ENERGY EFFICIENCY AND COMPETITIVENESS IN COLOMBIA

TUNISIA

NOVEMBER 2014
Only by deeply knowing our companies, we can transform the Colombian industry to make it more competitive.
2001    PRO URE Law for the rational and efficient use of energy resources
2002    Defined fiscal Incentives for equipment and machinery
2003    Research and development funds for PRO URE
2005    Development of technical requirements for electrical equipment (labelling)
2007    Best practices included in technical installation standard (Lights)
2008    Electrical installation standard was released for use
2009    Lighting standard was released for use
2010    Carbon emissions considered for electricity generation projects
2010    PROURE 2010 -2015 with specific targets for: residential, industrial, transport and energy sectors
2014    Law for promoting Energy Efficiency and renewables

Energy Security  -  Access  -  Sustainable Development  -  Competitiveness
<table>
<thead>
<tr>
<th>Subprogram</th>
<th>Category</th>
<th>Requests</th>
<th>VAT (MM USD)</th>
<th>TAX (MM USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity consumption optimization</td>
<td>Electrical Motors upgrade</td>
<td>1</td>
<td>0,204</td>
<td>0</td>
</tr>
<tr>
<td>Combustion process optimization</td>
<td>Heat recovery</td>
<td>2</td>
<td>4,966</td>
<td>0,991</td>
</tr>
<tr>
<td>Vehicles technology improvement</td>
<td>Vehicles upgrade to hybrid</td>
<td>3</td>
<td>20,746</td>
<td>13,49</td>
</tr>
<tr>
<td>Transport systems optimization</td>
<td>Use of clean technologies</td>
<td>4</td>
<td>3,967</td>
<td>0</td>
</tr>
<tr>
<td>Use of non conventional sources of energy</td>
<td>Potential per technology</td>
<td>3</td>
<td>0,0235</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>13</strong></td>
<td><strong>29,9065</strong></td>
<td><strong>14,481</strong></td>
</tr>
</tbody>
</table>
Cultural Habits - Technology upgrade - Sustainable

• Institutional Arrangement
  – Roles and responsibilities assigned to the government

• Advertisement and technical support
  – Advertisement campaigns (school, public sector, industry)
  – Roll out of fiscal incentives
  – Development of targeted technical information to industry

• Measurement, Monitoring and Performance Indicators
  – Develop energy efficiency baselines for industry, residential, transport and public sector

• Regulation
  – Allow for energy price signals
  – Distributed generation
  – Demand management
Cultural Habits - Technology upgrade - Sustainable

• Incentives
  – Incentives for upgrading technology
  – Energy management certification (ISO 50001)

• Standards
  – Develop or adapt technical standards that include energy efficiency
  – Develop or adapt labelling standards for electrical equipment

• Financial Offering
  – Structure funds to finance energy efficiency projects
  – Improve risk management required for this type of projects
  – Define payment options for the public sector
MOU
EE Workshop
Projects Incentives Summary
EE Audits Identification
1st Financing Workshop
Inventory of Industry Generation Capacity
EE project offer test
EE Goal in 2014-2018 Development Plan
Proposals Sent

Technical Data Gathered
EE Workshop
ESCOS Inventory
Fiscal Incentives Workshop
1st Auditors Training
1st Auditors Training
EE Project report template
Web Site
ESCOS proposals deadline

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Cosméticos y Aseo / Industria Autopartes y Vehículos / Industria Editorial y de la Comunicación Gráfica / Sistema Moda (Textil, Confección, Cuero, Calzado y Marroquinería) / Metalmeccánico, Siderúrgico y Astillero

Acuícola / Carne Bovina / Palma, Aceites, Grasas Vegetales y Biocombustibles / Chocolatería, Confitería y sus Materias Primas / Hortofrutícola / Lácteo
<table>
<thead>
<tr>
<th>Project Type</th>
<th>Qty</th>
<th>MMUSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Combustión</td>
<td>13</td>
<td>$ 9.0</td>
</tr>
<tr>
<td>2. EMS Implementation</td>
<td>2</td>
<td>$ 0.7</td>
</tr>
<tr>
<td>3. Cogeneration</td>
<td>3</td>
<td>$ 26.0</td>
</tr>
<tr>
<td>4. Cooling</td>
<td>2</td>
<td>$ 0.8</td>
</tr>
<tr>
<td>5. Electrical Motors</td>
<td>17</td>
<td>$ 4.0</td>
</tr>
<tr>
<td>6. Lighting</td>
<td>5</td>
<td>$ 0.6</td>
</tr>
<tr>
<td>7. Other (Electrical Energy)</td>
<td>7</td>
<td>$ 0.1</td>
</tr>
<tr>
<td>8. Other (Other energy sources)</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>9. Renewables</td>
<td>3</td>
<td>$ 0.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>52</td>
<td>$ 41.5</td>
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</tbody>
</table>

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2014

PROYECCIONES INDUSTRIA
• The main challenge is to create a market with enough demand for EE
• Energy Market is a takers market
• Climate change is not a priority for SME
• Industry, residential and public sector do not recognize EE as a cost saving tool
• Not every industry has the same financial needs or business priorities
• Industry underestimates the ROI of EE projects
• Financial institutions see low risk in EE projects once technical matters are understood
• Financial Institutions do not recognize the need for structured EE products
• The public sector must promote EE through the energy policy
• Engineering firms have limited financial capacity, few ESCOS in Colombia
EE Credit Line by BANCOLDEX

Performance Contract (optional)

Insurance Policy (Optional)

Clean Technology Fund

Agents:
- ESCOS
- HOSPITALS
- HOTELS

 Technologies:
- AC, AC Control, Cogeneration,
- Boilers, Pool Temperature Control, Water Heating

Energy Savings Technical Validation

Validation Phases:
- Contractor Validation
- Project Validation
- Investment Analysis

Cost assumed by the Bank

ADJUSTMENTS

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Institutional Arrangement
- Government responsibility for EE

Promotion
- Advertisement campaigns
- Baselines and targets to be defined for the different sectors
- Pilot projects and technical information publicized for benchmark

Regulation
- Develop price signals for energy and electricity
- Distributed Generation
- Demand Response Management

Incentives
- For technology development and upgrading
- Promote Energy Efficiency certification (ISO 50001)

Standards
- Develop energy efficiency standards
- Develop performance indicators and standard for calculating the base line

Financial
- Financial Risk and technical risk to be built into the models with independent validation
- Define regulation to allow public sector to invest in EE through energy savings
- Shared risk models