

ECOWAS RENEWABLE ENERGY ENTREPRENEURSHIP SUPPORT FACILITY
TRAINING WORKSHOP
7 - 11 November 2016
Praia, Cabo Verde

DRAFT AGENDA

Day 1 7 November 2016 Minigrid Introduction & Sizing	
10:00 – 10:30	Welcoming remarks by ECREEE (Jansenio Delgado), CERMI (Pedro Semedo), IRENA (Tijana Radojicic), 2iE (Bachir Ouedraogo), and Luxemburg Government (Jorge Wahnon)
10:30 – 10:45	Session 0 - Introduction <ul style="list-style-type: none"> • Introduction and welcoming words by the trainer • Short introduction of the group to assess knowledge basis
10:45 – 11:00	Coffee & tea break
11:00 – 12:15	Session 1 - General introduction to Minigrids <ul style="list-style-type: none"> • Types of Minigrids • Applications • Components of Minigrids • Methods to design Minigrids
12:15 – 13:00	Session 2 - Importance of sizing Minigrids <ul style="list-style-type: none"> • Methods for assessing energy demand <ul style="list-style-type: none"> ○ Surveys ○ Measurement ○ Assessments Exercise 2.1: Reading and understanding a site survey sheet
13:00 – 14:00	Lunch break

14:00 – 15:45	<p>Session 3 - Assessment of effective energy demand</p> <p>Exercise 3.1: Generation of load profile</p> <ul style="list-style-type: none"> • Influencing factors in rural communities <ul style="list-style-type: none"> ○ Willingness to pay ○ Ability to pay • Effective demand (vs. demand) and its calculation • Forecasting of energy demand <ul style="list-style-type: none"> ○ Theoretical models ○ Practical recommendation <p>Exercise 3.2: Forecasting of effective demand using corrective factors</p>
15:45 – 16:00	Coffee & tea break
16:00 – 16:45	<p>Session 3 - Assessment of effective energy demand – continued</p> <ul style="list-style-type: none"> • Socio-economic methods for forecasting based on <ul style="list-style-type: none"> ○ Demographics ○ Economic productivity ○ Typical consumption patterns • Variation of forecasting scenarios <p>Exercise 3.2: Understanding the different forecasting scenarios</p>

<p>Day 2 8 November 2016 Data for Minigrid Sizing & Minigrid Details</p>	
09:00 – 09:30	<p>Session 4 – Sizing of Minigrids</p> <ul style="list-style-type: none"> • Data requirements • Flowchart on the process of sizing • Data required to size Minigrids appropriately • Typical goals to achieve when sizing minigrids

09:30 – 10:00	<p>Session 5 – Understanding Tariffs Models</p> <ul style="list-style-type: none"> • Understanding tariffs <ul style="list-style-type: none"> ○ Calculation of tariff ○ ABC models ○ Uniform tariffs • Meters & Load delimiters • Demand side management aspects <p>Exercise: ABC Tariff calculation</p>
10:00 – 10:45	<p>Session 6 – Technical Basics for minigrid design</p> <ul style="list-style-type: none"> • Site evaluation • Using GIS for site selection • Power generation • Power distribution • Quality of components
10:45 – 11:00	Coffee & tea break
11:00 – 13:00	<p>Session 7 - Modes of operation of Minigrids</p> <ul style="list-style-type: none"> • Understanding different modes of operations, such as: <ul style="list-style-type: none"> ○ Solar-battery ○ Solar-diesel with battery backup ○ Solar-diesel ○ Daytime solar • Components in each of the systems • Aspects of energy security (security of supply) • Energy storage options to evaluate <p>Exercise: Sizing of components & operational differences of modes</p>
13:00 – 14:00	Lunch break
14:00 – 15:45	<p>Session 8 – Project Budgeting & Component selection</p> <ul style="list-style-type: none"> • Design criteria based on load profile & mode of operation • Elements to consider when setting up project budgets
15:45 – 16:00	Coffee & tea break

16:00 – 16:45	<p>Session 9 - Introduction to useful Minigrid tools</p> <ul style="list-style-type: none"> • Minigrid Builder • HOMER Energy • QjLoad • EU PDF Minigrid toolkit <p>This session will be interactive with the tools</p>
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Day 3 9 November 2016 Minigrid Design in HOMER Energy	
09:00 – 10:45	<p>Introduction to HOMER</p> <ul style="list-style-type: none"> • Introduction to HOMER • Basic use of the tool • Understanding the tool and how it works • Understand the elements and features
10:45 – 11:00	Coffee & tea break
11:00 – 13:00	<p>Detailed design of a Minigrid with HOMER</p> <ul style="list-style-type: none"> • Setting up a simple Minigrid in HOMER • Including different generation sources in the model • Including a load profile • Understand parameters of model and components in model <p>Exercise: Building up a model of a minigrid in HOMER</p>
13:00 – 14:00	Lunch break
14:00 – 15:45	<p>Simulation of a Minigrid model in HOMER</p> <ul style="list-style-type: none"> • Setting up scenarios in the model • Performing simulations • Result analysis and interpretation • Data export & reports <p>Exercise: Using the prior built model to perform simulations</p>
15:45 – 16:00	Coffee & tea break

16:00 – 17:00	Basics of financial modelling <ul style="list-style-type: none"> • Cost of capital • Internal rate of return vs. interest rates • Net present value calculation • Discounted cash flow calculation • Energy yield consideration • Probability scenarios
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Day 4 10 November 2016 Financial Simulation of Minigrids & Minigrid site visit	
09:00 – 10:45	Financial simulation of a Minigrid 1/2 <ul style="list-style-type: none"> • Presentation of a case study on a minigrid • Budgeting • Calculating LCOE • Calculating NPV • Calculating IRR
10:45 – 11:00	Coffee & tea break
11:00 – 13:00	Financial simulation of a Minigrid 2/2 <ul style="list-style-type: none"> • Calculation of tariffs • Revenue calculation as Minigrid operator • Simulation of different scenarios of the model • Result analysis and interpretation • How to finance minigrids
13:00 – 14:00	Lunch break
14:00 – 17:00	Field visit of Minigrid installation <ul style="list-style-type: none"> • Explanation of components installed <ul style="list-style-type: none"> ○ Solar panels & Inverters ○ Backup generators ○ Battery system ○ Cabinets & Controllers ○ Cabling & lines • Discuss maintenance and repair issues • Highlight good/bad examples of implementation

17:00	Dinner
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Day 5 11 November 2016 Financial Simulation of Minigrids continued	
09:00 – 10:45	Presentation and discussions on bankability of Entrepreneurs projects proposals 10min (Presentation) + 15min (Q&A)
10:45 – 11:00	Coffee & tea break
11:00 – 12:00	Presentation of Entrepreneurs projects proposals (continued)
12:00 – 12:15	Presentation on Minigrid in the ECOWAS region (by Eseoghene HOBSON – ECREEE)
12:15 – 12:50	Training summary <ul style="list-style-type: none"> • Data collection • Design of Minigrids • Financing of projects • Key takeaways • Do's and don'ts
12:50 – 13:00	Closing remarks
13:00 – 14:00	Lunch break