Economic Community
Of West African States
l'Ouest

Communauté Economique
Des Etas de l'Afrique de

WEST AFRICAN POWER POOL
SYSTEME D'ECHANGES D'ENERGIE ELECTRIQUE OUEST AFRICAIN

General Secrétariat / Secrétariat Général

Solar Energy Development in Sub-Saharan Africa - Phase (1)

TERMS OF REFERENCE

Recruitment of a Renewable Energy Expert

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CONTENT

1. BACKGROUND

The West African Power Pool (WAPP) or Système d'Echanges d'Energie Electrique Ouest Africain (EEEOA) was created by the highest decision-making authority of the Economic Community of West African States (ECOWAS) at the Conference of Heads of State and Government of the Member States held in Lomé, in December 1999.

The ECOWAS strategic objective being implemented by the West African Power Pool (WAPP) is based on a dynamic vision of integrating national power grids into a unified regional electricity market to ensure a regular, reliable and affordable supply of electricity to the ECOWAS Member States, in the medium and long term. To this end, WAPP promotes and develops power generation and transmission facilities to, eventually, ensure the coordination of power exchanges between ECOWAS Member States, thanks to the operationalization of the market,

The current WAPP infrastructure development programme is based on the ECOWAS Master Plan for the Development of Regional Power Generation and Transmission Infrastructure 2019-2033 which was adopted by the ECOWAS Authority of Heads of State and Government in December 2018, through Supplementary Act A/SA.4/12/18. This Plan identified key priority projects whose implementation is critical to the stable integration of national electricity grids in the ECOWAS region and will facilitate optimal power trade and marketing among Member States. Seventy-five (75) priority projects have been approved for a total estimated investment of USD 36.39 billion involving, among others, the construction of approximately 23,000 km of transmission lines and the implementation of a total generation capacity of approximately 15.49 GW, including 3.15 GW of intermittent renewable energy generation (solar and wind).

To support the implementation of this plan, the World Bank provided a grant to the WAPP Secretariat under a technical assistance known as "Solar Development in Sub-Saharan Africa, Project #1 Technical Assistance to WAPP", for the preparation of regional solar power generation projects and technical study activities to facilitate the integration of Renewable Energy into the regional electricity system.

This assistance is intended to support the establishment of an enabling environment capable of accelerating the deployment of large-scale solar power plants within the WAPP region, through the identification of technical bottlenecks, the preparation of Regional Solar Parks and the sharing of knowledge among countries in the region. The assistance is implemented by the WAPP Secretariat. It is expected that the grant will be used to identify and prepare regional investments in solar power generation, infrastructure, distribution and storage, as well as support for capacity building with special emphasis on planning, regulation and technical knowledge of resource evaluation and validation. The assistance therefore provides for specific actions aimed at combating gender gaps and improving the empowerment of women or men through training and certification in Renewable Variable Energy for WAPP staff members, of which at least 15% are women.

This technical assistance programme consists of several activities that can be broken down as follows:

- **Component 1**: Expansion of solar energy generation and development of grid integration capability. This component offers to support WAPP member utilities to strengthen their grid

integration capability and expand solar power generation monitoring capabilities within WAPP countries:

a. Reinforcement of the Information and Coordination Centre (ICC) with a substation dedicated to variable renewable energy to enable WAPP to monitor the volume and quality of intermittent solar energy generation within the various interconnected areas;
b. Establishment of a WAPP Renewable Energy Task Force (RETF), composed of members of the Technical and Operational Committee (TOC) and the Strategic Planning and Environmental Committee (SPEC) to: (i) monitor and support the development of variable renewable energy projects in the countries covered by WAPP; (ii) support increased coordination and knowledge on variable renewable energy issues between WAPP countries and the respective national utilities and (iii) share knowledge on planning, procurement and the integration of solar energy generation in the power system. It should be noted that WAPP has two organizational committees, namely the Strategic Planning and Environmental Committee (SPEC) and the Technical and Operational Committee (TOC) whose functions will have a direct impact on the activities to be carried out under the programme. Recent discussions indicate that specific joint meetings of these two organizational committees will constitute the work of the WAPP Renewable Energy Working Group;
c. Supporting the definition and implementation of regional and national grid codes with Renewable Energy connection requirements;
d. Capacity-building and technical assistance to support the design and implementation of standard operating procedures.

- **Component 2:** Identification and preparation of regional investments in solar power generation and networks upgrade.
    a. Identify and prepare regional solar power generation projects and related network investments, in close coordination with WAPP members, IFC, MIGA and development partners. Such projects could include the Burkina Faso Regional Solar Project, the Mali Regional Solar Project, solar power generation facilities related to hydropower plants. The activities would include the full range of preparatory areas (pre-feasibility, feasibility, safeguard, project structuring, implementation modalities determining ownership structure and operation, regulatory changes).
    b. Deploy a solar resources measurement campaign in several locations in the region to improve the overall knowledge of the solar resource, the location of solar power plants, reduce uncertainties about the solar resources, lowering thereby the prices of solar electricity generation.

2. OBJECTIVE OF THE SERVICE

Within the framework of the activities of this - technical assistance, financed by World Bank, it is planned to build the capacity of the WAPP Secretariat which is in charge of the execution of the technical assistance in various fields in order to diligently implement the programme. To this end, the Secretariat has recruited various resident and non-resident experts to strengthen the project team.
This team is housed within the Planning, Investments Programming and Environmental Safeguards (PIPES) Department of WAPP and placed under the responsibility of its Director, with a matrix organization. The team is currently composed of a Project Coordinator (the Head of Division, Studies Planning, and Project Financing), an Engineer from the WAPP's Information and Coordination Centre, an Environmental Consultant, a Procurement Consultant, an Accounting Consultant and a Renewable Energy Consultant. In view of activities under implementation, it appeared necessary to recruit a second Resident Consultant with experience in Renewable Energy, and more particularly in

solar energy, to support the team in charge of the programme implementation and the countries directly concerned by the programme. The Consultant will be responsible for advising the team in charge of the execution of the technical assistance on the different technical aspects of the various studies related to the integration of renewable energies. The Consultant will act as an interface, as required, for the activities of the Information and Coordination Centre under the Programme.
The Consultant will also be in charge of ensuring the coordination of activities with other technical and financial partners in terms of studies and capacity building / training.

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3. SCOPE OF THE EXPERT'S SERVICES

The Consultant will support the team in charge of the execution of the technical assistance in the technical management and coordination of the various activities related to the integration of renewable energy, focusing on solar and wind energy. The Consultant will report to the Project Coordinator and advise him in the implementation of the various studies as well as their interfaces.

The Consultant's services, in supporting the team, will generally consist of:

i) The technical coordination and harmonization of the studies of the whole technical assistance;
ii) The technical follow-up of the consultants in charge of the various studies in order to ensure the implementation of the technical assistance;
iii) The technical steering of the various activities related to the technical assistance within WAPP in general and, the team in charge of the implementation of technical assistance, namely those related to capacity building and working groups;
iv) The guidance of the Project Coordinator and the Management of the WAPP Secretariat in taking strategic decisions on issues that will be submitted to him/her;
v) Promotion of technical dialogue (coordination meetings, seminars, workshops) at the national level among stakeholders, for the purpose of facilitating the integration of renewable energies, particularly solar;
vi) Contributing to resource mobilization and coordination between donors and WAPP;
vii) The capitalization of the results of the implementation of technical assistance policies and projects;
viii) Preparation of notes for WAPP Management Team, working papers, meeting documentation, meeting reports and preparation of presentations as required; and
ix) Any other tasks that may be assigned by the WAPP Secretariat in the implementation of its priority projects;

These services will be divided into two main missions.

Mission 1: Coordination and harmonization of the technical assistance activities

The Consultant will be responsible for the technical coordination of the programme within the team in charge of the execution of the technical assistance and, will have to ensure the proper implementation of the various studies including the generation of solar parks and their integration into the network.

The specific tasks to be carried out are as follows:

- Support to the technical coordination and management of different studies under the programme concerning Variable Renewable Energies (Generation, Connection, Grid

Integration, Dispatching and Operation) to ensure the coherence of activities and the implementation of interfaces;
- Assist the Project Coordinator in the strategic dialogue with partners (Governments, Donors, Consultants, Companies, etc.);
- Advise and support the Project Coordinator in the definition and monitoring of technical assistance (strategy, planning, operation, etc.) including the initiation of corrective actions necessary to ensure compliance;
- Define and draft the Terms of Reference for the various study activities in order to support the team in the implementation of the programme;
- Participate in the recruitment of competent consultants to carry out various studies related to renewable energy;
- Support the WAPP Secretariat in improving and adapting the WAPP Operation Manual for Interconnected Power System in order to facilitate the integration of variable renewable energy plants and, where appropriate, for new installations requiring it, draw up new operating and maintenance rules;
- Participate in internal WAPP working groups, team and country working groups on the programme to advise on dossiers designed by technical departments or from donors and other partners;
- Support in the development of strategies aiming at the effective and sustainable appropriation of the actions undertaken;

Mission 2: Accompanying the implementation of the Programme

The Consultant will be responsible for identifying and defining the complementary studies that will ensure the success and proper implementation of the entire programme related to the production of variable renewable energies and their integration into the network.

The specific tasks to be carried out include, among others, the following:

- Review reports submitted by the consultants hired, prepare comments on them and participate in report review meetings. The comments made will be considered as a component of the expected results of the assigned assignment;
- Assist in the development of a system code and the updating of the WAPP Operations Manual to reflect system constraints related to the integration and connection of RE plants, on the basis of existing documents ;
- Review documents developed by the WAPP and the ECREEE in the framework of the integration of variable renewable energies;
- Review the programmes and action plans of other technical and financial partners in order to ensure complementarity of the different activities;
- Support the Renewable Energy Working Group in its activities;
- Support in the identification of problems and obstacles in the course of the programme and formulation of proposals concerning the measures to be taken to modify or adjust the failing actions and their implementation modalities; and
- To identify gaps and propose areas for improvement for the definition of complementary studies

Since the Consultant will be working in a team, he/she would be required to compare his or her views with those of the other team members, in a spirit of constructive dialogue.

4. QUALIFICATION OF THE EXPERT

Education :

Degree in Engineering or Master's degree, in the Energy field with specialization in Renewable Energy: minimum (5 years university).

Experience:

The Expert must have the following qualifications and experience:

- Proof of at least 10 years' experience in project management and planning, studies, electrical network design and the integration of power generation facilities into the network.
- Proof of at least 5 years of proven experience in the implementation of variable renewable energy projects (especially in solar);
- A knowledge of power generation parks with storage batteries would be an asset;
- Knowledge of the African energy sector in general and the issues and challenges in the integration of variable renewable energies;
- Ability to plan and organize, coordinate the work of others, work under tight deadlines and manage multiple projects and activities at the same time;
- Ability to anticipate technological developments;
- Excellent interpersonal skills and the ability to establish and maintain effective working relationships in a team spirit and in a multicultural and multi-ethnic environment;
- Excellent oral and written proficiency in either English or French and a working knowledge of the other language; excellent oral and written proficiency in both English and French would be an asset ;
- Excellent oral and written communication skills, including the ability to present complex technical concepts and recommendations to senior non-technical staff, both orally and in writing, in a clear and concise style;
- Be computer literate with proven skills in the use of common Microsoft software: Word, Excel, Access, Outlook, Powerpoint, Publisher and specific competence in the use of Microsoft Project software would be an asset;
- Good knowledge and proven experience of donor procedures and in particular of the World Bank would be an asset.

5. DURATION OF THE ASSIGNMENT

The Expert's mission is effective as of the signing of the contract for a period of one (1) year renewable upon a satisfactory performance evaluation of the Consultant. The scope of the Expert's services shall be reviewed at the end of the first year.

The Expert's services will be carried out at the premises of the WAPP Secretariat in Cotonou.

6. OBLIGATIONS OF THE RESIDENT CONSULTANT

The Resident Expert will be responsible for carrying out the services described in these terms of reference. He will take all necessary steps for the proper and timely execution of the work to be entrusted to him/her. He/she will have to commit, among other things, to:

- Undertake the services with all due seriousness, in accordance with internationally recognized rules and standards;
- Remain true to the customs of ECOWAS countries, particularly Benin's ;
- To keep confidential the information obtained and the results of his/her tasks during and after the execution of his/her mandate and to hand over at the end of his/her mission all documents and materials that would have been given to him/her.

The Expert will reside in Cotonou (Benin Republic) and will be called upon to travel frequently within the sub-region. The work may occasionally require weekends and/or late nights of work.

7. REPORTING REQUIREMENTS

The scope of the Expert's services includes the preparation and timely submission of quality reports and documents, written in English and/or French as required.

The Expert shall also provide:

a. **Inception Report**

The Expert will be required to submit an inception report within 4 weeks from the date of entry into service in Cotonou, containing, inter alia, the work plan, the methodology, the resources and timeframe for carrying out the mission.

b. Quarterly Reports

The Expert will be required to submit quarterly reports for the duration of the assigned mission.

These reports should summarize the main tasks carried out during the relevant period, the key steps taken towards the completion of the mission, and the completion rate of the mission. Financial data should include photocopies of Expert invoices and financial reports detailing all expenses incurred, the hours worked and other direct costs. All documents prepared by the Expert in connection with the assigned mission (including presentations and annotated comments to the reports) should be attached to each quarterly report. These reports should be written in English and/or French and submitted no later than the 10th day of the month following the end of each quarter under consideration.

c. **Completion Report**:

At the end of the assigned mission, the Expert will be required to submit a full report detailing, among others, the activities undertaken during the mission, inputs and outputs, expected results and deliverables required by the WAPP Secretariat and the Funding Agency. The submission, difficulties encountered, lessons learned and approaches to solutions. The submission and approval of this report will constitute the preconditions for the disbursement of his/her final payment under the assigned

mission.

8. LINE MANAGER

The Resident Expert will be placed under the functional authority of the Department of Planning, Investments Programming and Environmental Safeguards (PIPES) of the WAPP Secretariat, during the execution of the assigned mission.

ANNEX

Master Plan 2019 - 2033 : Priority Projects - GENERATION

Pos.	Projects	Capacity (MW)
1	WAPP Solar Park in Burkina Faso	150
2	WAPP Solar Park in Mali	150
3	WAPP Solar Park in Côte d'Ivoire	150
4	WAPP Solar Park in The Gambia	150
5	WAPP Solar Park in Benin	150
6	WAPP Solar Park in Ghana	150
7	WAPP Solar Park in Togo	150
8	WAPP Solar Park in Niger	150
9	WAPP Solar Park in Burkina Faso Phase II	150
10	WAPP Solar Park in Mali Phase II	150
11	Wind farm in Senegal	150
12	Wind farm in Nigeria	300
13	Early POWER Combined Cycle in Ghana	300
14	GPGC Combined Cycle in Ghana	170
15	Kaduna thermal plant in Nigeria	215
16	Gouina Hydropower plant (OMVS)	140
17	Sambangalou Hydropower plant (OMVG)	128
18	Azito IV Combined Cycle in Côte d'Ivoire	253
19	Amandi Combined Cycle in Ghana	240
20	OKPAI Combined Cycle in Nigeria	450
21	Souapiti Hydroelectric Power Plant in Guinea	450
22	Gribo-Popoli Hydroelectric Power Plant in Côte d'Ivoire	112
23	Ciprel V Combined Cycle in Côte d'Ivoire	412
24	Salkadamna coal-fired power plant in Niger	200
14	Zungeru Hydropower plant in Nigeria	700
15	Fomi Hydropower plant in Guinea	90
16	Rotan Combined Cycle in Ghana	330
20	Amaria Hydropower plant in Guinea	300
21	Bumbuna II Hydropower plant in Sierra Leone	143
22	Louga Hydropower plant in Côte d'Ivoire	246
23	Grand Kinkon Hydropower plant in Guinea	291
24	Boutoubré Hydropower plant in Côte d'Ivoire	150
25	WAPP Combined Cycle plant at Maria Gléta in Benin	450
27	Koukoutamba Hydropower plant (OMVS)	294
28	Mambilla Hydropower plant in Nigeria	3050
30	Alaoji II thermal plant in Nigeria	285
31	Morisananko hybrid (hydro+PV) power plant in Guinea	200
32	Bonkon Diara Hydropower plant in Guinea	174
33	Saint Paul Hydropower plant in Liberia	584
34	WAPP Solar Park in Nigeria	1000
35	Adjaralla Hydropower plant (Togo-Bénin)	147
37	Centrale thermique au charbon de San Pedro en Côte	700
3	Tiboto Hydropower plant (Côte d'Ivoire-Liberia)	225
4	Boureya Hydropower plant (OMVS)	114
4	WAPP Combined Cycle plant at Aboadze in Ghana	450
4	Mano Hydropower plant (UFM)	180
4	Songon thermal plant in Côte d'Ivoire	369
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