Ministry of Power

Five Years of Implementing the Renewable Energy Law Act 832 – Successes and Challenges

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The Renewable Energy Act 832

• The Renewable Energy Bill passed by Parliament of Ghana, presidential assent and was gazetted in December 2011 - the Renewable Energy Act 2011 (Act832).

• The Act is aimed at providing the legal basis for fiscal incentives and regulatory framework in attracting investment in the renewable energy sector.
Key Provisions in Act 832

• **Feed-in-tariff scheme** under which electricity generated from renewable energy sources is offered a guaranteed price.

• **Purchase Obligation** under which power distribution utilities and bulk electricity consumers would be obliged to purchase a certain percentage of their energy required from electricity generated from renewable energy sources.

• **Licensing regime** for commercial renewable energy service providers among others to ensure transparency of operation in the renewable energy industry.

• **Off-grid Electrification** – promote Mini-grid and stand-alone RE systems for remote off-grid locations.
Key Provisions in Act 832

- **Woodfuels & Biofuels**— Promote efficient production and utilization of woodfuels and biofuels for internal use and export where applicable.

- **Research & Development** – Innovative RE options including biofuels for transport and export (where necessary)

- **Renewable energy fund** to provide incentives for the promotion, development and utilization of renewable energy resources.

- **Establishment of Renewable Energy Authority** to own, implement and manage renewable energy assets on behalf of the State. (particularly for off grid electrification)
Progress Since Passage of RE Law in December 2011

• Feed-in-tariff scheme
  • 1\textsuperscript{st} RE-FIT gazette – Oct. 2013
    ❖ Limited to 10 years, no provision for investment in energy storage for grid stabilization for variable RE (wind & Solar)
  • 2\textsuperscript{nd} RE-FIT gazette - Oct. 2014.
    • 10 years with capacity limit for variable RE (wind & Solar) and provision for grid stabilization and storage.
  • 3\textsuperscript{rd} RE-FIT gazette – August 2016
    • Provision for 10 and 20 years and capacity limit subject to grid impact studies
  • Acknowledged the support of the World Bank through GEDAP for building capacity of PURC, EC and MOP for the development of the RE-FIT Methodology.
## RE-FIT gazette – August 2016

<table>
<thead>
<tr>
<th>TYPE OF TECHNOLOGY</th>
<th>Phase 1 (1 - 10 years) Guaranteed FIT</th>
<th>Phase 2 (11 - 20 years) Indicative Range</th>
<th>20 years Guaranteed FIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>USCents per Kwh</td>
<td>Minimum FIT (Uscents/kWh)</td>
<td>Maximum FIT (USCents/kW)</td>
</tr>
<tr>
<td>Solar PV</td>
<td>15.1029</td>
<td>10.5700</td>
<td>12.0800</td>
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<tr>
<td>Hydro &lt;= 10 MW</td>
<td>13.4114</td>
<td>9.3900</td>
<td>10.7300</td>
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<tr>
<td>Hydro (&gt; 10 MW and &lt;= 100 MW)</td>
<td>14.3204</td>
<td>10.0200</td>
<td>11.4600</td>
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<tr>
<td>Tidal Wave (Ocean Wave)</td>
<td>13.4114</td>
<td>9.3900</td>
<td>10.7300</td>
</tr>
<tr>
<td>Run off River</td>
<td>13.4114</td>
<td>9.3900</td>
<td>10.7300</td>
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<tr>
<td>Biomass</td>
<td>17.5100</td>
<td>12.2600</td>
<td>14.0100</td>
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<tr>
<td>Biomass (Enhanced Technology)</td>
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<td>12.9200</td>
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<tr>
<td>Biomass (Plantation as Feed Stock)</td>
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<td>Landfill Gas</td>
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<tr>
<td>Sewage Gas</td>
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<td>14.0100</td>
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<tr>
<td>Geoplutonic (Geothermal)</td>
<td>11.8000</td>
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</table>

Gazette in Ghana Cedis at GHS3.9498/USD (July 31 Interbank Exchange rate - (PURC)
Development of Utility Scale RE projects

- 20MW Solar Park (largest in the West Africa sub region) near Winneba by BXC (IPP) through the RE-FIT scheme under the RE Act.

Project implemented without government guarantee
Renewable Energy Purchase Obligation (REPO)

- The Act obliges all electricity distribution utilities and bulk consumers to purchase a % of their energy required from electricity generated from RE sources.
- Ghana currently has 3 distribution utilities and 32 bulk consumers.
- The PURC is yet to establish the % required for each of these consumers
  - GIZ is currently supporting the PURC and relevant stakeholder institutions to build capacity for establishing the required percentage and mode of implementation.
- ECG is therefore overwhelmed with RE developers seeking to sign PPAs in addition with request for government guarantee due to poor ECG financials.
## MOUs & PPAs Under Consideration (ECG)

<table>
<thead>
<tr>
<th></th>
<th>MOUs</th>
<th>Signed PPAs</th>
<th>Advanced PPAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td>36</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Wind</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Biomass/WtE</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Hydro/Tidal</td>
<td>5</td>
<td>2</td>
<td>0</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>16</strong></td>
<td><strong>8</strong></td>
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Progress Since Passage of RE Law

- Licensing regime

- Licensing Framework, Grid Code and Manual for RE investment has been developed by the EC

- Investment interest for utility scale RE grid integration is high due to the very attractive RE-FIT.

- About 66 Provisional Licenses; 17 sitting and 2 Construction permits issued by the EC to date.
  - Solar – 44
  - Wind – 7
  - Biomass/WTE – 11
  - Hydro - 3
  - Tidal Wave - 1
Renewable Energy Net-Metering Scheme

• 200,000 Solar Roof Top programme being implemented by the Energy Commission.

• Government providing capital subsidy of 500W panel per installation.
Average daily generation from Solar from Jan-Jun is about 156KWh. Translates to a savings (15% of total consumption)
Scale-Up Renewable Energy Programme (SREP)

- Developed and obtained approval for $230m Ghana SREP Investment Plan
- 4 projects under SREP
  - 55 Mini-Grid & 38,000 SHS
  - 15,000 Net-metering
  - 20-30MW utility scale Solar/wind Project
  - Technical Assistance
- Secure $40m financing from the Climate Investment Fund of which $30m is grant to finance the above 4 projects.
- Additional $1.5m project preparation Grant has been approved by CIF to develop the above project.
Mini-Grid Renewable Energy Electrification Programme

• Hybrid Mini-grids developed in 5 island communities on the Volta lake to provided electricity services for over 6000 inhabitants.

• Policy developed to mainstream Mini-grids into National Electrification Programme.
  • Public sector led investment with VRA and ECG/NEDCo responsible for generation and distribution respectively.
  • Uniform prizing tariff, zero connection fee for mini grid customers

• Launched socio-economic studies for 3 additional mini-grids under SECO grant financing for Island Communities in the Ada East District.
Off-grid Stand Alone Electrification Programme

• Solar Streetlights installed in remote off-grid communities.
• Solar systems installed in remote clinics, security outpost and schools.
• Energy service centers established in remote un-electrified communities for charging mobile phones, batteries etc.
Kerosene Lantern Replacement Program

- 70,000 solar lanterns sold under 70% subsidy to replace kerosene lanterns.
- The target is 2,000,000 by 2030.
- Private sector has taken up the challenge to deploy both solar and battery operated lanterns to power LED lamps.
- Kerosene consumption has drastically reduced.

Source: EC SNEP-2015
Sustainable Energy for cooking and Productive Use

1. Monitored cookstove initiatives (total improved woodstoves disseminated by private sector – 22,856 as June 30, 2016).
2. 32 Institutional Stoves constructed in 5 Districts for Gari Processors through a 50% grant facility from SNV/GIZ
3. Rehabilitation works of Appolonia Renewable Energy Center has commenced - 30% work done to date.
4. Completed market assessment for solar pumps for irrigation
**Key Programme initiatives**

- World Bank /IDA – Funding for the 5 mini-grids
- AfDB – funding secured for S/M Hydro power pre-feasibility studies for 10 sites
- SECO – Funding secured for 2 minigrids and other RE related initiatives
- GIZ - Supporting implementation of RE law and productive use of RE.
- SREP/AFDB – Funding secured for the development of framework for establishment of RE Authority.
- China, Japan Israel, India – Human resource capacity development in the RE Sector.
- USAID / Power Africa Initiative support to the RE Sector
- ECREEE /UNIDO / UNDP – Support for the SE4ALL Agenda
- EU – Support study for RE Fund Operationalization – **Low Outcome**
Conclusion

• Ghana has made significant progress in the deployment of RE since the enactment of the RE Act.
• Mini-grid and stand alone RE system will accelerate the attainment of Universal access.
• Pricing policy framework to address challenges in the off-grid RE market is being developed.
• Efforts underway to consolidate various plans and actions into a renewable energy master plan.
• Issues regarding regulatory framework and financing for the off-grid sector still remain a major challenges
• **Appreciate the continuous support of the donor partners and the private sector in advancing RE development in Ghana.**

• **THANK YOU**