



Renewable Energy Masterplan for Ghana – Work in Progress

A coordinated approach towards productive use of Renewable Energy
for Productive Use

10th August, 2016

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Objectives of REMP

- The specific objectives of the REMP are to:
 - Set clear targets for the development of the various renewable energy resources in Ghana
 - Define actions and strategies to be undertaken to achieve the targets
 - Prioritise the renewable energy technologies
 - Propose sustainable financing models, incentives and support systems
 - Define institutional roles for the implementation of the masterplan
 - Identify risks and mitigation measures for ensuring sustainability.
- The process is being financed by DANIDA under the China-Ghana Renewable Energy Technology Transfer (RETT) project.

Approach

- The Renewable Energy Masterplan for Ghana is developed by a taskforce comprising Ministry of Power, Energy Commission, the National Development Planning Commission and Energy Center.
- The taskforce conducted an extensive desk and field study of past and on-going renewable energy initiatives and programmes to identify success factors and implementation gaps or failures and how gaps identified could be addressed to ensure sustainability of interventions. The taskforce consulted with a wide range of stakeholders (both local and international) throughout the process.
- Renewable Energy Masterplans of other countries such as China were reviewed and lessons learnt were considered in the development of this masterplan.

Building on Existing Plans

From 1980s to date, the promotion of RETs in Ghana have been supported by government/regional policy and strategic documents. Below is a list of the major policies, plans and strategic documents that have been developed since 1986.

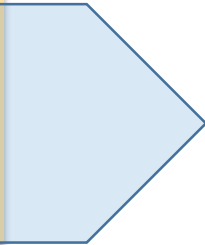
- Issues and Options in the Energy Sector (1986)
- National Electrification Scheme (1989)
- Vision 2020 (1995)
- Ghana Poverty Reduction Strategy 1&2 (2003/2006)
- National Renewable Energy Strategy (2003)
- ECOWAS white paper on access to energy services (2006)

- Strategic National Energy Plan (2006)
- Ghana Shared Growth and Development Agenda 1&2 (2009/2014))
- The National Energy Policy (2010)
- The National Energy Development Strategy (2010)
- The Renewable Energy Act, 2011 (Act 832)
- Sustainable Energy for All Action Plan / Agenda of Ghana (2012/2016)
- Mini-grid Electrification Policy (2016)
- Bioenergy Policy Document (draft)

Building on Existing Plans

The National Renewable Energy Strategy (NRES) was seen as the first attempt at developing a comprehensive RE strategy for the country. The process began in 2001 when the Government of Denmark agreed with the Government of Ghana to provide technical and funding support to the energy sector under an **Energy Sector Programme Support (ESPS)**. The support covered three areas, notably the

- Strategic National Energy Plan (SNEP)
- Traditional Energy Development and Management Programme
- Renewable Energy Development and Management Programme (REDP)



A key output from the REDP was the preparation of a National Renewable Energy Strategy (NRES)

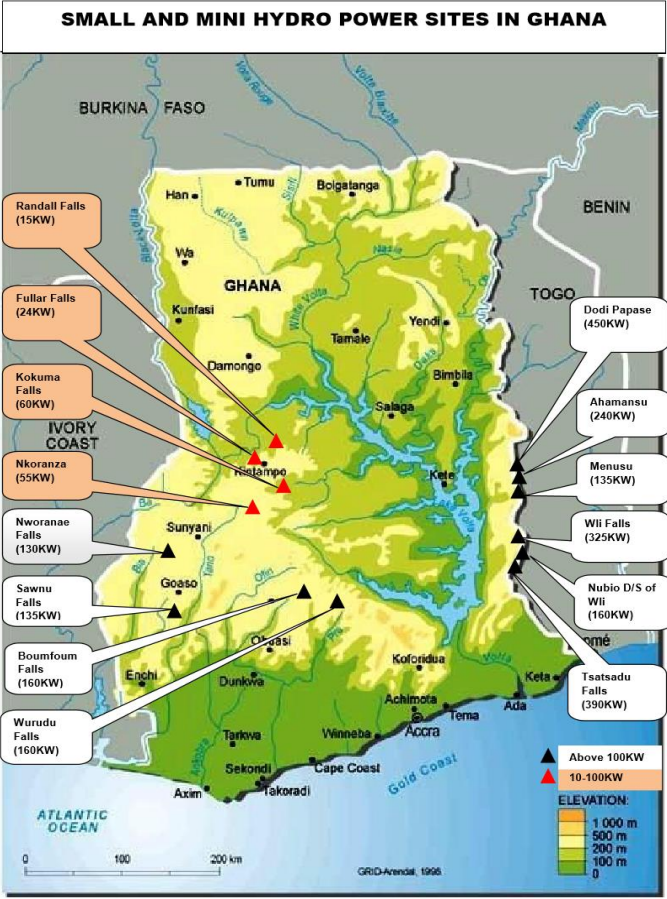
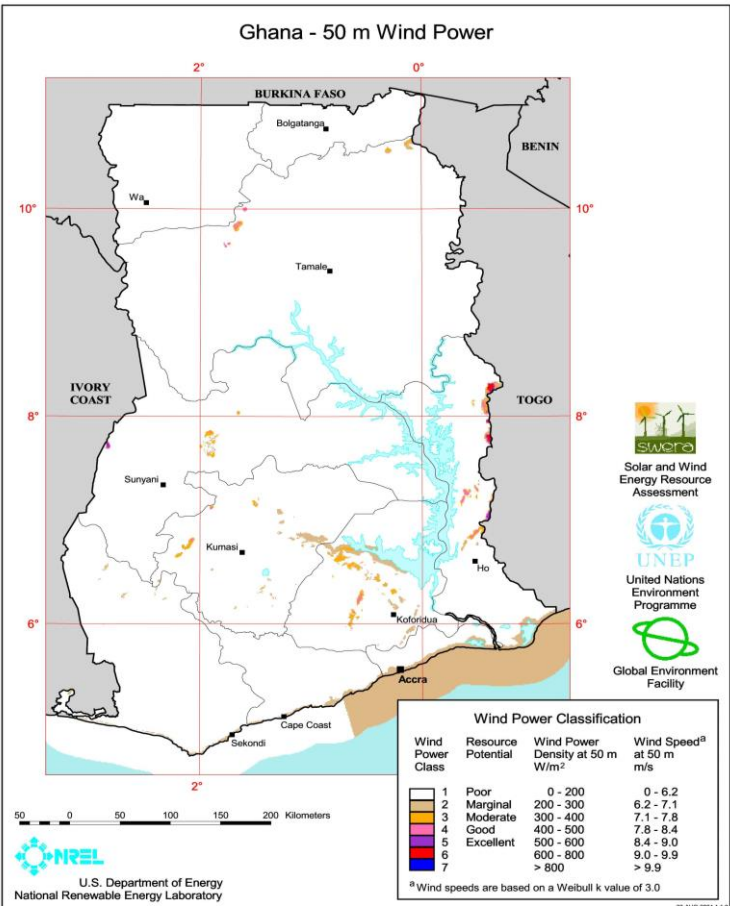
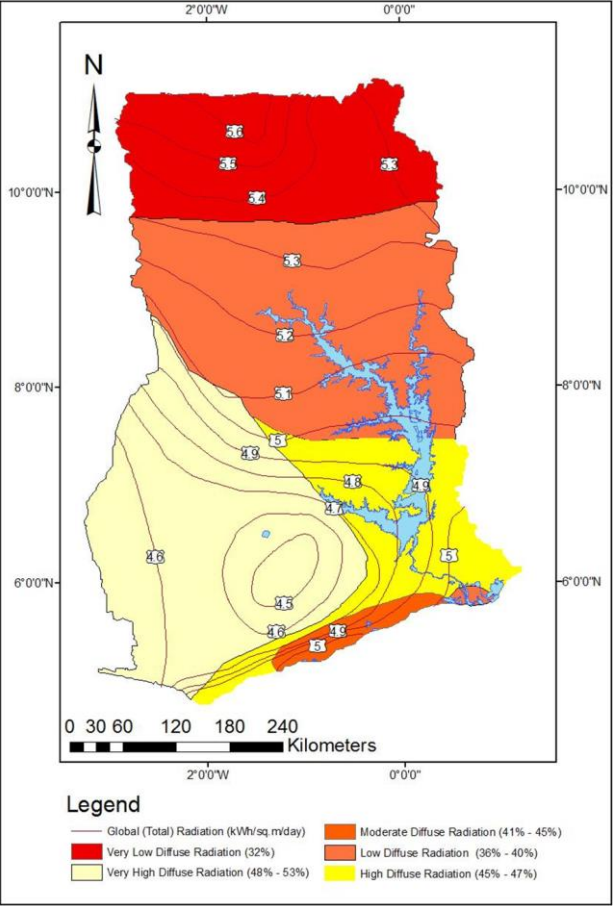
PROGRESS MADE SINCE THE NRES WAS PUBLISHED

Barriers identified	Progress
Absence of comprehensive RET Policies	A number of policy documents and regulations have been prepared
Absence of regulatory framework	RE Act passed
High initial cost of RETs	Government has supported a number of community off-grid solar projects. Now EC 20,000 rooftop solar programme.
Inadequate financing schemes for RETs	Under GEDAP, over >70,000 solar lanterns have been distributed to date. However, there is still difficulty in assessing finance due to high interest rate.
Inadequate public awareness to the benefits of RETs	Solar has enjoyed awareness creation. The Global Alliance for Clean Cook Stoves is also promoting awareness of improved cook stoves.
Uncoordinated R&D	Still a barrier

The REMP will build on the NRES to address some of the prevailing issues.

Resource Potential and Energy Demand

The REMP considers all the available resources and demand scenarios to establish target that will support economic growth



Targets

The targets are presented in 5-year blocks, in line with other sector plans such as the SNEP and SE4ALL action agenda upto 2030

INTERVENTION	UNITS	BASELINE	2020	2025	2030
1. Utility scale Solar	MW	23	150	225	300
2. Rooftop/net metering Solar PV	MW	1.7	40	120	200
3. Standalone Solar PV Systems	MW	2.5	7	9	10
4. Street/Community lighting	MW	1.5	4	6	8
5. Lanterns	Units	70,000	500,000	1,300,000	2,000,000
6. Solar Irrigation/water supply	Units	<30	200	350	500

Targets – Wind and Solar Mini-Grid

TECHNOLOGIES	INTERVENTION	UNITS	BASELINE	2020	2025	2030
WIND	1. Utility scale	MW	0	225	375	500
	2. Standalone systems (including net-metered)	MW	<0.1	1	1.5	2
	3. Wind Irrigation/water pumping	Units	<20	30	50	100
MINI-GRID (Solar)		Units	<10	50	100	200

Targets

– Wind and Solar Mini-Grid

BIOMASS (Solids)	1. Utility-scale/co-generation*	MWe	<10	70	100	150
	2. Woodlot Cultivation**	1000 ha	9	30	50	100
	3. Charcoal Production (export)	1000 t	7.43	8	9	9
	Charcoal (local demand)	1000t	4,300	4,600	4,900	5,100
	5. Briquetting/Pelleting	1000 tonnes	19.7	60	80	100
	6. Improved Cookstove (Institutional/commercial)	Thousand Units	1.8	2.5	3.0	3.5
	7. Improved Cookstove (Domestic) - Solid Biomass	Million Units	0.80	1.6	2.2	3

*Based on current capacities and projection by African Plantations for Sustainable Development (APSD), Kwamoka and other IPPs - GOPDC, TOP, BENSO and Komenda

** Based on current woodlot planted by EC/UNDP and three known private companies . Included the potential of the proposed afforestation project as part of VRA/Asogli coal power plant and APSD's projection

Targets

- Targets have also been set for:
 - Landfill to power
 - Municipal Waste
 - Agricultural/Industrial organic waste (Biogas)
 - Institutional Biogas
 - Domestic Biogas
 - Biofuels
 - Medium/Small Hydro
 - Tidal Wave Energy

RENEWABLE ENERGY ACTION PLAN AND IMPLEMENTATION STRATEGY

Lesson from Past Projects and Strategies

- Battery replacements was a major drawback in past projects such as Weichau, Isofotun and Respro
- For government supported solar projects, it is recommended that additional capital subsidy be provided for battery replacement. This should be sustainable as such the Energy Fund should set aside a portion of its funds to support this process.
- Assembly of batteries locally will be critical in making the cost of batteries affordable. Bangladesh has championed local battery assembly that has supported their renewable initiative.
- RE projects for rural communities should always remote and isolated communities where grid cannot be extended
- Develop regulation to push commercial properties such as hotels to install SHS. This will serve as a measure to drive demand for the systems.
- Government to provide subsidies for construction of improved cookstoves in public institutions such as hospitals, schools and prisons.

Next Steps

- Taskforce does not have all the answers as such it is seeking to engage and obtain feedback Continue engagement with Stakeholders
- Consider and incorporate feedback from various sector
- Finalize document 4th Quarter of 2016
- Establish a monitoring cycle for the REMP
- Adoption and alignment of the REMP in the country's planning cycle

Thank You

Q&A

