

SECTOR SKILLS REVIEW ON THE ELECTRICITY SUB-SECTOR IN WEST AFRICA

TERMS OF REFERENCE

(WB NO 18/10/17)

1. Background

In pursuit of its strategic goal of regional energy integration and effort to be self-sufficient in electricity supply in the West African sub-region, the 15 member states of the Economic Community of West African States (ECOWAS) have resolved to establish a well-functioning, cooperative, power pooling mechanism for West Africa. To this end, ECOWAS states adopted an ECOWAS Energy Policy in 1982 and decided to establish a West African Power Pool (WAPP) in 1999. To operationalize this mission, the 29th Summit of the Heads of State and Governments of the ECOWAS Member States in December 2006 adopted the "Articles of Agreement," which formally set up the WAPP Secretariat as a "Specialized Institution of ECOWAS.

The WAPP seeks to provide the citizenry of the community increased access to stable and reliable electricity at affordable costs. Also, the vision and mission of WAPP as embodied in the ECOWAS Energy Protocol (EEP) is to establish an open, unified, regional electricity market in West Africa to facilitate the balanced development of diverse energy resources of the ECOWAS Member States for their collective economic benefit, through long-term energy sector co-operation, unimpeded energy transit and increasing cross-border electricity trade. To this end, the WAPP has been helping countries in the ECOWAS region to develop and implement regional priority projects that are identified in the most recently updated regional Electricity Master-plan endorsed by WAPP in December 2011.

So far, the electricity infrastructure is under development and the World Bank together with other donors financed (i) the coastal transmission backbone (Côte d'Ivoire, Ghana, Benin/ Togo, Nigeria, under construction), (ii) the Inter-Zonal Transmission Hub (Burkina Faso & Mali via Ghana – under construction), OMVS via Mali – completed and in operation, Liberia-Sierra Leone-Guinea via Côte d'Ivoire – under construction, (iii) the OMVS/OMVS Regional Interconnector (Gambia, Guinea, Guinea Bissau, Mali, Senegal – under construction), (vi) the CLSG Regional Interconnector (Côte d'Ivoire, Liberia, Sierra Leone, Guinea – under construction). The North Core Interconnector (Nigeria, Niger, Burkina Faso, Benin/Togo - currently under preparation). The WAPP is also involved in the preparation and development of generation projects such as Souapiti and Amaria in Guinea, Maria Gleta in Benin, and Aboadze in Ghana

Beside the WAPP system, countries are also developing national generation, transmission projects, distribution projects and rural electrification projects. At the same time, institutions (governments, utilities, development and financial institutions, etc.) involved in sector planning, project preparation, project implementation and infrastructure operation and maintenance are facing

difficulties in recruiting skilled professionals in the sector. The training offers are few, and the risk of skilled professional shortage is looming ahead, especially because of aging workforce and many power engineers and system experts reaching retirement age in the next decade. Furthermore, the number of power engineers being trained in various universities in the region may be not adequate to the market demand.

The objective of the study is therefore, i to conduct a skills review of the subsector to identify and fill the gaps. This assignment will focus on the identification of the skills gaps in the electricity subsector, explore options to address them, and recommend policy measures and actions (including HR-driven) to fill them over the short, medium and long terms.

2. Key responsibilities

The Consultant will prepare a Sector Skills report on the Electricity Subsector in West Africa including a proposed set of 2-3 specialized areas of higher education and research that could help meet the training needs for the Electricity Sub-sector in West Africa.

The report will have the following tentative outline.

- I. Executive Summary

- II. Sector Profile
 - a. Definition of Electricity Sub-sector in the West African context, including key players, and geo-economic patterns of concentration of sector activities
 - b. Strategic significance of the sub-sector and fields under the sub-sector in the medium term, including growth prospects of the sub-sector and its fields
 - c. Key challenges facing the sub-sector in the short, medium and long term, including demand shifts and technology changes, with implications for the role of skills and skills demand in the electricity sector with due regard to renewable energy.

- III. Employment and skills demand, with focus on strategic fields under the Electricity sub-sector
 - a. Past trends, current status and forward-looking trends in typology of employers in the sub-sector, including education level, occupation structure, and number of workers;
 - b. Past trends, current status and forward-looking trends in the sub-sector occupations and vacancies, taking into account demographic trends, location, salary level, hiring time, and occupational standards;
 - c. Past trends, current status and forward-looking trends in specific sub-sector skills demand, including demand for both technical and behavioral skills.

- IV. Skills supply, with focus on strategic fields under the Electricity sub-sector
 - a. Past trends, current status and forward-looking trends in typology of skills providers in the sub-sector;
 - b. Past trends, current status and forward-looking trends in supply of education and qualifications, including number of students produced, key institutions, and employer training;
 - c. Past trends, current status and forward-looking trends in specific sub-sector skills, including number of students produced, key institutions, and employer training.

- V. Skill mismatches, with focus on strategic fields under the Electricity sub-sector
 - a. Definition of skills mismatches, in terms of occupations and levels, technical skills, and behavioral skills;
 - b. Evidence of skills mismatches based on skills demand and supply analysis
 - c. Causes and remedies of skills mismatches (including international recruitment, and considerations of geo-economic patterns of concentration of the sub-sector activities)

- VI. Key proposals for higher education Africa Center(s) of Excellence focusing on the Electricity sub-sector with specific proposals in the following areas:
 - a. Identifying 2-3 specialized areas of higher education training and research critical in meeting the needs of the sub-sector
 - b. Providing recommendations for designing the Center(s) to ensure it can support trainings for the technicians'/diploma level workforce in the sub-sector in addition to trainings for new Masters/PhD students and industry professionals.
 - c. Identifying key industry players and providing recommendations on how to bring them onboard to partner with the Center(s), particularly those with interest in the 2-3 specialized areas. Partnership activities may include joint research, internship opportunities for students, staff exchanges, etc.
 - d. Identifying large and relevant ongoing projects in the sub-region, such as the WAPP Initiatives of establishing Regional Centres of Excellence, the African Power Utilities Association Initiative and the ECOWAS initiative on Renewable Energy in Cape Verde (SERMI Centre for Renewable Energy and Energy Efficiency) and providing recommendations on ways to plug the Center(s) into these projects.
 - e. Providing considerations for setting up a functional and effective advisory skills council for each Center which involves relevant stakeholders from academia, the public and private sectors.

- VII. Concluding remarks, policy and any additional recommendations with a focus on the proposed higher education centers of excellence within the Electricity Subsector.

These proposed areas should be linked to the sector skills analysis.

The model report should use and outline the sources of the data and information used and provide sufficient information for reproduction of the information, since the report will serve as a model report, including the following data and information:

- Demand side
 - from employer surveys and industry associations
 - from focus group interviews
 - on occupational standards and occupational structure
- Supply side
 - From education authorities
 - From household surveys and labor force surveys

3. Deliverables

Intermediate and final deliverables are to be delivered according to the following tentative time table.

| Deliverable | Delivery deadline |
|---|-------------------|
| Signature of Contract | So |
| Inception report that includes up-to-date findings and directions for the full report, and that identifies (1) strategic fields under the Electricity sub-sector of focus for the report; (2) detailed data and information sources used and to be used for each section/subsection; (3) draft list of references consulted and to be consulted; (4) draft questionnaires for focus groups/stakeholder in sector to be interviewed; and (5) work plan, including meetings in West Africa with key questions for each meeting. | So + 3 weeks |
| Preliminary draft, with completion of focus group interviews and main findings for each chapter | So + 6 weeks |
| Draft report and presentation | So + 9 weeks |
| Final report, including executive summary with a focus on proposed higher education centers of excellence within the Electricity Subsector that will provide short term training for industry professionals, training master level training for preparation in key areas, and undertake joint research with industry, potential starting up or scaling up a PhD program. | So + 12 weeks |

The deliverables shall include the preparation and submission of documents and reports within the set deadlines. The said documents and reports shall be prepared in French and English and submitted by the Consultant to the WAPP Secretariat.

Also, all the reports must be submitted in 5 hard copies and one electronic copy in both English and French languages.

The consultant will therefore work in close collaboration with WAPP Secretariat, government (ministries of energy), private sector and parastatals in energy, education/training and other stakeholders as relevant. WAPP will provide with reference materials for the sector skills study.

4. Key qualifications

- Ph.D. or Master's Degree in electrical engineering or relevant field

- If having a Ph.D, at least 5 years of experience as primary researcher/consultant on human capital, skills or jobs issues in relation to the sub-sector. If having a Masters, at least 10 years of such experience.
- Experience producing and disseminating sector-specific skills reports that are directly policy-oriented
- Experience in developing countries

5. Travels

Travel to and within West Africa is expected for this consultancy. Depending upon agreements in the negotiation of contract, the travel arrangements can be facilitated by the WAPP.

6. Duration

Up to 65 work days from the signature of the contract. Fees payment will be in accordance with the actual number of days worked.