

RREP-WA

Thursday 29th of March 2012

■ Four main focuses for a RREP

REGIONAL LEVEL
Environmental Concerns

- Large RE as a cost effective alternative to large fossil fuel power generation

NATIONAL LEVEL
Supply's security and Reliability

- Existing regional and national programmes are delayed resulting into power scarcity → Medium sized RE on national grid

LOCAL LEVEL
Access

- Conventional electrification leads to a more grid-based rural electrification → medium/small sized RE mini-grid and stand-alone energy provision

HOUSEHOLDS' LEVEL
Domestic energies

- 60 to 65% of ECOWAS energy balance is not but could be renewable. Wood-fuel

Four main focusses for a RREP

- **COAL and NUCLEAR.** Is it possible to mobilise additional large RE to limit the extend of coal-based generation and to avoid nuclear plants? → Solar along side HV lines in the North, Off-shore wind farm (to be verified)
- **SECURE THE NATIONAL POWER SUPPLY.** National RE options mobilised to secure a reliable energy supply → Industrial Biomass, Solar energy as long the peak load for energy demand occur during the day and hydro resources (but seasonal variations i some countries) and EE. (What is the max possible penetration in terms of % of the ‘adjustable’ capacity?)
- **ACCESS TO MODERN ENERGY:** Conceptual bias due to the regional projects leading primarily to conceptualise rural electrification as grid based extension of the national grid. Less innovative rural electrification. RE as least cost never really assessed. No consistent policies for the stand alone solutions (credit versus RECOS at pilot stage but often as project) Revisit at regional level the rural electrification planning approach. As off-grid electrification is not profitable business, it becomes a marginal activity area for agencies and NGOs and marginalised in terms of funding and perception (second quality electrification). **Needs to develop robust concepts for mini-grid RE supply, developed contract standards/schemes for RESCO or credit schemes**
- **60% OF THE WA ENERGY BALANCE IS NOT SUSTAIBLE AND COULD BE RE**
 - (next slide)

Four main focusses for a RREP

■ 60% OF THE WA ENERGY BALANCE IS NOT SUSTAINABLE AND COULD BE RE.

Most of the WA energy balance is covered by wood-fuel (but assumption based on a very uncertain data background to assess it). A tiny share of this supply can be considered as sustainable supply for the following reasons:

- Sustainable forest management (production < regeneration)
- Sustainable conversion and use (improve carbonisation, cook-stoves, substitution strategy with gas and others)
- Role of 'modern RE' within the traditional energy fields
 - Wood briquettes - domestic biogas - jatropha - solar cookers

Assumptions to assess the targets

- The national policy level:
 - The national targets lead to an average penetration rate of 14% in 2020 and 20% in 2030. But the rate is biased by Nigeria (15/25%) → **3,2/7,4 GW RE**
 - Without Nigeria the existing targets for the 14 ECOWAS countries lead to an consolidated regional rate of 12%/11% in 2020/30, what is less ambitious
- The ‘technical’ feasible level:
 - Based on firm adjustable capacity at 60% load
 - Penetration rate of 10% in 2020 and 20% in 2030
 - **2,4/8,2 GW RE** in 2020/2030
- The target related to possible delays for WAPP:
 - An average capacity increase of 725 MW/ year on 13 years
 - 3 years delays = **2,2 GW** in 2020 corresponding to 9,3 % of the ECOWAS installed capacity
- The technological development of SMART GRID enables RE penetration rate up to 20%

Proposed targets

■ 10% in 2020 and 20% 2030

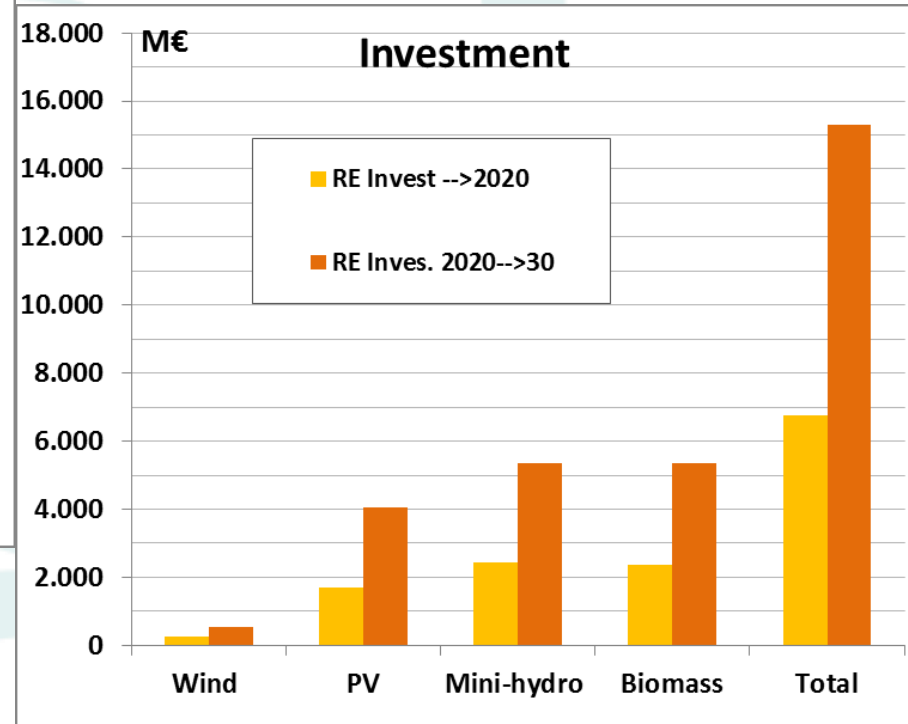
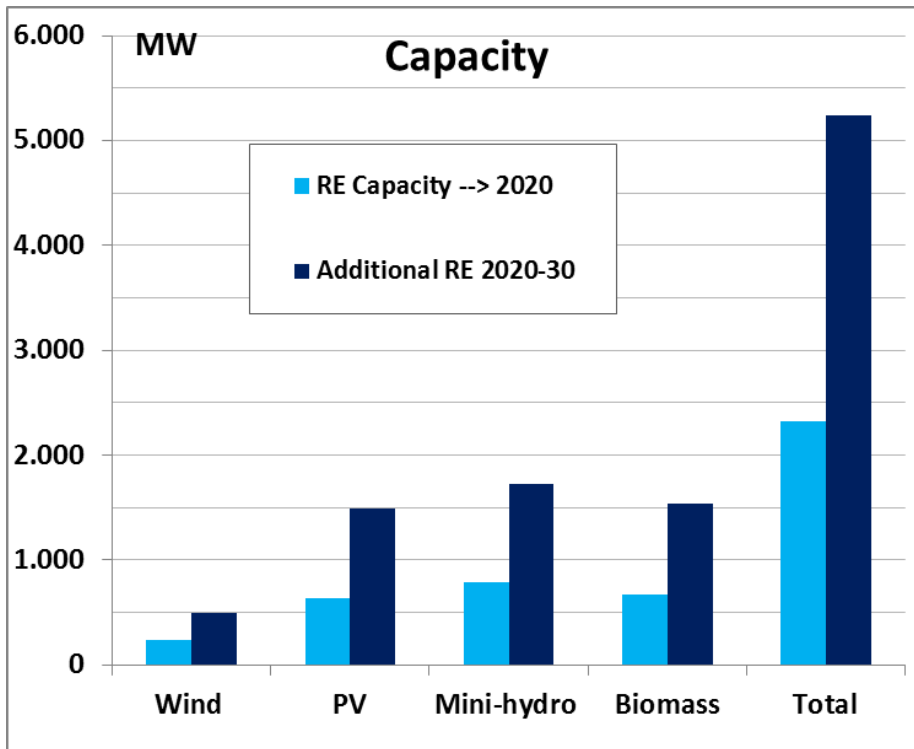
in MW	2020	2030
Load forecast ECOWAS	25,128	39,131
RE capacity	2,407	8,246

■ RE sources mobilised to reach the targets

	Wind	PV	Mini-hydr	Biomass
BENIN	0%	20%	60%	20%
BURKINA FASO	0%	75%	5%	20%
CAPE VERDE	90%	10%	0%	0%
COTE D'IVOIRE	0%	10%	50%	40%
GAMBIE	40%	50%	0%	10%
GHANA	10%	20%	40%	30%
GUINEE	0%	20%	50%	30%
GUINEE BISSAU	0%	20%	30%	50%
LIBERIA	0%	20%	50%	30%
MALI	10%	40%	20%	30%
NIGER	0%	80%	0%	20%
NIGERIA	10%	30%	30%	30%
SENEGAL	40%	30%	0%	30%
SIERRA LEONE	0%	10%	60%	30%
TOGO	0%	20%	50%	30%
Mines	0%	20%	80%	0%

Level of investment for the proposed targets

Investment → 2020 6,7 M€
 Investment 2020→30 15,3 M€
 22,0 M€



A Regional RE Policy Framework

- Develop and implement a full-fledged regional institutional, regulatory and financial framework for RE supply options to be fully complementary to the regional grid power strategy.
- Objectives: to contribute to and secure a reliable and affordable power/energy supply for both rural and urban areas offsetting fossil fuel generation.
- To contribute to a social balanced, environmental defensive and sustainable economic development of both rural and urban population

Identified Barriers to Overcome

- Policy and regulatory barriers
 - Focus on the conventional power sector
 - Subsidies within the conventional power sector
 - Absence of full-fledged rural electricity strategy and weak and non integrated RE planning
 - No RE policy
- Financing and investment barriers
 - High upfront cost - higher risk perception - lack of regulation
- Technological barrier
 - Equipment / spare part supply / maintenance / services
 - Lack of conceptual capacity
 - Competent operators
 - Critical mass
- Poor public awareness
- Poor or absence standards and quality control
- Inadequate resource assessment (Hydro - wind - biomass)
- Intermittency of resource availability
 - As long as national and regional networks are not well functioning and reliable

Five policies for a RE Regulatory Framework

- *Policy 1: To promote elaboration and development of national RE policies*
 - *Support the national level with the elaboration process*
 - *Guidelines to ensure coherent approaches*
 - *Capacity development*
 - *Support the national level with reliable data backgrounds*
 - *RE atlas (solar - wind)*
 - *Reviews of mini-hydro resources*
 - *Support awareness on RE through*
 - *Information campaigns*
 - *Targeted demonstration projects*

Five policies for a RE Regulatory Framework

- *Policy 2: To expand the RE market to reach a RE penetration of 10% in 2020 and 20% in 2030 (without WAPP large hydro)*
 - To make RE production an attractive business for private investors. Licensing agreement and fees schedules → add. Incentives for eligible RE investment
 - Incentives to local RE manufacturing and assembly
 - Subsidies
 - Taxes and duties
 - Technical standards and skill certification
 - Public awareness

Five policies for a RE Regulatory Framework

- *Policy 3 re. Grid-connected operations: Pricing - Access - Rights and obligations for TSO and RE-IPP*
 - Access to the grid
 - Feed-in tariffs
 - Standards for PPA
 - Tariff regulation
 - Determination of Renewable Portfolio Standards and enforcement at the national level

Five policies for a RE Regulatory Framework

- *Policy 4 re. Off-Grid operations: How to promote least cost RE energy services through national policies*
 - Mini-grids concessions
 - RE Quotas within rural electrification concession
 - Stand-alone systems standards
 - RE service companies
 - Credit schemes
 - Tariff regulation

Five policies for a RE Regulatory Framework

- *Policy 5 re. Rural Electrification, Development innovative, modular and cost-effective grid or off-grid options*
 - Least cost and marginal cost planning
 - Smart grid