High Level Seminar:

“Accelerated Sustainable Energy for All in Landlocked Developing Countries through Innovative Partnerships”

Achieving Sustainable Energy for All in LLDCs: Zimbabwe’s Experience

Introduction

The Government of Zimbabwe (GoZ) has developed an Action Agenda AA building on existing plans, programs and strategies, SE4All guidelines, extensive discussions with stakeholders and based on research conducted for the *Rapid Assessment and Gap Analysis issued in November 2015*.

The following National Development Documents were considered:

- ZimAsset – the Economic blueprint
- National Energy Policy of 2012
- System Development Plan (SDP)
- Rural Energy Master Plan
- National Energy Efficiency Audit
- Zimbabwe Intended Nationally Determined Contribution (INDCs)

Areas of Focus

- Energy Access
- Renewable Energy
- Energy Efficiency

1. Energy Access

The baseline year for electricity access is 2012, and based on the 2012 National Population Census, the urban electrification rate is approximately 90% while the rural electrification rate is about 10%. Energy access will also look at improved cooking access using LPG, biogas, improved cooking stoves and additional clean cooking will come from electricity.
Achievements

8,579 Rural Public Institutions have been electrified by Rural Electrification Fund and is shown in the table below:

<table>
<thead>
<tr>
<th>Province</th>
<th>Primary Schools</th>
<th>Secondary Schools</th>
<th>Rural Health Centres</th>
<th>Govt Ext Offices</th>
<th>Chieftainships Grid</th>
<th>Solar</th>
<th>Business Centres</th>
<th>Small Scale Farms</th>
<th>Villages</th>
<th>Others</th>
<th>Total Electrified to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Electrified</td>
<td>2376</td>
<td>1264</td>
<td>833</td>
<td>367</td>
<td>199</td>
<td>23</td>
<td>927</td>
<td>722</td>
<td>1138</td>
<td>730</td>
<td>8579</td>
</tr>
</tbody>
</table>

A total of 217 biogas digesters have been constructed in rural public institutions. The uptake of LPG has greatly improved in the country and an average of 60 tonnes of LPG are consumed a day. 575,699 out of the targeted 800,000 prepaid meters have been installed to improve revenue collection as well as improving the provision of electricity and funding the Rural Electrification Fund.

Challenges

- Bill payments by debtors are hampering REF efforts to electrify rural public institutions.
- The SADC region is facing electricity shortages and this has negative impacts to energy access.
- Electrification is increasingly becoming expensive e.g connection fees
- Sections of the national grid are not stable
- Rural settlements in Zimbabwe are widely dispersed
- Lack of adequate infrastructure in rural areas to supply LPG
- Uptake of alternative cooking technologies still low
- Institutional limitations, including in public & private sectors
- Insufficient experienced manpower to construct biogas digesters

Solutions

- The government, through ZPC and IPPs, will increase generation to increase power availability so that focus is shifted to prioritising connections and provision of other sustainable energy solutions
- Review the REF Act by 2020 to broaded the mandate of REF to Rural Energy Agency and establish a Rural Energy Fund which will operate a revolving fund providing grant- and subsidy-funding for rural households and communities.
- MoEPD and REF will promote mini-grids and off grids in areas where grid extension is not technically feasible
- Support private sector driven business models.
- MoEPD, ZERA and REF will design and implement a national training program for installers of solar and biogas technology.
• Under the national biogas promotion program, the Rural Electrification Program being implemented by the REFs rolling out 1,250 biogas digesters mainly for institutions by the year 2018
• ZETDC should complete the roll-out of prepaid and smart meters by 2020 to improve revenue collection and in the process increase the financial capacity of the REF;

2. Renewable Energy

The targets for large-scale, grid-connected renewable energy were developed based on: national power development needs, the RE project developments proposed by ZPC, the potential for IPP RE power development, and the recommendations provided by the Zimbabwe SE4ALL RE Working Group and the MoEDP. The targets for non-hydro RE represent a major increase for these technologies because the starting point is so low. The Solar Water Heating Programme aims to install of up to 1.85 million domestic solar water heating systems may by 2030. The Government will aim at installing hot water heating systems in over 8,000 primary and secondary schools as well as over 500 hospitals, clinics and social institutions across the country by 2020. Street lighting program was initiated in Zimbabwe targeting major cities, towns and growth points. Blending of leaded petrol with ethanol is targeted at 20%.

<table>
<thead>
<tr>
<th>Total Installed Capacity</th>
<th>Target Number</th>
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<tbody>
<tr>
<td>Large hydro</td>
<td>2,250 MW</td>
</tr>
<tr>
<td>Small hydro</td>
<td>153 MW</td>
</tr>
<tr>
<td>Solar</td>
<td>600 MW</td>
</tr>
<tr>
<td>Wind</td>
<td>100 MW</td>
</tr>
<tr>
<td>Bagasse and other RE</td>
<td>275 MW</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,378 MW</td>
</tr>
</tbody>
</table>

Achievements

• Solar water Heating Programme initiated in 2015. Currently the Programme is at Pilot Phase aiming to install 1,000 solar water geysers.
• Solar street lighting project complete in Harare and three other small towns
• Ethanol Plant constructed in Chisumbanje
• 15% petrol-ethanol blending achieved.
• 21MW of Small Hydro feeding into the grid and 127KW of standalone micro hydro
• 96MW from bagasse power generation
• A total of 217 biogas digesters have been constructed in rural public institutions
• Feasibility studies of 500MW Mamina Wind Power Station complete
• Renewable Energy Policy almost complete
• Biofuels Policy to be launched by December 2016
Challenges

- Poor quality of renewable energy technologies infesting our local market
- Lack adequate Policies and Framework to support renewable energy investment
- Lack of incentives for Developers
- Lack of resources to finance the development and maintenance of infrastructure
- The impact is growing debt has reduced the Country’s borrowing power.
- RE technology still expensive
- Policy inconsistencies
- Fragmented governance - The governance most sectors involves a number of agencies with overlapping responsibilities. A coherent and systematic approach to integrate the different competences and responsibilities of the authorities is lacking
- Lack of skills and expertise
- Little understanding of the initiative by players

Solutions

1. Develop and implement the Renewable Energy Policy
2. Develop and implement the IPP Policy
3. Develop and implement the REFIT
4. Implementation of Priority projects on RE e.g. Kariba South Extension
5. Streamlining requirements and licensing processes for RE developers. Financial incentives for developers and users
6. Allowing direct sales by RE suppliers to large users (retail wheeling) with regulated wheeling charges
7. Develop a financing strategy for RE
8. Implement RE education and training program
9. Improve and modernize the electric grid

3. Energy Efficiency

Energy use in Zimbabwe’s industries, farms, buildings and cities is highly inefficient compared to other countries in SADC. The country’s energy intensity, an indicator based on primary energy use per unit of GDP (toe/thousand USD 2005),

The energy intensity target up to 2030 is based on past performance data. It is expected that Zimbabwe’s overall energy intensity will be decreasing by 17% during each of the next 5 years period, which will lead to a cumulative decrease of 43% in country’s energy intensity over the period 2015 – 2030.
<table>
<thead>
<tr>
<th></th>
<th>Target</th>
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<tbody>
<tr>
<td>Energy intensity of economy in 2030 (Currently 1.56)</td>
<td>0.89</td>
</tr>
<tr>
<td>New energy-efficient barns constructed by 2030</td>
<td>20,000</td>
</tr>
<tr>
<td>Solar thermal water heaters installed by 2030</td>
<td>1,850,000</td>
</tr>
<tr>
<td>New prepaid meters installed between 2018 - 2030 beyond the 800,000 projected to be installed by 2018</td>
<td>1,300,000</td>
</tr>
<tr>
<td>Lighting: Additional CFLs installed by 2020</td>
<td>4,500,000</td>
</tr>
<tr>
<td>Lighting: Additional LEDs installed by 2030</td>
<td>9,600,000</td>
</tr>
</tbody>
</table>

### Solutions

1. LED retrofitting
2. Banning of incandescent lights
3. Installation of Solar water heaters
4. Import tariff reduction - The Government has put in place prudent fiscal measures that will foster the import of energy saving equipment
5. Setting of Minimum Energy Performance Standards (MEPS) and Labelling Regulations
6. Energy Efficiency promotion in the Industry
7. Efficient Agricultural processes e.g. tobacco curing
8. Promotion of green building code
9. Public awareness and capacity building initiatives
10. Prepaid / smart meters dissemination
11. Utility – on the bill financing mechanisms
12. Geyser controls
13. Energy-efficient cooking stoves and alternative cooking fuels e.g LPG
14. Awareness raising campaigns

### Challenges

- Lack of resources to finance the development and maintenance of infrastructure
- Lack of financing or financial incentives encouraging EE investments
- Technology still expensive
- Use of outdated and energy inefficient equipment (motors, boilers, etc.) in major economy subsectors (mining, agriculture, industry). Low penetration of modern energy saving technologies;
- Society’s resistance to technological change;
- Lack of knowledge
- Lack of capacity to conduct energy audits, manage energy use in facilities, measure and verify energy savings, etc.
- Lack of EE related technical expertise in the industrial sector
- Lack of national EE strategy that assigns roles and directs establishes EE codes, standards, procurement policy, etc.