

RENEWABLE ENERGY AND THE LANDSCAPE OF INVESTMENT IN GHANA

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OUTLINE

- ❖ **Imperativeness of RE development in Ghana**
- ❖ **Resource potentials of RE in Ghana**
- ❖ **Policy and institutional environments for investment in RE**
- ❖ **Emerging trends in investments**
- ❖ **Conclusions**

Imperativeness of RE development in Ghana



❖ **Goal #7 of the SDG requires World Leaders to ensure access to affordable, reliable, sustainable and modern energy. Three specific pillars**

- ❖ **Universal Access**
- ❖ **Increase share of RE**
- ❖ **Improve Energy Efficiency**

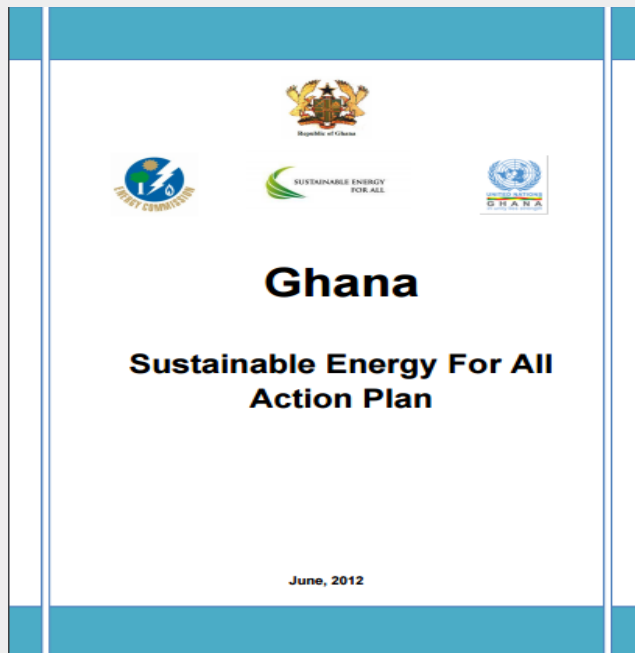
❖ **Ghana – signatory and ratifier of Paris Agreement**

- ❖ **Requires strong share of RE to meet emissions reduction goals**

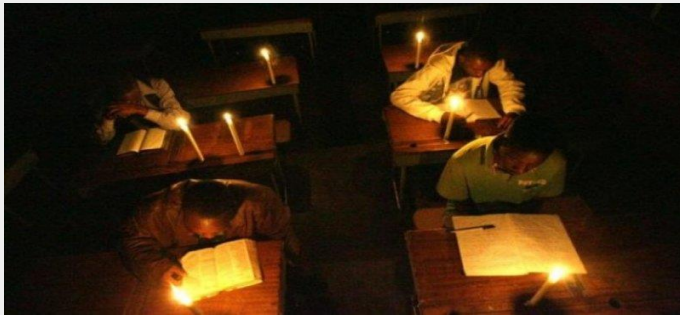
❖ **GoG recognised the potential of SE4ALL initiatives to drive the National Energy Policy (2010) implementation**

- ❖ **Provision of Off-Grid RE-Based Power Solutions for Remote Communities**
- ❖ **Access to modern energy for productive uses & access to modern energy for cooking**

❖ **2012 ECOWAS RE Policy**



Imperativeness...



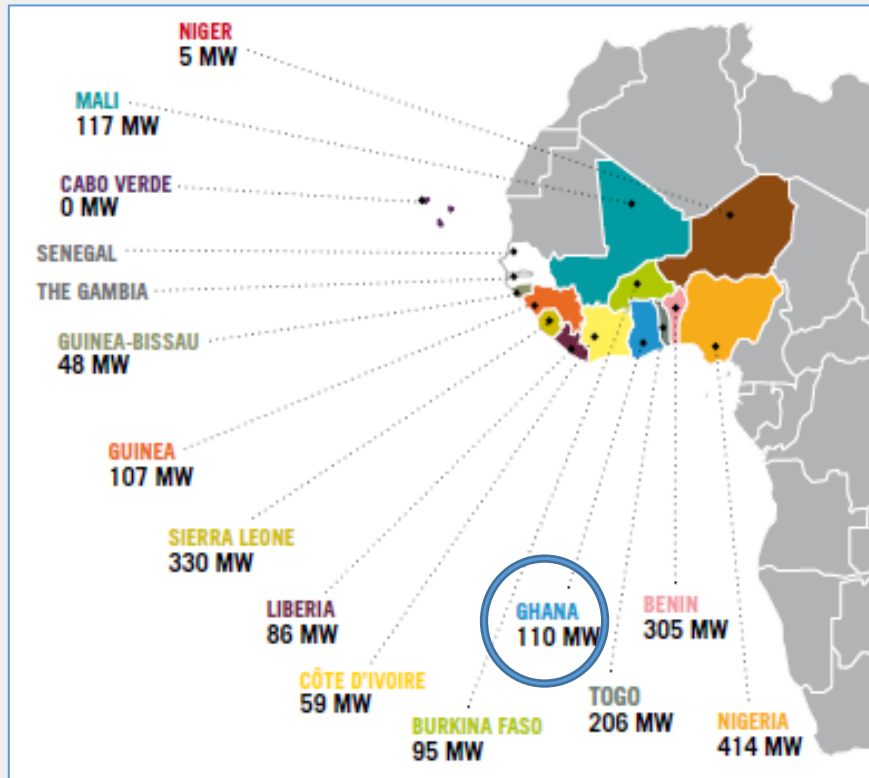
❖ Electricity supply shortfall and access to modern energy

- ❖ Unreliable main electricity source (hydro).
- ❖ Growing electricity demand (approx. 10% annually) by sectors, out-pacing supply.
- ❖ Low rate of access to modern energy and projected installed capacities.
 - 450 MW equivalent of 2020 scenario of 4200 MW installed capacity; 550 MW equivalent of 2026 scenario of 5550 MW installed capacity.
- ❖ 2012 demand (9000 GWh); projected demand in 2020 (24000 GWh), requiring installed generation capacity over 3.5 GW.

❖ Climate change implications of current and future electricity supply sources.

- ❖ Projected 80% of electricity supply sources to be thermal (Gas) by 2025 in Ghana

Resource potentials of RE in Ghana



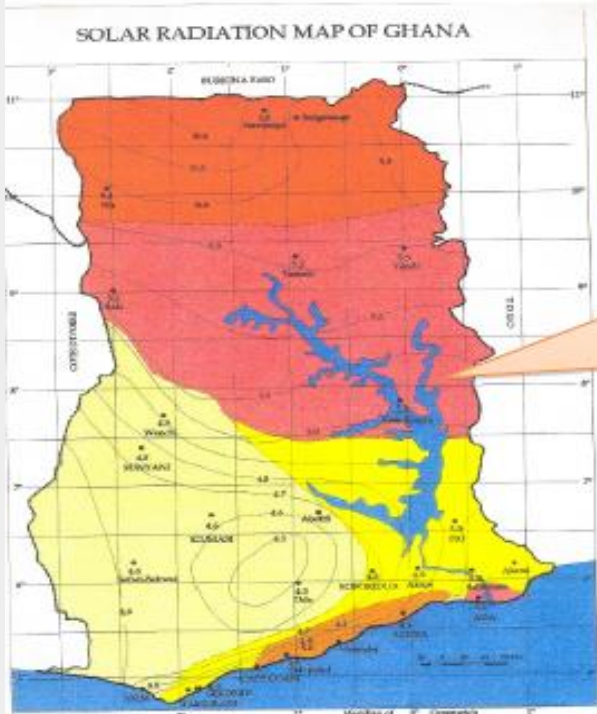
❖ Ghana is well endowed with renewable energy resources namely biomass, solar, wind, mini-hydro, solid and liquid wastes

❖ Studies in the past established the technical potential of the following RE sources in Ghana:

- ❖ Solar - 7644MW
- ❖ Wind – about 5000 MW (200 - 400 MW onshore)
- ❖ Small and Mini Hydro potentials – about 837 MW
- ❖ Municipal and Agro Waste – 95 MW

Estimated small-scale hydro power potentials in West Africa

RE Resource potentials...

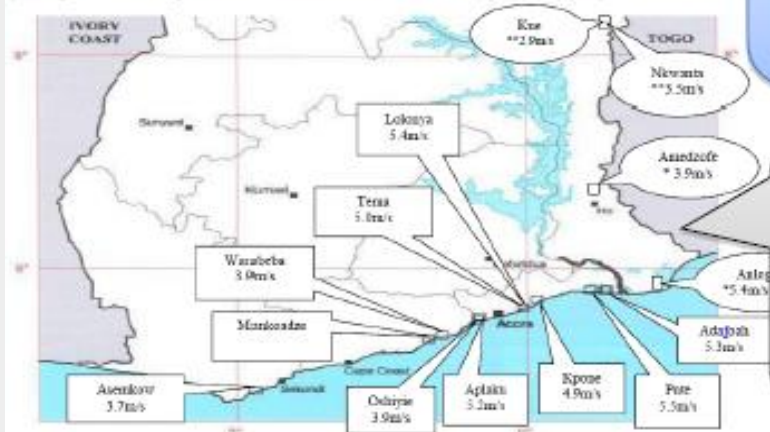
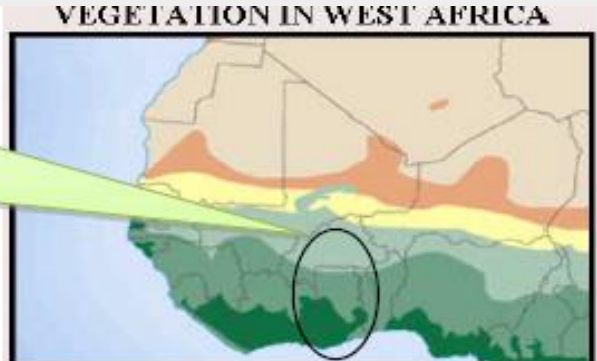


Ghana has high potential for energy crops, forest and crop residue for electricity generation

High solar irradiation 4-6kWh/m²/day to support grid and off-grid electrification

Ghana has over 14 potential hydro sites with total capacity of 740MW yet to be exploited.

High Wind power potential along coast. Data collection at 60m & 80m height underway in 13 sites.



Policy, regulatory and institutional architectures for investment in RE in Ghana

❖ Power sector reformation in the 1990s

- ❖ Due to lack of competitiveness, private sector participation coupled with poor financial performance of the sector
- ❖ The PURC –establishes by Act 538 in 1997- and the Act 541 - EC were proposed regulatory bodies established under the reform

❖ Strategic National Energy Plan (SNEP)

- ❖ Ghana's energy sector activities mainly driven by the SNEP prior to the National Energy Policy - divided into Energy Demand Sectors and Energy Supply Sectors of the Economy

❖ 2010 National Energy Policy

- ❖ Drives current energy sector activities with RE generation target of 10% by 2020
 - ❖ Promote efficiency in biomass use
 - ❖ Enhance waste to energy generation
 - ❖ Create fiscal & pricing incentives

❖ The Renewable Energy Law (Act 832)

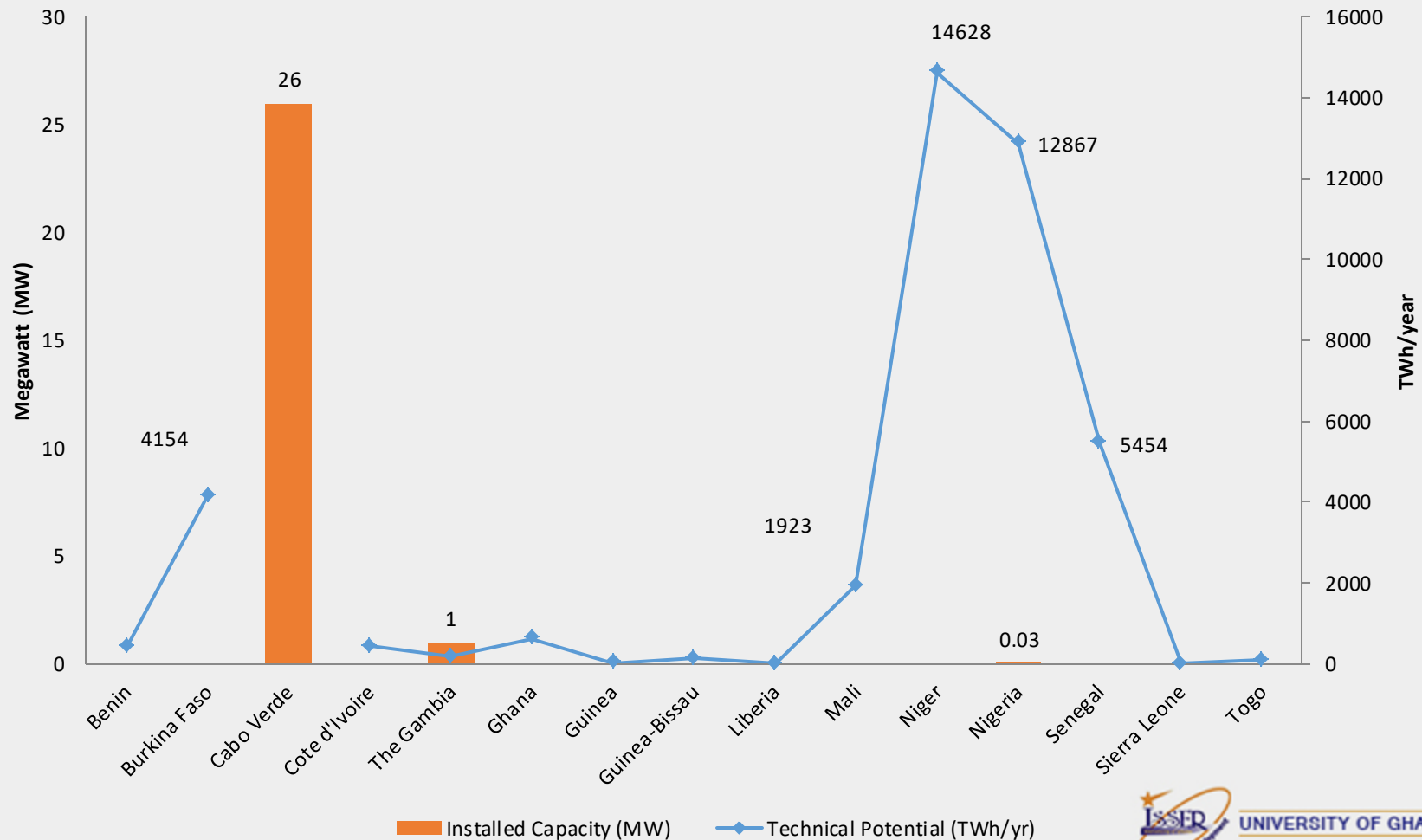
- ❖ Passed in 2011 with provisions: FiT, RPO, Net Metering R&D, establishment of RE Fund RE Authority

Emerging trends in investments

- ❖ **It is estimated that an investment of USD 1 billion will be required for utility scale grid connected and off-grid for the RE interventions in Ghana (Ahiataku-Togobo, 2014)**

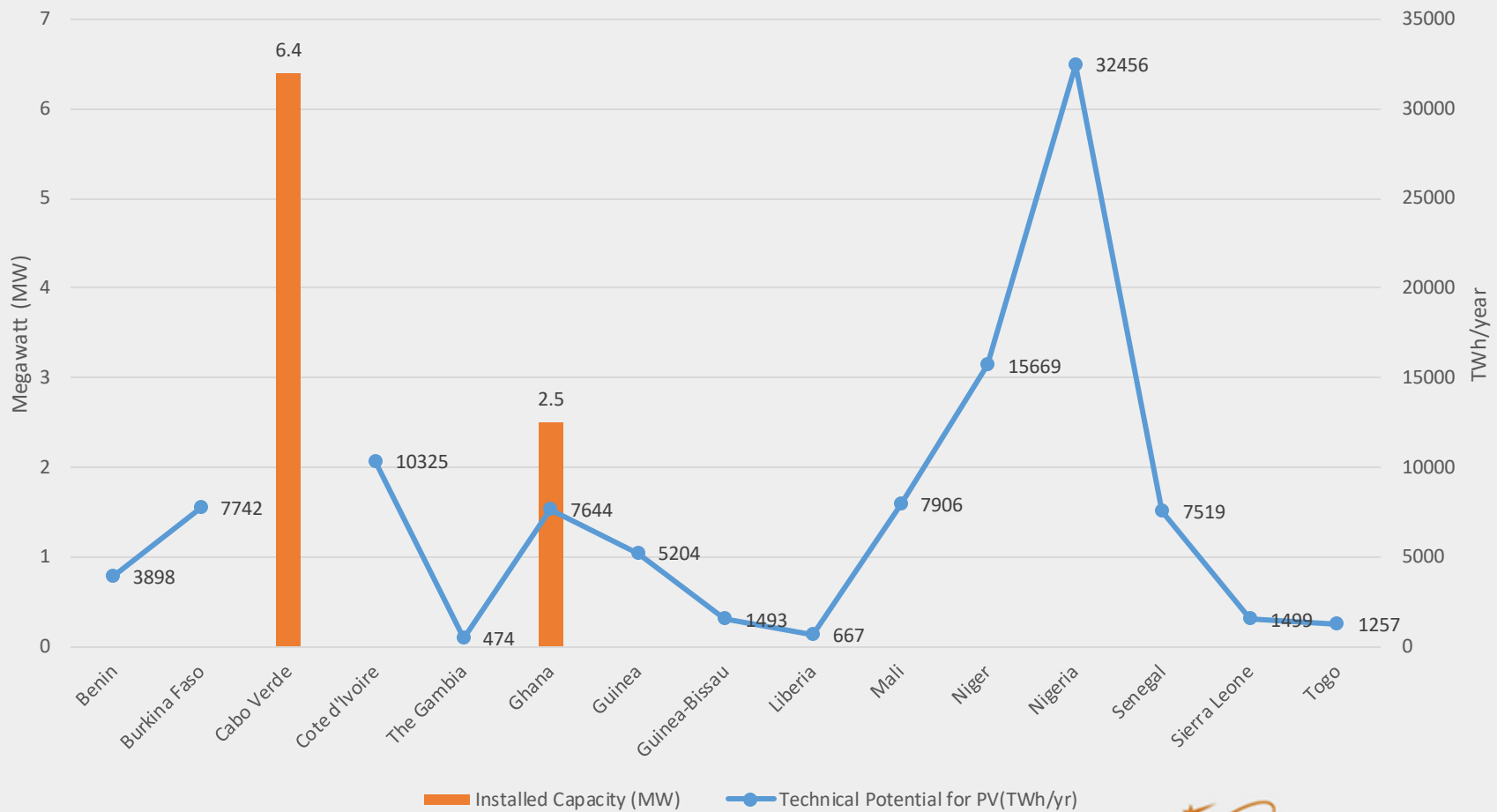
Emerging trends in investment (cont..)

❖ Wind Resource potential vis-à-vis Installed Capacity among W/A states by 2014



Emerging trends in investment (cont..)

❖ Solar Resource Potential vis-à-vis Installed capacity among W/A states by 2014



Emerging trends in investment (cont...)

Table... Comparison of Installed Electricity Generation Capacity in MW from various generation sources (Share %) (2010-2014)

Plant	2010	2011	2012	2013	2014
Hydro	1,180 (54)	1,180 (54.4)	1,180 (51.8)	1,580 (51.4)	1,580 (55.8)
Thermal	1005.5 (46)	989.5 (45.6)	1,100 (48.2)	1,494 (48.6)	1248 (44.1)
RE (VRA Solar)	-	-	-	2.5	2.5
SHS (about 15000)**					3.2
BXC***					20
RE Total (<1)					25.7

Emerging trends in investment (cont..)

VRA Navrongo Solar farm



Noguchi Solar Plant



BXC Solar Plant



ISSER Solar Plant



❖ Expression of interest in RE to date

RE Technology	No. of applications issued with PL	Total Capacity (MW)
Solar	29	2,155
Wind	4	676
Biomass	2	60
Waste-to-Energy	3	271
Hydro	3	195
Wave	1	1,000
Total	42	4,357

❖ Some well functioning RE plants currently

- ❖ VRA Solar farm at Navrongo (2.5 MW)
- ❖ Noguchi Solar plant at Legon (700 KWp)
- ❖ Valley view University
- ❖ KNUST Eng. College rooftop 24 KWp
- ❖ BXC Solar Plant (20MW)**
- ❖ ISSER Solar plant (9 KWp)



Conclusions

Dec 08, 2015 at 8:59am

Africa receives 10 billion dollar boost to help build renewable energy sources

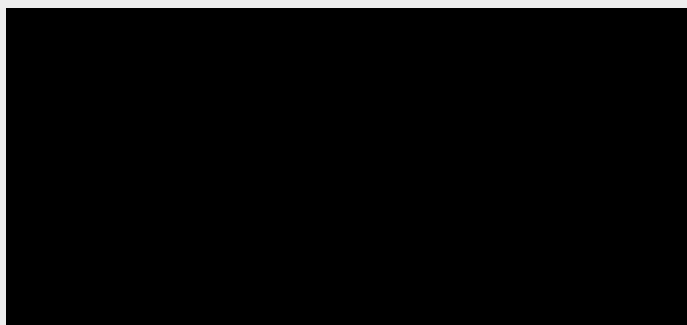
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The UN and partners launched the \$5 billion Africa Renewable Energy Initiative aiming to expand renewable capacity by 2020

By NEOnline/GK

- ❖ **Availability of funding and advisory supports from the international community and lots of associated funding.**
- ❖ **It is therefore important to investigate the fundamental factors that are limiting investment in RE technologies in Ghana**



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