Energy Efficiency Policies for the SEMED/Arab Region
Amman 15 & 16 April 2013

National Energy Efficiency Strategy in Industrial Sector in Tunisia: Policy, Instruments & Achievements

Kawther LIHIDHEB
Industrial Energy Efficiency Department– ANME
Tunisia
Presentation Content

- Energy context in Tunisia
- Industrial Energy characterisation in Tunisia
- Energy policy and public tools for the development of EE in industrial sector in Tunisia
- The achievement of EE programme in industrial sector in Tunisia
- Conclusion
Energy context in Tunisia

Ressources et Consommation d'énergie primaire

Source: ONE
Tunisian industrial sector: Caractérisation
Economic Importance

- 6000 Companies
- 35% du GDP
- 80% Exports of goods and services
- 500 thousand of direct jobs

Structure de la valeur ajoutée de l'industrie

- IAA 11%
- IMCCV 6%
- IME 14%
- IC 6%
- ITHC 14%
- INM 41%

Total Industrie = 35%
Industrial Energy caractérisation in Tunisia

Weight of Energy

2,3 Mtoe in 2009, 2,3% /year progression 90-2010

36%: decreasing; in favor of Building sector

GDP Progression : +4%/year

Source: ONE
Industrial Energy characterisation in Tunisia
Final Energy Intensity evolution

-1.7%/an
Industrial Energy characterization in Tunisia

Energy consumption by form

More Natural Gaz: + efficient, + clean, - emissions

More Elec: structural changes, + primary energy + emissions

More pet coke: - cost for the cement sector, - efficient, + emissions
Industrial Energy Characterisation in Tunisia

Energy Consumption Structure

Energy Consumption Structure in the Industrial Sector

2000 ktoe

- IMCCV 61%
- ITHC 4%
- ICH 12%
- IAA 9%
- IME 4%
- ID 10%
- Autres 25%
- Etab. ind. assujettis 75%
Industrial Energy Characterisation in Tunisia


Energy Savings achieved over the period 2005-2011

- Industrie: 45%
- Tertiaire / Residentiel: 40%
- Transport: 5%
- Agriculture: 0%
- Electricité renouvelable: 5%

Industrial Energy Savings achieved over the period 2005-2011

- Audits & Contrats Programmes: 93%
- Cogénération: 7%
- Eolien autoproducteurs: 0%

Industrial Energy Savings:

- 2005-2011: 3500 ktoe
- 3500 ktoe

- 2005-2011: 1600 ktoe
- 1600 ktoe
# Industrial Energy Characterisation in Tunisia

## Energy Savings Potential: 2012-2016

### Energy Efficiency Action Plan 2012-2016

<table>
<thead>
<tr>
<th>Economies (ktep)</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrie</td>
<td>170,3</td>
<td>303,1</td>
<td>448,1</td>
<td>599,2</td>
<td>1 520,7</td>
</tr>
<tr>
<td>Résidentiel et Tertiaire</td>
<td>58,9</td>
<td>133,5</td>
<td>226,1</td>
<td>308,8</td>
<td>727,3</td>
</tr>
<tr>
<td>Transport</td>
<td>93,2</td>
<td>129,4</td>
<td>298,1</td>
<td>336,9</td>
<td>857,6</td>
</tr>
<tr>
<td>Actions Agriculture et pêche</td>
<td>0,3</td>
<td>1,3</td>
<td>2,3</td>
<td>2,6</td>
<td>6,5</td>
</tr>
<tr>
<td>Total EE</td>
<td>322,7</td>
<td>567,3</td>
<td>974,6</td>
<td>1 247,5</td>
<td>3 112,2</td>
</tr>
</tbody>
</table>

Energy Saving 3 Mtoe

50%
State policy and public tools for EE enforcement in the industrial sector

Technical Support

Incentive Instruments
- Subventions FNME
- Avantages fiscaux
- Outils de financement
- ESE

Regulatory Instruments
- Mandatory Periodic Energy Audit
- Mandatory Energy audit for new project

Institutionnel instrument
- ANME (Unité de l’Efficacité Énergétique dans l’Industrie)
- National Fund for Energy Conservation
- Programme National de Mise à Niveau
State policy and public tools for EE in the industrial sector

Mandatory measures

- Mandatory periodic Energy audits
  - Industrial companies consuming more than 800 toe / year
  - Actual target 320 companies

- Mandatory Energy audits for new projects
  - Industrial new projects consuming more than 800 toe /year: ANME permission
  - Industrial new projects consuming more than 7000 toe /year: Autorisation from the minister in charge of energy
Subsidies for energy audits:

- 70% of the cost of the audit with a limit of 30,000 DT

Subsidies for EE investment:

- Immatériel Investissement: 70% of the cost with a limit of 70,000 DT
- Matériel Investissement: 20% of the cost with a limit depending on the energy consumption
  - less than 4000 toe: 100,000 DT
  - between 4000 and 7000 toe: 200,000 DT
  - more than 7000 toe: 250,000 DT
Specific Framework for the promotion of cogeneration

- **20%** subsidy for cogeneration investment with a maximum of 500,000 dinars per project.
- Obligation for the utility company STEG to buy the excess of electricity produced by cogeneration plant.
- Third part access to STEG transmission Network.
- An incentive purchase price for the excess of electricity sold to the grid
  - **Prix Jour**: 0.2401 x Prix Gaz/tep + 16 (millimes)
  - **Prix Pointe**: 0.3110 x Prix Gaz/tep + 60 (millimes)
  - **Prix Soir**: 0.3039 x Prix Gaz/tep + 40 (millimes)
  - **Prix Nuit**: 0.2179 x Prix Gaz/tep (millimes)
Creation of 4 Task forces chaired by ANME Key in the implementation of the 4ECP

- Task force for large industrial energy users:
  To assist large industrial users in their energy conservation efforts

- Task force cogeneration:
  To support the establishment of the required legal framework to achieve the cogeneration objectives
  To work with industrial companies to assist in the development and implementation of projects

- Task force on natural gas:
  To encourage the expansion of gas use in industry

- Task force CDM:
  To support industrial companies in the preparation of their CDM projects
Sensitizing and assisting industrial companies on identifying and implementing EE actions plan.

Accompanying industrial companies on the verification, evaluation and monitoring of the implemented EE projects.

Assisting and accompanying the industrial companies on implementing the **Energy Management System**.

- Creation of an Energy Management Unit.
- Assistance on the implementation of Energy performance indicators.
- Training Energy Managers on the EE issues

Sensitizing commercial banks to finance EE projects in industrial companies.
State policy and public tools for EE in the industrial sector
Mobilizing credit lines dedicated for financing EE programs

• **Credit line World Bank: 40 MUS$**
  - A long term loan from the world bank with the guarantee from the Government of Tunisia
  - 2 banks partners: Amen Bank, Banque de l’Habitat
  - Cogénération and Energy Efficiency in industries

• **Credit Line Environment AFD: 40 M€**
  - A loan from AFD, bonifie par l’UE
  - 3 banks partners: BIAT, UBCI, BT
  - Cogénération, Energy Efficiency and Renewable Energies
State policy and public tools for EE in the industrial sector
Mobilizing credit lines dedicated for financing EE programs

• Technical and financial assistance to project developers

➢ The ANME in the center of the dispositif

➢ Providing technical assistance to the commercial banks in the area of EE

➢ Providing support to project developers to assist in the preparatory studies and business development assistance.
The achievement of the Industrial Energy Efficiency Programme

Energy Efficiency Indicators 2004-2011

Cumulative Energy Savings of 1 400 Ktoe

4 MTCOE  Emissions Avoided
The achievement of the Industrial Energy Efficiency Program

Energy Efficiency Indicators 2004-2011

- IMCCV: 56%
- IAA: 8%
- ICH: 9%
- ID: 12%
- IME: 12%
- ITHC: 3%
The achievement of the Industrial Energy Efficiency Program

Energy Efficiency Indicators 2004-2011

Total EE Investment = 300 MUS$
Average pay back period~ 2 years
Potentiel for CHP in Industry: 260 MW electrical
Program objective: Installation of 110 MW in 2014

Pipeline cogeneration installations targeted in 2014

<table>
<thead>
<tr>
<th>Nombre d'installations</th>
<th>Situation</th>
<th>Capacité (MW)</th>
<th>Investissement consenti (MDT)</th>
<th>Economies prévues (tep/an)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Installations opérationnelles</td>
<td>37</td>
<td>35</td>
<td>25 450</td>
</tr>
<tr>
<td>8</td>
<td>Installations imminentes</td>
<td>20</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Installations engagées</td>
<td>33</td>
<td>59</td>
<td>26 000</td>
</tr>
<tr>
<td>27</td>
<td>Installations en cours d'études de faisabilité</td>
<td>92</td>
<td>163</td>
<td>73 600</td>
</tr>
<tr>
<td><strong>52</strong></td>
<td><strong>TOTAL</strong></td>
<td><strong>181</strong></td>
<td><strong>292</strong></td>
<td><strong>141 050</strong></td>
</tr>
</tbody>
</table>
Better mobilizing the CHP potential: regulatory framework, awareness of industries...

- Explore new solutions for EE in the industry:
  - Measures focusing on Utilities, Process optimization,
  - Best available technologies...

- Strengthen and improve the EE services for customers:
  - Coaching
  - Guarantee of results
  - Improve the effectiveness of energy savings: systematizing measuring and monitoring Protocols

A need for changing scale in EE and Cogeneration investment
Establish an Energy Efficiency Information System for Industry (database of relevant indicators, benchmarking, etc.)

Promote the progressive integration of EE into the overall management system of companies (ISO 50001 standard)

Promote Public - Private partnership based on a "win-win" approach for both partners
A need for changing scale in EE investment

Success keys

- A good understanding of circumstances and issues
- A long term vision and policy
- A good and updated Energy Information System
- Strong positive signal from the public sector
- Specific financial mechanism for each targeted sectors
- Real public-private partnership based on a win – win approach between stakeholders
Thank you very much for your attention