency in Portuguese is also desired.

Proposals will be evaluated based upon the following criteria:

1. Technical Approach: The technical approach described in the proposals will be evaluated on:
    a. Demonstrated understanding of the overall project context;

b. Detailed work plan and approach clearly defining the target objectives and the strategy to achieve the objectives as outlined in the Description of the Assignment.

2. Management Structure and Staff Qualification: The proposed management structure and staff will be evaluated based on:
    a. Professional qualifications and the extent to which the requisite expertise and experience of the key personnel will directly contribute to the completion of the tasks
    b. Extent of the collaboration proposed with qualified contractors local to the ECOWAS region.
    c.
3. Past Performance and Corporate Experience: The experience and capacities of the contractor will be evaluated based on:
    a. Past performance, familiarity, and experience in understanding policies and programs related to renewable energy issues in the member states;
    b. Extent of local expertise including experience, qualifications, and track record in implementation of similar programs in Africa and the region.
4. Total Cost: While the overall Technical Evaluation is the key factor in reviewing the proposal, the financial proposal must be competitive and will be evaluated for feasibility, completeness, and practicality.

Proposals will be evaluated using a Quality and Cost-Based Selection (QCBS) method, with weights of 80 percent towards project proposal quality and team and organization experience, and 20 percent towards proposed costs.

The offer comprising of technical and financial proposals, in two separate files, should be sent ONLY to: green-hydrogen@ecreee.org clearly indicating in the subject: “Consultancy to conduct studies on the potential benefits of green hydrogen relative to the West African Cooking Alliance and ECOWAS Renewable Energy Facility”. **The deadline for submission of proposals is the 2nd May 2022, 12.00 noon GMT time.**

For any clarifications, kindly contact: Korgo.b@wascal.org or bnjie@ecreee.org