CASE STUDIES FOR INDUSTRIAL ENERGY EFFICIENCY IN ZIMBABWE - CTCN PROJECT

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ZIMBABWEAN DELEGATION TO THE ENERGY EFFICIENCY WEEK, PRETORIA, SOUTH AFRICA
ABOUT THE BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT ZIMBABWE (BCSDZ)

• Formed 26 years ago in 1993 and consists of 100 companies, 500 individuals

• BCSDZ is a Global Networking Partner of the World Business Council for Sustainable Development

• 10 Technical Committees - ENERGY, WATER, CLIMATE, LEGISLATION, RESEARCH, SUSTAINABILITY REPORTING, WASTE, OHS, CHEMICALS, WASTE
CONTEXT

- Industry key to the socio-economic development of the economy
- SMEs also face financial challenges to invest in energy efficiency
- Obsolete Equipment and archaic technologies make it difficult for SMEs to be competitive
- Generation capacity of 1200MW compared to a Total Demand of 2200MW
- Industrial Energy Efficiency is therefore an imperative
ENERGY POLICY FRAMEWORK

- National Energy Policy
- Renewable Energy Policy
- Electricity Act
- Biofuels Policy
- SI 134 ZSE Listing Rules
- NB: No specific Energy Efficiency Policy
KEY STAKEHOLDERS FOR THE CTCN ENERGY EFFICIENCY PROJECT IN ZIMBABWE

- Government
  - MoEPD
  - MEWC
  - MIC
- Development Partners
  - UNIDO
  - UNE
  - CTCN
- Technical Assistance Providers
  - PWC India
- Industry
- Standards Association of Zimbabwe (SAZ)
- IEE/WI
- CTCN-ZIM Project
- POWER UTILITY
  - ZETDC
CTCN MILESTONES ON ENERGY EFFICIENCY IN ZIMBABWE

- Training and Capacity Building of 46 experts in Energy Audits/Industrial Energy Efficiency and Renewable Energy for Private Sector
- Energy Audits for 10 high impact industries
- Training in Energy Management Systems based on ISO 50001:2018
- Production of a National Energy Efficiency and Water Manual
- Identification of Renewable Energy Potential in 10 High Impact Companies
Selection Criteria for CTCN industrial energy efficiency project

Units from following sectors in Zimbabwe
- Food processing and Beverages
- Leather and Footwear
- Agrochemical Production
- Timber processing
- Mining, Mineral processing and Metal finishing
- Cement production
- Cable manufacturing
- Buildings and Construction
- Waste Management and Recycling
- Dairy Sector

1. Top 30 units with highest scores (Top 3 for each sector)

2. Final 10 industries for carrying out audits (1 unit per sector)

Preliminary rating criteria

Desirable criteria Discussion between UNIDO/CTCN and Project team
Audit Methodology for industrial energy efficiency in Zimbabwe
ENERGY AUDITS IN PRACTICE – ZIMBABWE CTCN PROJECT
ENERGY AUDITS IN PRACTICE – ZIMBABWE CTCN PROJECT
Energy and water saving recommendations

No. of energy and water recommendations identified: 161

- Leaks reduction: Water, compressed air
  - Process optimization in boiler / Hot air generators
- VFD retrofit on compressor
  - Cogged V-belt
  - Boiler automation
  - Reduce heat loss
- No investment: 12%
- Payback > 3 years: 10%
- Payback < 3 years: 78%
- Replacement of
  - Smelting furnace
  - Boiler
  - LED lighting
  - Refrigeration compressor
- Rain water harvesting
  - High pressure nozzle for ablution
  - Flow restrictors

Source: BCSDZ/CTCN/UNIDO/PWC: 2018
Investment potential and monetary saving

Investment proposed: US $ 4.53 million
Monetary saving potential: US $ 3.85 million

Implementation prioritization:
- No investment measures
- Payback less than 1 year
- Payback less than 3 years
- Payback more than 3 years
CTCN MILESTONES ON ENERGY EFFICIENCY AND RENEWABLE ENERGY IN ZIMBABWE

- Increased adoption of Industrial Energy Efficiency in industry
- Increased networking between technology developers and private sector
- Adoption of benchmarking in energy benchmarking and energy performance review
- Increased energy reporting in corporate sustainability reports
- Improved Power Factor
- Mainstreaming energy efficiency in purchasing decisions
- Increased Productivity
What should be done to encourage that Energy Efficiency and Energy Audits?

- Promote the savings that have been achieved in companies so far
- More demonstration plants and capacitation of Zimbabwean engineers.
- Like what Alf did, the ten companies must be your pilot companies and the savings of $ energy and CO2 emissions can be presented to other companies to promote uptake
- It should be made mandatory by government for companies to have at least an audit every two years.
- Involve top management commitment especially in industry
- Create energy saving awareness
- Government incentives on acquisition of new technology
- Develop a policy framework, programs and incentives
- Awareness is important about the achievements so far achieved to encourage those that want to go the EE way
What should be done to encourage that Energy Efficiency and Energy Audits?

- Cohesive policies which talk to efficiency and implementation of other cleaner forms of energy such as renewable energy, battery storage etc.
- Awareness of benefits of energy efficiency and potential
LESSONS LEARNT IMPLEMENTING INDUSTRIAL ENERGY EFFICIENCY IN CTCN ZIMBABWEAN PROJECT

- Lack of financial resources to support RE/IEE Investments
- Low perception of Energy Efficiency
- Technical capacity for installation, operation and maintenance
- Lack of implementation of Energy Management Systems e.g ISO 50001:2018
- Obsolete technologies and equipment
- Lack of awareness and management commitment
- Weak business case and low bankability of existing IEE projects
- Short term financial perception by selected enterprises
- Lack of proper sizing and feasibility studies on IEE technologies
UPSCALING RENEWABLE ENERGY ENERGY

Although pilot projects have been established in various industrial facilities and sectors, the bigger challenge is how we can upscale and replicate success stories in order to achieve a higher impact.
IEE should not remain at start-up phase but must overcome barriers to SCALE-UP.
in your own country which factors do you consider as most critical in SCALING - UP adoption of Industrial Energy Efficiency in industry

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financing energy efficiency in SMEs</td>
<td>14</td>
</tr>
<tr>
<td>Increased access to energy efficient technologies</td>
<td>5</td>
</tr>
<tr>
<td>Increased Awareness</td>
<td>5</td>
</tr>
<tr>
<td>Promotion of Energy Audits</td>
<td>4</td>
</tr>
<tr>
<td>Implementation of Energy Management Systems (EMSS e.g. ISO 50001:2018)</td>
<td>9</td>
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<tr>
<td>benchmarking with best practice</td>
<td>0</td>
</tr>
<tr>
<td>Training in Energy Efficiency</td>
<td>5</td>
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</table>
Lesson Learnt: There is need to promote the implementation of Energy Management System
Energy Audits should be encouraged to identify energy savings
Which aspects of this project can you also replicate in your own country?
Questions to the Presenter

20 questions
0 upvotes