



AIDE-MÉMOIRE

***ECREEE Regional Training Workshop:
GIS Energy Access Planning, 22 to 23 August 2011
RETScreen Clean Energy Project Analysis, 24 to 26 August 2011***

Location: Kumasi, Ghana

**Jointly organized by
the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE),
the United Nations Industrial Development Organization (UNIDO) and
the Energy Center of Kwame Nkrumah University of Science and Technology (KNUST)**

1. BACKGROUND

The regional training workshop is organized by ECREEE in cooperation with United Nations Industrial Development Organization (UNIDO) and The Technology Energy Centre (TEC) of Kwame Nkrumah University of Science and Technology (KNUST) from 22 to 26 August 2011 in Kumasi, Ghana. ECREEE will take the opportunity to organize the second coordination meeting of the National Focal Institutions (NFIs) on 27 August 2011 at the same location. The RETScreen training is foreseen in the 2011 work plan of ECREEE (see CAD.7) and contributes to the result area on RE&EE capacity development of the ECREEE Business Plan. The training workshop addresses key barriers for the deployment of renewable energy and energy efficiency technologies and services in the ECOWAS region:

- Due to the different financial structure and requirements of RE&EE projects, the appraisal and the determination of the viability of such projects creates a challenge for policy makers, local banks/investors and consultancy companies. The need for such training creates market opportunities for local training institutes or companies. The RETScreen Clean Energy Project Analysis Software is one of the world's leading clean energy decision-making software. It is provided completely free-of-charge and can be used to do financial pre-feasibility checks (see <http://www.retscreen.net>). RETScreen is a proven *enabler* of clean energy projects worldwide. RETScreen significantly reduces the costs (both financial and time) associated with identifying and assessing potential energy projects. These costs, which arise at the pre-feasibility, feasibility, development, and engineering stages, can be substantial barriers to the deployment of Renewable-energy and Energy-efficient Technologies (RETs). By helping to break down these barriers, RETScreen reduces the cost of getting projects on the ground and doing business in clean energy. RETScreen allows decision-makers and professionals to determine whether or not a proposed renewable energy, energy efficiency, or cogeneration project makes financial sense.
- The lack of reliable information, data and planning capacity is a major barrier for rural electrification planning in the ECOWAS region. Decentralized RE&EE technologies (including hybrids, mini-grids) have an important role for rural electrification purposes. There is particularly the need of GIS based data and planning tools. KNUST implemented a pilot project titled "GIS-based support for implementing policies and plans to increase access to energy services in Ghana". The project is sponsored by the European Union Energy Initiative (EUEI) Partnership Dialogue Facility (PDF). The general objective was to contribute towards effective implementation of policies and plans for achieving energy access targets in Ghana until 2020 by applying a GIS toolkit. The project concept envisaged the replication of the project and dissemination of the toolkit in other ECOWAS countries.

2. OBJECTIVES, BENEFICIARIES AND BENEFITS OF THE WORKSHOP

The **overall objective** of the training workshop is to contribute to the long-term endeavor of ECREEE to build up a regional train-the-trainers network on RE&EE issues and tools in the ECOWAS region. The workshop can be seen as a first step in this process. The training network will constitute a platform for other ECREEE activities in the areas of capacity development and knowledge management.

The **specific objectives** of the workshop is to provide training on a.) financial RE&EE project appraisal and analysis by applying the RETScreen Software Tool and b.) Energy Access Planning by using GIS tools tested in Ghana.

The **direct beneficiaries** of the workshops are RE&EE training institutes from all ECOWAS countries, the National Focal Institutions of ECREEE (NFIs) and private sector experts. The training institutes have to meet certain quality criteria and were nominated by the NFIs which represent the Energy Ministries in the respective ECOWAS countries. The RETScreen training will be undertaken by an international consultant and the GIS training will be done by the Energy Centre of KNUST (TEC). All participants will receive a

certificate in the use of the RETScreen Software, if they successfully pass the exam. ECREEE will take the opportunity to organize the second

Outputs and Benefits of the Workshop: The workshop applies a **train-the-trainers approach**. For all ECOWAS training institutes it is compulsory to undertake national follow-up trainings for public and private sector experts in 2012. ECREEE will secure co-funding for these activities in its 2012 work plan and will provide supervision services. The NFIs are asked to act as facilitators for the workshops. The GIS training aims at the replication of the pilot project “GIS-based support for implementing policies and plans to increase access to energy services in Ghana” in other ECOWAS countries. The project was funded by EU-PDF and replication activities could receive co-funding. The TEC of KNUST in coordination with ECREEE will take the lead in this process. If the results of the regional workshop are promising ECREEE will introduce the training institutes into new tools in 2012 (e.g. HOMER and SAM). Apart from direct training benefits, the meeting will also facilitate synergies and cooperation between the ECOWAS training and research institutes. The scientific cooperation between the countries on RE&EE issues is with some exceptions (e.g. KNUST, 2ie) weakly developed. The meeting constitutes the first get-together of RE&EE training institutes from all ECOWAS countries. ECREEE will make use of the meeting for its planned regional RE&EE Capacity Need Assessment (CAD.2).

3. ORGANIZATIONAL PARTNERS

3.1 ABOUT ECREEE

As a policy response to the rising energy security concerns, continued lack of access to energy services in rural areas and the need for climate change mitigation the ECOWAS Energy Ministers established the first regional renewable energy promotion agency in Sub Sahara Africa. The Secretariat of the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECEEE) was inaugurated on 6th July 2010 with assistance of the ECOWAS Commission, the Governments of Austria, Spain and the United Nations Industrial Development Organization (UNIDO). The ECREEE Secretariat is based in Praia, Cape Verde and operates with a small multi-national team of full time staff. ECREEE is decentralized organized and has established a network of National Focal Institutions (NFIs) which interlinks the Secretariat with all ECOWAS Member States. The overall objective (development goal) of ECREEE is to contribute to the sustainable development of West Africa by improving access to modern, reliable and affordable energy services, energy security and reduction of negative energy related externalities (e.g. local pollution, GHG emissions) through the dissemination of RE&EE technologies and services. The specific objective of ECREEE is to create favourable framework conditions for RE&EE markets by supporting activities directed to mitigate existing technical, legal, institutional, economic, financial, policy and capacity related barriers. The Centre implements key activities and projects within the scope of seven result areas:

- RESULT AREA 1: Effective regional RE&EE promotion agency is created and efficiently managed
- RESULT AREA 2: Funds for RE&EE projects mobilized and implemented by the Centre
- RESULT AREA 3: Effective partnerships/networks in the RE&EE sectors created and executed
- RESULT AREA 4: Tailored RE&EE policy, legal and regulatory frameworks created and executed
- RESULT AREA 5: RE&EE Capacities are strengthened and applied
- RESULT AREA 6: RE&EE Knowledge base, awareness raising and advocacy strengthened
- RESULT AREA 7: RE&EE Business and Investment Promotion

3.2 ABOUT UNIDO

The United Nations Industrial Development Organization (UNIDO) is the United Nations’ specialized agency with the mandate to promote industrial development in the world’s developing and least developed nations. The Organization supports governments, businesses and other stakeholders in their efforts to meet the challenges of, and to remove the barriers to, their industrial development. To do so, UNIDO mobilizes knowledge and information, builds capacity, and facilitates the transfer of technology to enhance competitiveness and advance the adoption of climate change mitigation measures. UNIDO’s strategy is built upon three pillars: Poverty reduction through productive activities, trade capacity building and energy and

environment. UNIDO is one of the lead United Nations agencies in the field of renewable energy for productive uses and industrial energy efficiency.

UNIDO takes a comprehensive approach in addressing the barriers to continuous improvement of industrial energy efficiency. It successfully builds on its long-standing experience and unique expertise in sustainable industrial development providing policy support services and capacity-building geared towards market transformation for industrial energy efficiency. UNIDO's approach is based on two core concepts: energy system optimization and energy management standards.

UNIDO assists developing countries and countries in transition to benefit from renewable energy for productive uses. UNIDO's services include the implementation of renewable energy demonstration projects, policy support to create a favorable environment for renewable energy technologies, and capacity-building in the form of local training, workshops and targeted publications. In this context, UNIDO supported the ECOWAS Commission to establish ECREEE and provides technical assistance to its Secretariat. In the regional workshop UNIDO will share its experience in financial and economic RE&EE project analysis by applying the COMFAR tool.

3.3 ABOUT THE ENERGY CENTRE OF KNUST

The Kwame Nkrumah University of Science and Technology (KNUST), Kumasi was established in 1952 as the Kumasi College of Technology by the Pioneer of African Independence, Dr Kwame Nkrumah. The Kumasi College of Technology was transformed into a full-fledged University - the Kwame Nkrumah University of Science and Technology by an Act of Parliament on 22nd August, 1961. Following a Revolution in 1966, the name was changed to University of Science and Technology; however, by another act of Parliament, Act 559 of 1998, the University has been renamed Kwame Nkrumah University of Science and Technology, Kumasi. The University's mission is to provide an environment for teaching, research and entrepreneurship training in Science and Technology for the industrial and socio-economic development of Ghana, Africa and other nations. KNUST also offers service to community, is opened to all the people of Ghana and positioned to attract scholars, industrialists and entrepreneurs from Africa and other international communities. KNUST has consistently been ranked as Ghana's no 1 in higher education, and continues to play a key role in training and research in Africa. The University's official website is: www.knust.edu.gh. The Energy Centre of KNUST is implementing several capacity development and research projects in the area of RE&EE in cooperation with international donors (e.g. World Bank, EU-PDF). The Centre is also executing a RE Msc course and several e-learning trainings. To strengthen its regional profile the Centre has recently signed a cooperation agreement with 2ie in Burkina Faso on common RE&EE training and research activities.

4. TRAINING CONTENT: GIS FOR ENERGY ACCESS PLANNING, 22 to 23 August 2011

Detailed information on the GIS training schedule will be published soon at: <http://workshop.ecreee.org>. The Energy Center (TEC) of Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, has since 2009 been implementing a project titled "GIS-based support for implementing policies and plans to increase access to energy services in Ghana". The project is sponsored by the European Union Energy Initiative (EUEI) Partnership Dialogue Facility (PDF) and aims at regional replication in the ECOWAS region to sustain project results. The general objective is to contribute towards effective implementation of policies and plans for achieving energy access targets in Ghana by 2020 using GIS tools. The specific objectives of the project are:

- To review existing energy policies, strategies and plans for increasing energy access in Ghana
- To use GIS to collate and analyze national level data and provide timely information on population distribution, services, economic activities, and status of energy access programs.
- To identify the gaps in energy policies and plans for achieving expected energy access targets by 2020 and proffer timely mitigation measures.

- To develop methods and tools to facilitate business models, investment plans and capacity development to complement current planned activities to achieve the energy access targets by 2020.
- To facilitate project identification, planning implementation and impact assessment for the Energy Commission of Ghana, the Ghana Ministry of Energy and the ECOWAS Commission for timely development, implementation and monitoring of energy access strategies.
- Replication in other ECOWAS countries

The pilot Ghana project and the applied GIS toolkit opens up possibilities for replication in other ECOWAS countries. As the project in Ghana comes to an end, the project team of KNUST is poised to transmit skills and lessons to other ECOWAS colleagues. ECREEE and KNUST join forces and organise a special regional training workshop. Specifically, the regional GIS training workshop seeks to:

- Introduce participants to methods and tools that has been developed by the project, and
- Use results from the Ghana project as case studies for the application of GIS tools in energy planning and access review, and
- Present a template for implementing similar projects in other ECOWAS member countries.

5. TRAINING CONTENT: RETScreen RE&EE Project Analysis, 24 to 26 August 2011

Detailed information on the RETScreen Training will be provided by the international trainer. Please check <http://workshop.ecreee.org> for regular updates. The international trainer will provide limited follow-up support to the ECOWAS training institutes to prepare the national follow-up trainings. A training CD with a video of the training and other documents will be delivered by the trainer to the participants.

A. REGISTRATION PROCESS

Around 40 to 50 participants consisting of fifteen ECOWAS RE&EE training institutes, fifteen National Focal Institutions of ECREEE (NFIs), ECREEE-KNUST experts and private sector experts are invited. **The nominated participants are requested to send the completed registration forms for the training at latest by 26 July 2011 to workshop@ecreee.org.** The full name (first and second name/surname) of the nominees, their passport numbers and the airports of departure and arrival are required to start the booking process by the UNIDO Travel Unit. Please note, that nominations cannot be changed after the registration (flight tickets are not changeable). Therefore, kindly provide reliable data.

B. DATE AND VENUE

The regional workshop will be held from 22 to 26 August 2011 at The Energy Centre of Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. The GIS training is slated to take place from 22 to 23 August 2011 (see description of training) and the RETScreen training from 24 to 26 August 2011 (see description of training). On 27 August 2011, the second coordination meeting of the ECREEE National Focal Institutions (NFIs) will take place at the same location. A separate agenda and background information will be provided to the NFIs by e-mail.

C. PREPARATORY WORKS AND BACKGROUND INFORMATION

Updated training information, schedules and background papers are available for download at: <http://workshop.ecreee.org>. Workshop participants are asked to bring their own laptops and to preinstall the RETScreen Software which is available free-of-charge at: <http://www.retscreen.net>. The GIS software tools of KNUST will be installed during the training. There is the opportunity to analyse practical RE&EE project proposals from the ECOWAS region during the RETScreen training.

Participants are asked to send technical and financial information on projects they would like to analyse in the RETScreen training at latest by 6 August 2011.

D. VISA ARRANGEMENTS

Before leaving the home country, participants should complete all formalities regarding entry and transit visas, which they may require for the trip to Kumasi, Ghana.

E. HOTEL RESERVATION:

A list of reserved guest houses with reduced rates can be found at: <http://workshop.ecreee.org/>. Please inform if the organizer should help with the accommodation arrangements.

F. ENQUIRIES AND CORRESPONDENCE

All enquiries and correspondence prior to the Conference shall be addressed to:

ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE)

Achada Santo Antonio, Electra Building, 2nd Floor

C.P. 288 Praia – Cape Verde, Tel. +238/2604630

Email: workshop@ecreee.org

Website: <http://workshop.ecreee.org/>, <http://www.ecreee.org>

G. TRAINING LANGUAGES

English and French (Simultaneous translation between English and French will be provided.). The GIS training will be held in French and translated into English. The RETScreen training will be held in French and translated to English.

H. FINANCIAL ARRANGEMENTS

All training fees are covered by the organizers. The costs for the RETScreen trainer and training fees will be covered by UNIDO. The trainers for the GIS training will be covered by KNUST according to the agreed budget. The participation of one expert from each ECREEE National Focal Institution (NFIs), one expert from one RE&EE training institute per ECOWAS country and four experts from ECREEE will be sponsored by UNIDO (around 33 participants). Financial and administrative arrangements for the UNIDO sponsored participants will be made in accordance with UNIDO's rules and regulations. UNIDO will provide:

- a) A round-trip airfare (economy class and most direct route) between the airport of the departure in the sponsored participant's usual place of work and the site of the Workshop (Kumasi, Ghana). The bookings of flights will be done by the UNIDO Travel Unit. Please note that no tickets shall be purchased by sponsored participants. Such tickets cannot be refunded. All sponsored participants shall arrive in Kumasi, Ghana no later than the 21 August 2011. The experts from the ECOWAS training institutes will depart no later than on 26 August right after the training ends (around 18.30) or 27 August (depending on the availability of flights). The National Focal Institutions (NFIs) of ECREEE and the ECREEE experts will participate in the coordination meeting on 27 August and will depart on 27 August right after the meeting (ends at 18.00) or on 28 August (depending on the availability of flights).
- b) A Daily Subsistence Allowance (DSA) at the prevailing UN rate for Kumasi, Ghana, will be paid at the venue to each participants in accordance with the UNIDO regulations and rules and the period of the training (22 to 26 August). The DSA cover board, lodging and incidentals for the period of the attendance at the meeting. An additional DSA night will be paid to cover expenses incidental to travel abroad, such as expenditure for passport, visa, medical examination, inoculations

and other such miscellaneous items, as well as travel to and from the airports. UNIDO cannot assume financial responsibilities for earlier arrivals / later departures for personal reasons. The DSA portion (one day) for the NFIs which participate in the ECREEE Coordination Meeting will be paid by ECREEE according to ECOWAS rules and regulations.

Exclusions:

UNIDO and ECREEE will not assume responsibility for the following expenditure in connection with the participants' attendance at the meetings:

- Costs incurred by participants with respect to any insurance, medical bills and hospitalization fees.
- Compensation in the event of death, disability or illness.
- Loss or damage to personal property.
- Purchase of personal belongings and compensation for damage caused to them by climatic or other conditions.



Agenda: ECREEE GIS Energy Access Planning and RETScreen Training 22 to 26 August 2011, KNUST, Kumasi, Ghana

Day One: 22 August 2011		
GIS Energy Access Planning Training by KNUST		
Location: KNUST, Kumasi, Ghana,		
Time	Session	
09:00	1	<i>Introduction to GIS-based Energy Access Project, Ghana Study</i> 09:00-09:30 Overview of GIS-based Energy Access Project in Ghana 09:30-10:30 Questions/Discussion
10:30		Tea/coffee/cocoa break
12:00	2	11:30-11:50 Discussions on the expectations for the training 11:50-12:10 Introduction to the concepts of the Network Planner Model 12:10-12:40 Running scenarios in the Network Planner Model
12:40		Lunch break
14:00	3	<i>Hands-on training/Exercises</i> 14:00-15:00 Installation and introduction of the Ghana Energy Access Review (GEAR) Toolkit 15:00-15:30 Exploring/Updating data on the GEAR Toolkit
15:30		Snack break
16:00	4	16:00-16:45 Installation of software & course in MS Excel 16:45-17:30 ArcGIS Intro. (Layers, Features, Relative paths and saving maps)
17:30		End of Day One

Day Two: 23 August 2011		
GIS Energy Access Planning Training by KNUST		
Location: KNUST, Kumasi, Ghana,		
Time	Session	
09:00	1	<i>Hands-on training/Exercises</i> <i>Creating/publishing GIS-Energy Access e-maps in ArcGIS</i> 09:00-09:45 Importing Spatial data (e.g. from GPS) 09:45-10:30 Digitizing and Geocoding
10:30		Tea/coffee/cocoa break
10:45	2	10:45-11:45 Spatial analysis 11:45-12:30 Map design
12:30		Lunch break
14:00	3	<i>Hands-on training/Exercises</i> 14:00-15:30 Publishing e-maps
15:30		Snack break
15:45	4	15:45-16:15 Plenary discussions on the way forward 16:15-16:30 Evaluation of workshop, participants 16:30-16:45 Closing remarks by Prof. Abeeku Brew-Hammond
17:00		End of Day Two



Day Three: 24 August 2011		
RETScreen Training on RE&EE Project Analysis by ECREEE		
Location: KNUST, Kumasi, Ghana		
Time	Session	
9:00	1	Downloading, and installation of RetScreen Expected topics of interest – overview of the training course – introduction to RetScreen worksheet
11:30		Tea/coffee/cocoa break
12:00	2	General Walk-through the analysis of a project with RETScreen – climate and energy data –online resources -
13:30		Lunch break
14:30	3	RETs_1: Photovoltaic Energy: Case study: Photovoltaic Electricity Generation Introduction – type of network – off grid, isolated grid – grid connected – central/decentralised systems
16:00		Tea/coffee/cocoa break
16:30	4	Hands-on/Exercise: Renewable Energy Project Analysis and demonstration of calculation of case studies on PV grid-connected- Case studies for ECOWAS countries (e.g. – water pumping) – Group discussions
18:30		End of Day Three

Day Four 25 August 2011		
RETScreen Training on RE&EE Project Analysis by ECREEE		
Location: KNUST, Kumasi, Ghana		
Time	Session	
09:00	1	RETs_2: Wind Energy Technology: Power point presentation - Energy Project Analysis and demonstration of calculation of case studies on Wind power generation
10:30		Tea/coffee/cocoa break
11:00	2	Case Studies: Group work – Discussion of group work - comments
12:45		Lunch break
14:00	3	RET_3: Mini-Hydro Power Generation - Power point presentation – example of case study Case study: Hydro power generation – Group discussions - Project Analysis of case studies from the ECOWAS region to be undertaken by the participants in working groups – Presentation of calculations of case studies by working groups and discussions
15:30		Tea/coffee/cocoa break
16:00	4	RET_4: Thermal Energy Analysis Power point presentation – Solar Thermal heat – Case study –Group discussions RET_5: Biomass based combined heat and electricity generation
18:30		End of Day Four

Day Five 26 August 2011		
RETScreen Training on RE&EE Project Analysis and Appraisal		
Location: ECREEE Secretariat		
Time	Session	
09:00	1	EE_1: Energy Efficiency in buildings – Lighting Case study: Group discussions - Comments
10:30		Tea/coffee/cocoa break
11:00	2	EE_2: Energy Efficiency – Ventilation – Air Conditioning Power point presentation – case studies
12:30		Lunch break
13:30	3	Briefing and instructions to the training institutes and NFIs on the follow-up trainings in 2012. Assign preparatory works and helpful materials for the curricula development.
15:30		Tea/coffee/cocoa break
15:50	4	Certification Exams (exam available in French and English)
19:00		End Day

Registration Form
(only for invited participants)

TRAINING WORKSHOP
GIS Training for Energy Planning and RETScreen Project Appraisal Training

Date: 22 August to 26 August 2011

Location of Workshop: *The Energy Center College of Engineering,
Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana*

Regular updates on the workshop, logistical information and a list with recommended hotels are available at our website: <http://workshop.ecreee.org>. Please, send this registration form to: workshop@ecreee.org.

First and Second Name:

Mr./Ms. _____

Organisation:

Address:

ZIP Code / City:

Country:

Phone:

Fax:

E-mail:

Passport Number (is needed for the travel bookings and DSA payments)

A round-trip airfare (economy class and most direct and shortest route) between the departure airport in the participant's usual place of work and the site of the workshop will be booked by a travel consultant. Please, provide reliable information on the departure and arrival airports. The bookings will be done by the organizers. Not authorised tickets cannot be reimbursed.

Departure Airport: _____
flight)

Departure Date: 20/21 August 2011 (outward

Arrival Airport: _____

Arrival Date: 26/27 August 2011 (return flight)

Hotel accommodation:

I made a room reservation at: *(please fill in)*

Hotel

(see hotel list with room contingents at <http://workshop.ecreee.org>)

Date, Place and Signature:

GIS Training for Energy Access and RETScreen Project Appraisal Training

Rate for hotel rooms

HOTEL NAME	ROOMS RESERVED	SERVICES INCLUDED	PRICE per day	CONTACT
Royal Basin Hotel	21	-Break-fast	25 EUR	Kate Amoa - Ohenakwah Communication and Publications Assistant The Energy Center, KNUST Kumasi, Ghana +233-247-590828 (mobile) kaiddytec@gmail.com
School of Medical Sciences Guest House, KNUST	7	-Break-fast	16 EUR	Kate Amoa - Ohenakwah Communication and Publications Assistant The Energy Center, KNUST Kumasi, Ghana +233-247-590828 (mobile) kaiddytec@gmail.com
Engineering Guest House, KNUST	16	-Break-fast	25 EUR	Kate Amoa - Ohenakwah Communication and Publications Assistant The Energy Center, KNUST Kumasi, Ghana +233-247-590828 (mobile) kaiddytec@gmail.com

A bus transport from the hotel to the Workshop location will be provided to convey Participant to and from their hotel rooms. Please do not forget to return the registration form. For Further confirmation, please or send your question to workshop@ecreee.org

Annex 1: Job Description/Terms of Reference for the RETScreen Trainer (TOR)

1. General Background Information

The Secretariat of the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) was established in November 2009 in Praia, Cape Verde by the ECOWAS Commission with support of the Governments of Austria, Cape Verde and Spain, and the technical assistance of the United Nations Industrial Development Organization (UNIDO). The official inauguration of the Centre and the first Executive Board meeting of ECREEE were held on 6th July 2010 in Praia, Cape Verde. The event marked the completion of the preparatory phase, the signing of the headquarters agreement and the official launch of the operational phase of ECREEE. ECREEE aims at the establishment of regional renewable energy and energy efficiency markets by supporting various activities to mitigate existing barriers on different levels and sectors. The ECREEE activities include policy development and quality assurance, capacity development, the design and application of tailored financing mechanisms, awareness raising and the implementation of demonstration and investment projects and programmes with potential for regional dissemination. Back to back to a regional a regional workshop on GIS energy access planning, to be held in Kumasi, Ghana, from 22 to 23 August 2011, ECREEE is organising a RETScreen Clean Energy Project Analysis training from 24 to 26 August. The training is applying a train-the-trainers approach and should facilitate follow-up trainings. The ECREEE Secretariat will assign a qualified international trainer with extensive experience regarding RETScreen and RE&EE project appraisal.

2. Aim of the Project

The **overall objective** of the RET Screen workshop is to contribute to the endeavor of ECREEE to build up a regional train-the-trainers network on RE&EE project appraisal in the ECOWAS region. The RETScreen evaluation tool will be one tool apart of others being applied by the network (e.g. HOMER, COMFAR etc.).

The **specific objective** of the workshop is to provide training on financial RE&EE project analysis by applying the RETScreen Software Tool. The specific objective of the assignment of the trainer is to ensure high-quality training and follow-up support for the participants. The **direct beneficiaries and participants** of the workshops are RE&EE training institutes from all ECOWAS countries, the National Focal Institutions of ECREEE (NFIs), ECREEE staff and private sector experts. The training include a certification exam in the use of RETScreen.

Outputs and Benefits of the Workshop: The workshop applies a train-the-trainers approach and aims at replication in the ECOWAS region. The international trainer will empower the participating ECOWAS training institutes to hold national follow-up trainings. For all ECOWAS training institutes it is compulsory to undertake national follow-up trainings for public and private sector experts in 2012. ECREEE will secure co-funding for these activities in its 2012 work plan. The international trainer provides limited follow-up support to the training institutes to prepare the curricula of the national workshops in cooperation with ECREEE and more advanced training institutes in the ECOWAS region.

3. The Scope of the proposed Services

The workshop shall have the following structure:

- One day introduction course into RETScreen & selected EE & RE case studies
- Two days in-deep training (including calculations done by the participants in groups) including certification exam (for around 40 to 50 experts)
- Follow-up assistance to the training institutes and NFIs for the preparation of their national follow-up workshops in 2012

The assigned trainer should provide the following services throughout the workshop cycle (preparation, execution and follow-up):

Tasks	Responsible/Costs
<ul style="list-style-type: none"> Teaching in English and French; Portuguese would be an added value; 	International trainer will deliver the training in French. ECREEE will provide an English translation service. The exams and all documents shall be made available by the trainer in English and French.
<ul style="list-style-type: none"> Provide all relevant information on the training schedule and content to the participants before the workshop by e-mail (in French and English) and to be published at http://workshop.ecreee.org. 	International trainer
<ul style="list-style-type: none"> Provide training materials in hard-copy and electronically at the event in English and French (e.g. software, RETScreen Guides, case studies) 	International trainer
<ul style="list-style-type: none"> Provide examination materials in English and French 	International trainer
<ul style="list-style-type: none"> Provide certificates in the use of RETScreen for successful participants (in French & English) 	International trainer
<ul style="list-style-type: none"> Publish a press notice on the workshop in cooperation with ECREEE & UNIDO & KNUST 	ECREEE & UNIDO & KNUST
<ul style="list-style-type: none"> 10 days follow-up phase after the termination of workshop: preparatory Assistance to the training institutes and NFIs to organize follow-up trainings in 2012: <ul style="list-style-type: none"> Give needed follow-up instructions, homework and advise to the ECOWAS training institutes to develop the curricula for the follow-up trainings in 2012; Provide supervision in cooperation with ECREEE and selected advanced training institutes in the ECOWAS region to prepare the follow-up trainings; Answer follow-up questions of the participants 	International trainer

4. Time Schedule (to be negotiated with the trainer)

Time Schedule	Expected Duration	Location	Expected Results
Preparatory Phase (preparation of training materials, pre-information for participants)	4 w/d	Home base	Pre-inform participants
Workshop execution including travel	6 w/d	Kumasi, Ghana	Workshop executed
Follow-up support to the ECOWAS training institutes for the preparation of the follow-up workshops	10 w/d	Home base	Ensure follow-up workshops

Day Three: 24 August 2011		
RETScreen Training on RE&EE Project Analysis by ECREEE		
Location: KNUST, Kumasi, Ghana		
Time	Session	
9:00	1	Downloading, and installation of RetScreen Expected topics of interest – overview of the training course – introduction to RetScreen worksheet
11:30		Tea/coffee/cocoa break
12:00	2	General Walk-through the analysis of a project with RETScreen – climate and energy data –online resources -
13:30		Lunch break
14:30	3	RETS_1: Photovoltaic Energy: Case study: Photovoltaic Electricity Generation Introduction – type of network – off grid, isolated grid – grid connected – central/decentralised systems
16:00		Tea/coffee/cocoa break
16:30	4	Hands-on/Exercise: Renewable Energy Project Analysis and demonstration of calculation of case studies on PV grid-connected- Case studies for ECOWAS countries (e.g. – water pumping) – Group discussions
18:30		End of Day Three

Day Four 25 August 2011		
RETScreen Training on RE&EE Project Analysis by ECREEE		
Location: KNUST, Kumasi, Ghana		
Time	Session	
09:00	1	RETS_2: Wind Energy Technology: Power point presentation - Energy Project Analysis and demonstration of calculation of case studies on Wind power generation
10:30		Tea/coffee/cocoa break
11:00	2	Case Studies: Group work – Discussion of group work - comments
12:45		Lunch break
14:00	3	RET_3: Mini-Hydro Power Generation - Power point presentation – example of case study Case study: Hydro power generation – Group discussions - Project Analysis of case studies from the ECOWAS region to be undertaken by the participants in working groups – Presentation of calculations of case studies by working groups and discussions
15:30		Tea/coffee/cocoa break
16:00	4	RET_4: Thermal Energy Analysis Power point presentation – Solar Thermal heat – Case study –Group discussions RET_5: Biomass based combined heat and electricity generation
18:30		End of Day Four

Day Five 26 August 2011		
RETScreen Training on RE&EE Project Analysis and Appraisal		
Location: ECREEE Secretariat		
Time	Session	
09:00	1	EE_1: Energy Efficiency in buildings – Lighting Case study: Group discussions - Comments
10:30		Tea/coffee/cocoa break
11:00	2	EE_2: Energy Efficiency – Ventilation – Air Conditioning Power point presentation – case studies
12:30		Lunch break
13:30	3	Briefing and instructions to the training institutes and NFIs on the follow-up trainings in 2012. Assign preparatory works and helpful materials for the curricula development.
15:30		Tea/coffee/cocoa break
15:50	4	Certification Exams (exam available in French and English)
19:00		End Day

5. General Time Schedule

The training workshop will take place from 24 to 26 August 2011 in Kumasi, Ghana. It will take place in the facilities of the The Energy Centre of KNUST.

6. Languages requirements

The main working languages of the trainer would be English and French. ECREEE will provide English-French translation services if required. Portuguese could be covered by participating ECREEE experts.

7. Deliverables

The institution/company is responsible to deliver the following products in English and French:

- Final Workshop Agenda & explanation of conducted teaching methodology
- Send preparatory information and background documents on the training and RETScreen to participants before the event (to be published at <http://workshop.ecreee.org>)
- Provide Training materials for all participants (hard-copy and electronically)
- Examination Materials & RETScreen certificates
- Produce a Video on the training to be used by ECREEE for follow-up activities
- Follow-up Instructions, homework and supervision materials for the preparation of the 2012 follow-up workshops.
- Meeting report on the workshop and follow-up activities
- Published press note on the workshop

8. Skill and Qualifications required

The contractor has to meet the following requirements:

- Fluent English and French teaching skills

- Extensive RETScreen training experience of the institution/company and the provided trainer (CV & list of done trainings required)
- Train-the-trainer experience
- Good knowledge of the trainer regarding energy efficiency and renewable energy project appraisal (indicate in CV);
- Experience in the area of energy in Sub Sahara Africa or in other developing countries required



*ECOWAS Regional Centre for
Renewable Energy and Energy Efficiency*

*Centre Régional pour les Energies Renouvelables
et l'Efficacité Energétique de la CEDEAO*

*Centro Regional para Energias Renováveis e
Eficiência Energética da CEDEAO*

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