CONCEPT NOTE

ECREEE Regional Training of Trainers Workshop:
HOMER Software for RE project design

Date: 18 to 21 June 2013
Location: Praia, Cape Verde

Organized by:

Supported by:

Austrian Development Cooperation

UNIDO

aecid

I. Introduction and Context

A. Brief Description

The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) is organising a four-day Training of Trainers on HOMER as a tool for renewable energy (RE) project design from June 18–21, 2013, in Praia, Cape Verde.

The training will use theoretical concepts, simulations, practical exercises and field visits to existing RE projects in Cape Verde to prepare potential trainers on the use of HOMER and to enable them conduct basic national trainings in ECOWAS Member States. Prospective participants will be required to pass a preliminary phase prior to their acceptance onto the Training Workshop as well as finalising some activities after the workshop, including organising a 2-day national workshop in their own institution.

This training of trainers is part of ECREEE's objectives in building capacities in ECOWAS Member States in RE project design and appraisal, and to create an ECOWAS network of certified trainers in different RE project tools. The first training of this kind was for RETScreen. The regional training is anticipated in ECREEE's 2013 work plan and contributes to the results area on renewable energy and energy efficiency (RE&EE) capacity development in ECREEE's Business Plan. The training workshop addresses key barriers to the deployment of RE&EE technologies and services in the ECOWAS region.

B. Background

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 (ECREEE) was inaugurated on 6th July 2010 with support of the ECOWAS Commission, the Governments of Austria, Spain and technical assistance of 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 works through a network of National Focal Institutions (NFIs) which interlinks the Secretariat with all ECOWAS Member States. The overall objective of ECREEE is to contribute to the sustainable development of West Africa by improving access to modern, reliable and affordable energy services and energy security, and a reduction of negative energy related externalities (e.g. local pollution, greenhouse gas (GHG) emissions) through the dissemination of RE&EE technologies and services. ECREEE aims at the creation of favorable framework conditions for renewable energy and energy efficiency markets. The Centre supports activities, programs and projects directed to mitigate existing technical, legal, institutional, economic, financial, policy and capacity related barriers. The ECREEE activities include fund mobilization, policy support, knowledge management and awareness raising, capacity development and business and investment promotion.

About HOMER

The HOMER energy modeling software is a powerful tool for designing and analyzing hybrid power systems, which contain a mix of conventional generators, combined heat and power, wind turbines, solar photovoltaic, batteries, fuel cells, hydropower, biomass and other inputs. It is currently used all over the world by tens of thousands of people.

For either grid-tied or off-grid environments, HOMER helps determine how variable resources such as wind and solar can be optimally integrated into hybrid systems. Engineers and non-professionals alike use HOMER to run simulations of different energy systems, compare the results and get a realistic projection of their capital and operating expenses. HOMER determines the economic feasibility of a hybrid energy system optimizes the system design and allows users to really understand how hybrid renewable systems work.

As distributed generation and renewable power projects continue to be the fastest growing segment of the energy industry, HOMER can serve utilities, telecoms, systems integrators and many other types of project developers – to mitigate the financial risk of their hybrid power projects.

HOMER Energy provides software, services and an on-line community to the diverse group of people who are using HOMER to design hybrid systems. More information can be found at http://homerenergy.com/index.html

HOMER is a software developed in English, no French version is available.

II. Activity Objectives and Key Results

A. Primary objectives

To increase the knowledge on simulation and dimensioning tools for the energy system in West Africa through ECREEE's Train-the-Trainers Network on Renewable Energy and Energy Efficiency Project Planning and Design.

B. Key outcomes being sought

The workshop aims at achieving the following specific objectives:

- To empower an expert pool from the ECOWAS region to conduct further HOMER Software training.
- To understand the complexity of hybrid systems and the need for simulation and dimensioning tools available now to the public.

III. Activity Description (Tasks and outputs)

A. Outputs and Benefits

The workshop applies a train-the-trainers approach. For all ECOWAS institutions participating, it is compulsory to undertake national follow-up training for public and private sector experts in 2013/14. ECREEE will secure limited co-funding for these activities in its 2013/4 work plans and will provide supervision services. Synergies with the ongoing national RETScreen trainings and trainer capacities will be sought. Besides direct training benefits, the meeting will also facilitate synergies and cooperation between a range of ECOWAS training and relevant institutions.

B. Expected Results

By the end of the workshop, it is expected that the participant will be able to perform the following tasks:

- Complete a HOMER software based exercise.
- Conduct a national course about HOMER software.
- Provide help desk services.

IV. Participants and Requirements

The direct beneficiaries of the workshops are RE&EE relevant institutions from all ECOWAS countries. Participants will be selected according to the requirements described below. Successful candidates will be selected up to a maximum of 20 participants; geographical criteria will be used to ensure the broad presence of of Member States.

A. Requirements from the candidate

a) Prior to the Training

Technical Requirements:

- Understanding of the basics of Hybrid, Stand-alone and Grid-connected systems using different types of energy resources;
- Good overview of simulation tools and software for electricity;
- Understanding of cost and economic analysis of power systems' life cycle.

Institutional Requirements:

- The candidate should commit to organising a two-day workshop for experts from his/her institution and other relevant institutions in his/her country. A written commitment will be required.

Note:

- A pre-training session will be delivered online.
- Prior to the training, instructions on how to install the HOMER software will be provided. The candidate will ensure the safe installation on his/her own computer.

b) During the Training

- The participant is required to bring his/her own laptop.
- The participant is expected to complete all the practical exercises.
- The participant will undertake a test to assess the competences acquired during the training.

c) After the Training

- The participant will prepare national trainings with ECREEE's support and validation.
- The participant will organise national training in his/her institution within a period of one year from the date of the training in Praia.

V. BASIC INFORMATION FOR PARTICIPANTS

A. REGISTRATION PROCESS

After reading the background information provided at http://www.ecreee.org/event/ecreee-regional-training-trainers-workshop-homer-software-renewable-energy-project-design, interested participants should complete the online questionnaire at http://www.ecreee.org/homer-online-questionnaire before 22 May 2013. Detailed resumes and support letters from an ECOWAS institution will need to be uploaded as part of the online questionnaire.

Successful candidates will be duly informed about their nomination before 27 May 2013.
Workshop participants are requested to bring their own laptops and to install the HOMER Legacy software which is available free-of-charge at: http://homerenergy.com/.

Nominated participants are requested to complete and submit their registration forms latest by 03 June 2013. The full name (first and second name/surname) of the nominees, passport number and the airports of departure and arrival are required to commence the flight booking process. Please note that nominations and flight details cannot be changed after the registration. Therefore, kindly provide accurate information.

B. FINANCIAL ARRANGEMENTS

Costs of the HOMER trainer and other training fees will be covered by ECREEE.

For each participant, ECREEE will provide:

- A round-trip airfare (economy class and most direct route) between the airport of departure in the sponsored participant's usual place of work and the location of the workshop (Praia, Cape Verde). Flight bookings will be arranged by ECREEE.
- Hotel and meals (except dinner).
- DSA of €205 per day for two travel days and €200 for miscellaneous expenses (total 605 EUR).

C. EXEMPTIONS

ECREEE will not assume responsibility for the following expenditures in connection with participants' attendance at the trainings:

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

D.TRAINING LANGUAGES

The course will be conducted in English and French.

E. ENQUIRIES AND CORRESPONDENCE

All enquiries and correspondence prior to the workshop should be addressed to:

Email: workshop@ecreee.org

F. INDICATIVE TRAINING SCHEDULE

	DAY 1: Introduction to HOMER
Times	Activities
08:00 – 08:30	Registration
08:30 – 09:30	Opening, Overview of ECREEE and participants' presentation
09:30 – 10:30	Overview of the training course: critical concepts, approach and specific needs from the users.
10:30 – 10:15	Tea / coffee / break
10:15 – 11:15	General introduction: Overview of design and simulation tools
11:15 – 12:00	PROS & CONS about Homer simulation tool
12:00 – 13:30	What you can do (and what you cannot do) with HOMER: Examples, outputs, results and data processing.
13:30 – 14:45	LUNCH TIME!
14:45 – 16:30	HANDS on HOMER: practical session with the user interface
16:30 – 16:45	Tea / coffee / break
16:45 – 18:00	Introduction to Exercise 1
18:00	End of Day 1

	DAY 2: SYSTEM DIMENSIONING
Times	Activities
08:30 – 09:00	Correction of Exercise 1
09:00 – 10:15	Introduction to hybrid systems
10:15 – 10:30	Tea / coffee / break
10:30 – 11:45	HANDS on HOMER: Simulating and dimensioning and Stand-alone Hybrid System *THE INPUTS* • Energy Demand: the load profile INPUT • Energy Resource INPUT • Technical equipment and costs INPUT • Restrictions INPUT
11:45 – 12:00	Q & A
12:00 – 13:15	*THE OUTPUTS* • Outcome of the simulation: List of possible systems • Interpretation of the economical results • Analysing the simulated performance of the system • Exporting data for further uses
13:15 – 13:30	Q & A
13:30 – 14:30	LUNCH TIME!
14:30 – 15:30	Introduction to Grid Connected systems
15:30 – 15:45	Q & A
15:45 – 16:15	HANDS on HOMER: Simulating and dimensioning a Grid Connected System

	THE INPUTS • Energy Demand: the load profile INPUT • Energy Resource INPUT • Technical equipment and costs INPUT • Restrictions INPUT
16:15 – 16:30	Tea / coffee / break
16:30 – 17:15	*THE OUTPUTS* • Outcome of the simulation: List of possible systems • Interpretation of the economical results • Analysing the simulated performance of the system • Exporting data for further uses
17:15 – 17:30	Q & A
17:30 – 18:00	Introduction to Exercises 2 and 3
18:00	End of Day 2

	DAY 3: FIELD VISIT and SIMULATION
Times	Activities
Morning	TECHNICAL VISIT -Hybrid System in Vale da Custa -Grid connected in Cabeolica
13:30 – 14:45	LUNCH TIME!
14:45 – 16:15	HANDS on HOMER: Quick simulation of the "TECHNICAL VISIT"
16:15 – 16:30	Tea / coffee / break
16.30 – 18:00	HANDS on HOMER: Quick simulation of the "TECHNICAL VISIT"
18:00	End of Day 3

	DAY 4: NATIONAL TRAINING PREPARATION
Times	Activities
Morning	More data resources for training Explanation of the "on-line" certification Exam Preparation of National Training Wrap up and evaluation of the training course
13:30 – 14:45	LUNCH TIME!
14:45 – 16:15	FREE time
18:00	End of Day 4

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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