



ECOWAS INITIATIVE ENERGY EFFICIENCY IN BUILDINGS (EIEEB)

TERMS OF REFERENCE

For

*The development of Tools for Calculating Energy Performance Buildings in
ECOWAS Region*

Title:	International Expert for Development Tools for Calculating Energy Performance Buildings in ECOWAS Region
Main Duty Station and Location:	If applicable
Mission/s to:	If applicable
Start of Contract:	1 st July 2015
End of Contract:	30 th September 2015
Number of Days:	60

INTRODUCTION

The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) with support of the “Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME)” is recruiting an International Expert to develop the tools calculation of energy performance in buildings for the ECOWAS Region. This action aims to provide support to Member States under the implementation of regional energy efficiency policy which was adopted by the Heads of State of the ECOWAS region.

1. BACKGROUND

The ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) was established as a response to the rising energy security concerns, continued lack of access to energy services in ECOWAS region and the need for climate change mitigation. The Vision of ECREEE is to contribute to the sustainable social, economic, and environmental development of ECOWAS by improving access to modern, reliable and affordable energy services, energy security and reduction of energy related GHG emissions and climate change impacts on the energy systems. The specific objective of ECREEE is to create favourable framework conditions and an enabling environment for renewable energy and energy efficiency markets to increase energy access by supporting activities directed to mitigate existing barriers. These activities include policy development, capacity development, knowledge management and awareness, investment and business promotion.

The ECOWAS Heads of State and Governments, at its 43rd Ordinary Session, from 17 to 18 July 2013 in Abuja, Nigeria, renewed their commitment to the provision of sustainable energy services in ECOWAS by adopting the ECOWAS Energy Efficiency Policy (EEEP) which aims to implement measures that will save up to 2000 MW of power generation capacity by 2020.

In order to achieve the objectives of the ECOWAS Energy Efficiency Policy, several flagship initiatives were established, among which the **ECOWAS Initiative on Energy Efficiency in Buildings**.

As part of the implementation of the ECOWAS Initiative Energy Efficiency in Buildings, ECREEE developed the regional directive on energy efficiency of

buildings adopted by the ECOWAS experts meeting in September 2014, in Dakar, Senegal.

According to the article 7 of regional directive, the energy performance of buildings must be measured on the basis of a methodology, which may be differentiated at regional level and which includes, in addition to thermal insulation, other factors such as electrical appliances, application of renewable energy sources and building design. A common approach to this process, carried out by qualified and/or accredited experts, whose independence is to be guaranteed on the basis of objective criteria, will contribute to introduce transparency for owners or users with regard to the energy performance in the real estate market. In this regard, it was recommended to develop or adapt tools for calculating the energy performance of buildings for the ECOWAS region.

Under the overall guidance and supervision of the ECREEE project manager, the incumbent will work as an international expert to develop the tools for calculating of the Energy Performance including climate aspects of new buildings and existing buildings to rehabilitate for the ECOWAS region.

2. OBJECTIVES OF THE ASSIGNMENT

2.1 Overall objective

The overall objective of this consultancy is to develop the calculating tools for the ECOWAS thermal regulation.

2.2 Specific objectives

Specifically the tools will take into account the following priorities:

- The thermal characteristics of the building envelope to reduce the demand for cooling and heating
- Thermal insulation for the need for air conditioning and heating;
- CO₂ emissions.

3. SCOPE OF WORK

Under the direct supervision of ECREEE, the consultant will take responsibility for the work which integrate the following aspects:

- Bioclimatic building design;
- Thermal characteristics of the building envelope;
- Lighting and electrical appliances;
- Ventilation and air-conditioning;
- Occupancy patterns and indoor climate conditions;
- Occupancy patterns and domestic hot water;
- Renewable energy systems;
- Conventional energy systems;
- CO₂ emissions.

The consultant should define criteria allowing ECREEE to evaluate the future tools that will be developed in the ECOWAS zone.

3.1 Identification of existing tools

The Consultant has to:

- Identify relevant tools, especially those adapted to warmer climates, that exist in the world;
- Analyze advantages and weakness and adaptive capacities of each tool identified;
- Select a limited number of relevant proper or adaptable tools to the ECOWAS climate zones.

3.2 Application tools on test countries

The consultant has to test the tools on some ECOWAS countries. Within this frame work, he has to:

- Define the necessary adjustments for each tool ;
- Establish the ECOWAS software version;
- Define the assumptions required for conventional calculations;
- Collect data: climates, construction and technical systems;
- Data input in ECOWAS version of tools;
- Define the relevant sample for testing;
- Make the test of buildings;
- Make adjustments and proceed to the Validation of tools.

3.3 Adaptation of tools to all ECOWAS climate zone

The tool must operate in accordance with the six climate zones that cover the fifteen ECOWAS countries, which are retained in the ECOWAS directive of energy efficiency in buildings. To this end, the consultant will:

- Adapt tools for other countries with the same methodology
- Define the assumptions required for conventional calculations (climate, occupation, internal gains, consumption of ECS, equipment performance ...) for each of the 15 ECOWAS countries.

3.4 Development of tools in ECOWAS languages

The tools must be translated in the three ECOWAS languages (English, French and Portuguese).

4. DELIVERABLES

The consultant will be required to deliver the following deliverables over the course of the project:

- Inception report in English or French - the inception meeting will take place in Praia, Cabo-Verde;
- Assessment and description of existing relevant tools in the world including analysis of the benefits and weaknesses;
- Draft Tools for Calculating Energy Performance including climate aspects of Buildings in ECOWAS countries test and manuals of use;
- Draft Tools for calculating energy performance including climate aspects of Buildings and manuals documents for six ECOWAS climate zones;
- Final Tools for Calculating Energy Performance including climate aspects of Buildings in ECOWAS countries test and manuals of use;
- Final Tools for Calculating Energy Performance including climate aspects of Buildings and manuals documents for six ECOWAS climate zones.

5. METHODOLOGY

It is expected that the Consultant will conduct in-person research and interviews during the course of this project.

The consultant will suggest a methodology to show how he can implement the project. The methodology will include detailed steps for the

development of Tools for Calculating Energy Performance in Buildings. He will study different models applied on international levels. Based on the agreed methodology, the consultant will create a detailed planning, development and monitoring framework for the project implementation. The framework will include detailed activities, organizational plan, time schedule and budget.

6. TIMELINE

It is envisioned that this study will commence on **1st July 2015** and will be completed in time indicated above at the 1st page. The timeline for the implementation of specific activities will be coordinated with the selected Consultant for this project. The consultant will be requested to take into account efforts with relevant on-going initiatives in the matter in West Africa.

7. FORM AND EVALUATION OF PROPOSALS

Bids must include a separated technical and financial part.

7.1 Technical Part:

- Demonstrated understanding of the overall project context.
- Detailed work plan and approach clearly defining the target objectives and the strategy to achieve the objectives as outlined in the scope of work.
- Description of the Consultant:
 - Documents as requested below (see profile, formal & legal, financial);
 - Short description with examples of its previous experiences;
 - Detailed CVs of with proven track record the individual consultant or in case of a consortium, all CVs of the project team of similar international assignments with similar scope and complexity;
 - Copy of highest university degree certificates of the individual consultant or in case of a consortium of the whole project team and other technical trainings related to the assignment;
- Indicative work Plan of activities, schedule of works, including diagram indicating the working days of the offered experts per activity.

7.2 Financial Part:

- Personnel Costs: budget table according to the expert diagram (showing the individual daily fees of the experts in Euro and shall be inclusive of all taxes, duties, works contract tax, sales tax, service tax, VAT, etc.).
- Travel costs according to the suggested methodology including the inception meeting and final meeting in Praia, Cabo-Verde.

7.3 Qualification Requirements

➤ **Profile of Consultant**

The consultant is expected to have the following profile:

- Individual consultant or consortium of consultants (contract will be made with the main consultant)
- Demonstrate strong academic background in research and development software tools in energy management, energy efficiency, buildings and construction;
- At least 10 years of consulting experience in development software tools, including energy performance calculation tools in hot country buildings;
- knowledge in the energy efficiency implementation measures, energy economics in buildings;
- Previous involvement in complex assignments with a similar scope;
- Fluency in English and French.

➤ **Formal and legal requirements**

- The applicant shall be registered as consultant legally authorized to enter into contracts for provision of consulting services. As a proof, the applicant provides evidence on the existence of the company.
- All working files will become the property of ECREEE.

➤ **Financial requirements**

- Personnel Costs: budget table according to the expert diagram (showing the daily fees of the experts in Euro; inclusive of all taxes, duties, contract tax, service tax, VAT, etc.).
- Travel costs according to the suggested methodology.

7.4 Evaluation Criteria

The best offer will be determined as follows:

➤ **80% Quality of technical part**

- Qualification of consultant;
- Quality of proposed methodology: It shows clear understanding of all technical aspects related to services requested. It provides a plan and gives an outlook on the provided solutions to achieve the set objectives and meet all the requirements;
- Years of consulting experience in development software tools;
- Quality and number of tools / developed software, including in hot countries;
- knowledge in the energy efficiency implementation measures, energy economics in the building, especially in hot countries;
- Previous involvement in complex assignments with a similar scope and focus;
- Fluency in English and French.

➤ **20% Financial part**

For the evaluation of the best financial offer the following costs will be considered:

- Personnel Costs: budget table according to the expert diagram (showing the individual daily fees of the experts in euro; inclusive of all taxes, duties, contract tax, service tax, VAT, etc.);
- Travel costs according to the suggested methodology.

ECREEE reserve the right to verify the information provided by the applicant independently.

8. LANGUAGE OF WORK

The consultant must have the capacity to work in English or French. However, the final draft documents should be submitted in English, French and Portuguese.

9. PAYMENT TERMS

The consultant will be paid in accordance with the produces deliverables as agreed in the contract.

10. DEADLINE FOR OFFERS AND QUESTIONS

Electronic offers shall be submitted by e-mail (pdf-format) **at latest by 15 June 2015 at 18:00 GMT to energyefficiency@ecreee.org** .