## Analysis of renewable energy and energy efficiency policies

### National Strategy (NREAP, NEEAP, SE4ALL AA)

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Electricity for all country (in %)</td>
<td>12.5</td>
<td>44</td>
<td>92</td>
</tr>
<tr>
<td>Rural Electrification served with Electricity (in %)</td>
<td>2.5</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>Renewable Energy connected to the grid (in MW)</td>
<td>56</td>
<td>650</td>
<td>1200</td>
</tr>
<tr>
<td>Transmission / Distribution losses</td>
<td>38%</td>
<td>15%</td>
<td>9%</td>
</tr>
<tr>
<td>Share of population Using improved cookstoves (%)</td>
<td>15%</td>
<td>26%</td>
<td>48%</td>
</tr>
<tr>
<td>Share of Households using LPG(%)</td>
<td>2%</td>
<td>16%</td>
<td>25%</td>
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</tbody>
</table>
Regulatory framework in place

CURRENT SITUATION

Policies

- **National Energy Policy (NEP 2009)**, including renewable energy framework
- National Renewable Energy Policy of Sierra Leone (NREP), adopted by cabinet in May 2016
- The National Energy Efficiency Policy of Sierra Leone (NEEP) adopted by cabinet in May 2016
- SE4ALL AA, NREAP, NEEAP validated in 2015

Energy Law/Regulation

- **National Electricity Act (NEA 2011)**
  Through NEA unbundling and restructuring of the public utility company was made and two entities were established:
  - The Sierra Leone Electricity Generation and Transmission Company (EGTC) and
  - the Electricity Distribution and Supply Authority (EDSA)
  - The Electricity and Water Regulatory Commission (EWRC) was established by an Act 2011
Action Agenda Target
### Access to Electricity

| Overall | 12.5% |

### Energy Efficiency

| Technical / non technical grid losses | 38% |
| Efficient cookstoves | 12% |

### Installed Capacity

| Grid connected Capacity | \( \approx 120 \text{ MW} \) |
| Thermal Capacity | \( \approx 64 \text{ MW} \) |
| Renewable Capacity | \( \approx 56 \text{ MW} \) |

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### Primary Energy mix

- **Petroleum products**
- **Biomass**
- **Renewables**, Column1, 0.4%
- Fossil
- Biomass/Charcoal
- Renewables
Sierra Leone: Electrification model

- Network Expansion & Interconnections.
- Increase connected generation capacity
- Mini Grids
- Integration of mini grids & Network.
Aspiration for future electrification of the country

Places with electricity today

Our aspiration
## Pipelines of the IP

<table>
<thead>
<tr>
<th>Pipeline 1</th>
<th>Pipeline 2</th>
<th>Pipeline 3</th>
<th>Pipeline 4</th>
<th>Pipeline 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Generation, transmission and distribution (on–grid)</td>
<td>• Off-grid (Mini-Grids and standalone systems)</td>
<td>• Bioenergy and Cooking Projects</td>
<td>• Energy Efficiency</td>
<td>• Enabling environment</td>
</tr>
</tbody>
</table>
Projects to be connected to the grid

Identified needs / targets

• To increase electricity access from the current 12.5% (10% for grid connected and 2.5% off-grid) to 56% (33-23) and 92% (55-37) by 2020 and 2030 respectively
• To achieve an overall 55% renewable energy contribution to the capacity mix
• To **rebuild** and **extend** the national grid to allow for capacity injections into it

Identified type of projects

• Bekongor (160 MW)
• Congo Dam (180MW) – Mano River Union (MRU)
• Bumbuna II (140 MW)
• Moyamba (10 MW)
• Betmai Hydropower (25MW)
• Manga hydropower (100MW)
Projects to be connected to the grid (Pipe line)

- SATAREM IPP, HFO (30MW Thermal)
- Sinohydro IPP, HFO (58MW Thermal)
- CEC Phase 1 (IPP) (57MW Thermal)
- Aggreko Emergency Thermal Power (20MW)
- SHARPOOJI (IPP, 105MW Thermal)
- Addax (30 MW of which 15 MW fed into the grid)
- Solar Park Freetown (6 MW)-ADFD/ IRENA
- Solar Era for Bo (5 MW) – Bo to Kenema Townships
Projects to be connected to the grid

- WAPP – CLSG Interconnection project (525km, 225 KV)
- Bumbuna II to Waterloo (225kV, 210km)
- 225kV Waterloo to Manor (CLSG)
- New 33kV OHL Bo to Kenema Townships
- New Distribution network Koidu Township
- T&D 25MW Betmai hydro (IPP)
Projects not connected to the grid

Identified needs / targets
- To reach 14% (of total SL population) and 37% electrification from Mini-Grid/ Off-grid systems by 2020 and 2030 respectively

Identified type of projects
- Approx. 200 MW of mini-off grid systems have been identified
- Mini-grids powered purely by renewables (mainly hydro)
- Mini-grids powered by hybrid systems (diesel/Hydro-biomass)
- PV & pico-hydro rural systems
- Most needed are further feasibility assessment to reach financing or funding discussions
Projects of bioenergy and sustainable cooking

**Identified needs / targets**
- To replace traditional firewood with LPG usage to 16% by 2020 and 25% by 2030, while
- Share of population using improved cooking stoves to reach >26% by 2020 and >48% by 2030
  - To improve efficient and effective charcoal production
  - To improve efficient cookstoves
  - To improve on efficient tree planting management
  - To effectively deploy other Bioenergy technologies.

**Identified type of projects**
- The Government shall develop national programs for the adoption of technological standards for cooking fuels and appliances in terms of efficiency, (safety and health impacts) in accordance with international bodies such as the Global Alliance for Clean Cooking Stoves (GACC)
- To Support the Preparatory Phase of a Household Cooking Energy Plan by the European Union Energy Initiative Partnership Dialogue Facility (EUEI PDF)
- A GEF project by UNDP on Energy Efficient Production and Utilization of Charcoal through Innovative Technologies and Private Sector Involvement in Sierra Leone
Projects of energy efficiency

Identified needs / Targets
• Sierra Leone’s National Energy Efficiency Action Plan has set the targets for Energy Efficiency in the country, which need to be enforced by national legislation
• To achieve the 750 GWh potential by 2030 through Energy Efficiency measures, such as:
  • Reduction of transmission and distribution losses
  • Efficient lighting
  • Energy /efficiency measures in the Industry
  • Efficient buildings, etc.

Identified type of projects
• Reduction of losses in domestic and public lighting (i.e. 100% efficient lighting by 2020)
• Reduction of losses in the electric grid
• Reduction of losses in the building sector
• Reduction of losses in the industrial sector
• Establishment and enforcement of EE Standards and labelling
• Campaign and awareness raising on energy efficiency & conservation
• Promotion of Liquefied Petroleum Gas (LPG)
Projects to improve enabling environment for energy investments

**Identified needs**

- To collaborate with the Ministry of Finance & Economic Development and Ministry of Justice
- To involve the private sector and Banking / Finance Institutions
- To collaborate with Donor Partners and agencies
- To collaborate with the standards bureau department
- To partner with the Regulatory Commission
- To work with the Environment Protection Agency (EPA)
- To improve capacity building and institutions strengthening
- To work with the media, rural authorities and local communities

**Identified type of projects**

- Technical Capacity Building to sustain power production and grid expansion and operation
- Assess the potential and feasibility of RE projects, both on-grid and off-grid, for which scoping and pre-feasibility assessment has been done
- Establish collection account and sector-wide budget
Dynamics of the energy sector to unlock private investment in the country: President’s Recovery Priorities Programme

**Double access to electricity from 125,000 to 250,000 households**
- Rural access to renewable off-grid electricity
  1. Install electricity in schools, hospitals and other institutions and build solar systems
  2. Implement energy revolution; install 250,000 solar household systems
  3. Install 10,000 (of total 50,000) Solar Street Lights in Chiefdom HQ Towns

**Accelerate T&D to increase access by 125,000 households**
- T&D for Charlotte 2.2 MW
- T&D for Bankasoka 2.2 MW
- T&D for 25MW Betmai hydro IPP

**Provide technical and transactional support**
- Establish renewable energy and energy efficiency policies

**Double the total operational power generation capacity from 75MW to 150MW**
- 150 MW new generation COD or IPP
  1. 6MW Solar Park
  2. 5MW Solar Era – IPP
  3. Charlotte (2.2MW) MiniHydro
  4. Bankasoka (2.2MW) MiniHydro
Thanks for your attention

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