

**Workshop Agenda: WEEK II - Training workshop for policy makers, regulators and national/public utilities in 5 advanced ECOWAS countries** (Cape Verde, Gambia, Ghana, Nigeria and Senegal)

**Location: ERATA Hotel, Accra, Ghana / 16-20 September 2013 (English => French translation)**

	<b>Monday 16 Sept</b> <b>Introduction</b> <b>Regional Policies</b>	<b>Tuesday 17 Sept</b> <b>RE policies and</b> <b>regulatory framework</b>	<b>Wednesday 18 Sep</b> <b>Off-grid and rural</b> <b>electrification</b>	<b>Thursday 19 Sep</b> <b>Grid-tied PV projects</b>	<b>Friday 20 Sep</b> <b>Technical issues - grid</b>
<b>9.00 - 10.45</b>	<b>Welcome and Introduction (1)</b>	<b>Renewable Energy Policies (5)</b>	<b>Off-grid supporting policies (9)</b>	<b>Grid-tied PV projects (13)</b>	<b>Grid connection of PV systems (17)</b>
	<ul style="list-style-type: none"> <li>• Introduction by Trainers and Participants</li> <li>• Guest speakers (ECREEE &amp; IRENA)</li> <li>• Introduction to agenda (RENAC)</li> </ul>	<ul style="list-style-type: none"> <li>• Feed-in-tariffs (tariff setting, adjustment, review, degression)</li> <li>• Renewable Portfolio Standards</li> <li>• Tax credits</li> <li>• Tendering</li> </ul>	<ul style="list-style-type: none"> <li>• Support instruments for off-grid regions: FITs for mini-grids?</li> <li>• Overview of International Off-grid FITs</li> <li>• Cost and financial analysis of RE micro-grids</li> <li>• Issues and options for RE &amp; micro-grids</li> </ul>	<ul style="list-style-type: none"> <li>• Typical grid-tied PV systems and applications</li> <li>• Important technical aspects in PV projects</li> <li>• Typical risks in PV projects (incl. discussion)</li> </ul>	<ul style="list-style-type: none"> <li>• Grid connection procedures of medium-sized PV power plants to low and medium voltage grid</li> <li>• The German Medium-Voltage Guideline</li> <li>• Technical requirements and modern power electronics</li> <li>• Unit and system certificates</li> </ul>
<b>Lecturer</b>	<b>Jens Altevogt, RENAC</b>	<b>David Jacobs</b>	<b>David Jacobs</b>	<b>Jens Altevogt, RENAC</b>	<b>Jens Altevogt, RENAC</b>
<b>10.45 - 11.15</b>	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>
<b>11.15 - 12.45</b>	<b>Photovoltaics – technology and cost overview (2)</b>	<b>Net metering in ECOWAS (6)</b>	<b>Options for rural electrification (10)</b>	<b>Grid-tied PV projects and Economic assessment (14)</b>	<b>Workshop: Strategy for grid-connection procedures (18)</b>
	<ul style="list-style-type: none"> <li>• Technologies</li> <li>• Applications</li> <li>• Costs</li> <li>• Market and price developments</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to net metering for small-scale PV</li> <li>• Analysis: Risks and Opportunities Discussion</li> <li>• Applicability in ECOWAS</li> <li>• Customer classes: residential, commercial and industrial net metering</li> <li>• Engaging local actors</li> </ul>	<ul style="list-style-type: none"> <li>• Practical example of off-grid/micro grids in Senegal</li> <li>• Grid extension/densification, isolated micro-grids, stand-alone systems</li> <li>• Capacity Development for Energy Sector and RETs</li> </ul>	<ul style="list-style-type: none"> <li>• Developing PV projects</li> <li>• Price development in PV technology</li> </ul>	<ul style="list-style-type: none"> <li>• Group work on identifying a strategy for the implementation of suitable grid-connection procedures</li> <li>• Discussion of potential obstacles</li> </ul>

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		(schools, hospitals, hotels)			
<b>Lecturer</b>	<b>David Jacobs</b>	<b>David Jacobs</b>	<b>G. Obeng, TEC-KNUST</b>	<b>Jens Altevogt, RENAC</b>	<b>Jens Altevogt, RENAC</b>
<b>12.45 - 14.00</b>	<b>Lunch break</b>	<b>Lunch break</b>	<b>Lunch break</b>	<b>Lunch break</b>	<b>Lunch break</b>
<b>14.00 - 15.45</b>	<b>Energy Economics and Pricing (3)</b>	<b>Analysis of Risk and RE Finance (7)</b>	<b>Financing of rural electrification (11)</b>	<b>Economic assessment and Cost optimization of grid-tied systems (15)</b>	<b>NREAPS in ECOWAS (19)</b>
	<ul style="list-style-type: none"> <li>• Status of electricity production costs in ECOWAS (technology and country specific overview conventional and renewable)</li> </ul>	<ul style="list-style-type: none"> <li>• Project financing and risk management</li> <li>• Mitigating economic risk</li> <li>• Price and market risk</li> <li>• Political and regulatory risk</li> <li>• Dealing with off-taker risk</li> </ul>	<ul style="list-style-type: none"> <li>• CAPEX – level of subsidy requirements</li> <li>• Subsidies impact</li> <li>• Subsidizing capital or tariff?</li> <li>• Financing mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Costs structures</li> <li>• Life cycle cost analysis, and profitability of grid-tied PV systems</li> <li>• RENAC’s economic analysis tool for grid-tied PV</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction and Overview of NREAPS in ECOWAS countries</li> <li>• Process of NREAPs, Recommendations and Guidelines per Country</li> </ul>
<b>Lecturer</b>	<b>D. Quansah, TEC-KNUST</b>	<b>David Jacobs</b>	<b>David Jacobs</b>	<b>Jens Altevogt, RENAC</b>	<b>Hyacinth Elayo, ECREEE</b>
<b>15.45 - 16.15</b>	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>
<b>16.15 - 18.00</b>	<b>Summary of ECOWAS country Reviews (4)</b>	<b>Standard PPAs , structuring of IPP projects (8)</b>	<b>Practical case studies on finance (12)</b>	<b>Case studies (16)</b>	<b>Final Seminar Session (20)</b>
	Cape Verde, Côte d’Ivoire, Gambia, Ghana, Nigeria and Senegal	<ul style="list-style-type: none"> <li>• Different models (PPP)</li> <li>• PPA negotiations with private investors, social issues, ownership</li> <li>• Drafting of PPAs</li> </ul>	<ul style="list-style-type: none"> <li>• Rural Electrification: Regional examples</li> <li>• Ghana Case study</li> </ul>	<ul style="list-style-type: none"> <li>• Group work: Thorough economic assessment and financial structuring of grid-tied PV projects</li> </ul>	<ul style="list-style-type: none"> <li>• Summary of Seminar</li> <li>• Feedback by participants</li> <li>• Certificates of attendance</li> <li>• Concluding remarks</li> </ul>
<b>Lecturer</b>	<b>D. Quansah,TEC-KNUST</b>	<b>D. Jacobs / J. Altevogt</b>	<b>G. Obeng, TEC-KNUST</b>	<b>Jens Altevogt, RENAC</b>	<b>Jens Altevogt, RENAC</b>

## Practical Exercises

