Sustainable Energy for All (SE4ALL) Action Agenda for Ghana

Presented By:

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Outline

- Ghana Overview
- Ghana’s Energy Situation
- Policy Objectives
- Targets and Measures
- High Impact Action
- Investment Prospectus for Ghana
Ghana Overview

- **Area:** 238,539 km²
- **Population:** ≈ 26.3 million (at 2013)
- **GDP per capita:** ≈ US$ 1,858.24 (at 2013)
- **Installed Capacity:** ≈ 2,955 MW of which 1588.2 MW (being 54% are large hydro and modern renewables)
- **Access to Electricity:** ≈ 76% (2015)
- **Access to LPG for Cooking:** ≈ 22.3%

**VISION:** Develop an energy economy to secure a reliable supply of high quality energy services for all sectors and become a net exporter of oil and power by 2020.
Total Energy Supply in 2014 (9,147 ktoe)

- Wood: 39%
- Oil: 46%
- Hydro: 8%
- Natural Gas: 7%

Ghana’s Policy Objectives

ENERGY ACCESS

- Secure long term fuel supplies for the thermal power plants;
- Support the modernisation and expansion of energy infrastructure to meet growing demands and ensure reliability;
- Increase access to modern forms of energy;
- Improve the overall management, regulatory environment and operation of the energy sector;
- Minimise the environmental impacts of energy supply and consumption through increased production and use of renewable energy and make energy delivery efficient;
- Ensure cost recovery for energy supply and delivery;
- Ensure the productive and efficient use of energy;
- Promote and encourage private sector participation in the energy sector; and
- Diversify the national energy mix by promoting renewable energy sources nuclear and coal.
Ghana’s Policy Objectives

RENEWABLE ENERGY

• Support sustained development of RE technologies through legislation, fiscal incentives, and attractive pricing;

• Support the use of decentralised off-grid technologies;

• Promote the establishment of dedicated woodlots / energy crop for biofuel production for cooking, heating, power generation and transportation;

• Balance biofuel development against food security;

• Promote the production and use of improved and more efficient biomass utilisation technologies;

• Promote the use of alternative fuels; and

• Support indigenous research and development to reduce the cost of RE technologies.
Ghana’s Policy Objectives

ENERGY EFFICIENCY

• Establish appropriate pricing regime for energy services that would provide incentives to domestic and industrial consumers to voluntarily manage their energy consumption;

• Implement programmes and measures to help consumers optimise their energy use;

• Support a sustained and comprehensive public education and awareness creation campaign on the methods and benefits of energy conservation;

• Promote the establishment of a Centre for Energy Efficiency;

• Discontinue, through legislation, the local production, importation and use of high energy consuming vehicles and inefficient electricity consuming equipment and appliances.

• Reduce technical and commercial losses in power supply;

• Implement measures to reduce petroleum product consumption in transportation;

• Enforce zonal system for lifting of petroleum products from dedicated storage depots; and

• Encourage the use of fuel enhancing additives.
Targets and Measures (1)

By 2020:

Energy Access

- Universal access to electricity
  - 5,000 MW installed capacity

Measures:

- GIS mapping of communities
- Grid extension – through WAPP (e.g. strengthening of transmission networks by Gridco), NES, SHEP, GEDAP
- Re-structuring of ECG to improved revenue collection and reduce system losses
- Gas power plant efficiency improvement
- Encourage Independent Power Producers (IPPs)
- Explore alternative energy generation options
- Provide decentralised electricity access for island and remote communities (for ICT education, health centres, energy service centres, residential and communal facilities)
Targets and Measures (2)

By 2020:

**Energy Access**

- Clean cooking
  - 50% LPG penetration

**Measures:**

- Develop and implement policy on LPG promotion
- Increase LPG storage infrastructure and supply to meet demand
- Develop and implement standards and labels for LPG stoves by 2016
- Create public awareness on the benefits of using LPG
By 2020:

**Energy Access**

- Productive uses of energy (PUE)
  - 250 irrigation schemes (grid-connected)
  - 50 aquaculture ventures (cold storage facilities)
  - 10 medium scale salt production ventures

**Measures:**

- Conduct feasibility studies to establish the viability or otherwise of the interventions.
- Develop sustainable business models
- Capacity building on PUE
- Awareness creation on PUE
- Improve access to finance
Targets and Measures (4)

Renewable Energy

- 10% renewable energy in the national electricity generation mix by 2020
- 55 renewable energy mini-grids
- 33,000 stand alone electrification schemes
- 200,000 Roof-top solar systems (including net metering schemes)
- 2 million solar lanterns distributed

Measures:

- Develop regulatory instruments (RE Act 832, FiT, REPO, Technical codes, RE fund)
- Promote utility scale RE (biomass/waste-to-energy, small hydro, 150 MW solar PV, 300 MW wind)
- Develop standards and establish testing centres for Solar PV
- Promote IPPs
- Tax exemptions on RE systems
- Develop local content policy

(Targets for 2030 – to be defined by the Strategic National Energy Plan, currently under review)
Targets and Measures (5)

Renewable Energy

- 1500 sustainable woodlots
- 500 irrigation schemes (wind & solar)
- 250 solar dryers
- 200 Biogas systems for cooking in institutions

Measures:

- Develop and implement Bioenergy Policy
  - Develop the supply chain of the woodfuel sector
  - Promote alternative fuels e.g. briquettes and pellets using crop residue and carbonized bamboo
  - Liquid bio-fuels for cooking, heating and transportation
- Conduct feasibility studies to establish the viability or otherwise of the interventions.
- Develop sustainable business models
- Capacity building on PUE
- Awareness creation on PUE
- Improve access to finance
Energy Efficiency

- Achieve efficient production and transportation, and promote efficient end use devices
- Adopt 2 million households using improved biomass cookstoves by 2020

Measures:
- Convert single cycle plants to combined cycle plants
- Reduce grid transmission and distribution losses
- Develop and implement standards and labels for all end use devices
- Promote efficient carbonization technologies
- Establishment of two test and expertise centers for cookstoves by 2015
- Build capacity of local artisans in the manufacture of energy efficient cookstoves
- Create public awareness on the benefits of clean cooking
- Promote Energy efficiency in buildings and develop standards.
- Demand side management of electricity:
  - Increase awareness on energy conservation and management in residential, public, industrial and commercial facilities
  - Sensitisation in institutions - train energy managers
  - Tax exemptions on importation of energy efficient lamps
High Impact Actions (1)

Energy Access

• Use of LNG in electricity generation
• Explore alternative energy sources
  • Clean coal
  • Nuclear
• Expand petroleum product storage capacity, and extend petroleum products bulk distribution infrastructure to all parts of the country (e.g. Jetty facility)

• LPG
  • Increase LPG storage facilities
  • Produce 500,000 6kg cylinders per annum
  • Establish large LPG bottle refilling plants
  • Double LPG distribution network and retail outlets
High impact actions (2)

Renewable Energy

• Promote IPPs in utility scale RE
• Implement net metering scheme
• Implement 200,000 rooftop solar systems
• Deploy mini-grids and stand-alone systems
  • GIS mapping of communities
• Promote solar water heater in commercial facilities

Others:

• Capacity building for the energy sector
• Strengthen financial capability of utilities
High Impact Actions (3)

Renewable Energy

• Sustainable woodlots
• PUE
  • Wind & Solar PV irrigation systems
  • Solar dryers for agro-processing
High Impact Actions (4)

Energy Efficiency
• Standard and labels for end use devices
  • Television
  • Fans
  • Motors
  • Transformers
  • Generators
  • Clean Cookstoves
• Industrial energy efficiency
  • Capacity banks
• Efficient cookstoves
  • Awareness creation
  • Efficient biomass stoves for commercial cooking (agro-processing and cooking)
• Improved carbonization technologies
# Investment Prospectus for Ghana

## Energy Access

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Estimated Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Alternative energy sources</td>
<td>1.5 - 2 b</td>
</tr>
<tr>
<td>• Clean coal of 750MW</td>
<td>4.5 – 5 b</td>
</tr>
<tr>
<td>• Nuclear of 1,000 – 1,200MW</td>
<td></td>
</tr>
<tr>
<td>• Clean cooking</td>
<td></td>
</tr>
<tr>
<td>• LPG cylinder recirculation model implementation</td>
<td>250 m</td>
</tr>
<tr>
<td>• Disseminate 200,000 6kg LPG cylinders, stoves &amp; accessories under Rural LPG promotion programme</td>
<td>15 m</td>
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<tr>
<td>• 250 irrigation schemes (grid-powered)</td>
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## Energy Efficiency

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Estimated Cost (USD)</th>
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<tbody>
<tr>
<td>• Promote adoption of efficient cookstoves by 2 million households</td>
<td>10-50 m</td>
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# Investment Prospectus for Ghana

## Renewable Energy

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Estimated Cost (USD)</th>
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<tbody>
<tr>
<td>Utility scale power projects</td>
<td></td>
</tr>
<tr>
<td>• Wind 50 – 150MW</td>
<td>300 - 550 m</td>
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<tr>
<td>• Biomass/waste to energy 20-50MW</td>
<td>60 - 150 m</td>
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<tr>
<td>• Solar PV systems</td>
<td>400 - 700 m</td>
</tr>
<tr>
<td>• Small hydro (150-300MW)</td>
<td>450 - 900 m</td>
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<tr>
<td>200,000 Rooftop Solar (including net-metering systems)</td>
<td>250 m</td>
</tr>
<tr>
<td>30,000 solar stand alone systems in remote communities</td>
<td>10 - 25 m</td>
</tr>
<tr>
<td>Mini-grids (30-42 units)</td>
<td>21 - 38.5 m</td>
</tr>
<tr>
<td>PUE</td>
<td></td>
</tr>
<tr>
<td>• 500 irrigation schemes (wind and solar powered)</td>
<td>150 m</td>
</tr>
<tr>
<td>• 250 solar crop dryers</td>
<td>100 m</td>
</tr>
<tr>
<td>• 50 aquaculture ventures</td>
<td></td>
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<tr>
<td>• 10 medium scale salt production ventures</td>
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Thank You!!!
Merci!!!
Obrigado!!!
Me Daase!!!
Akpe!!!

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