Capacity Building to Develop Energy Efficiency Investment Projects

Approach, Results, Experiences and Lessons Learned

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ENSİ - Energy Saving International AS

Capacity Building and Business Development Consultant

(energy, energy efficiency, renewables and the environment)

16 years of international experience in 24 Central and Eastern Europe and CIS countries:

- Albania
- Azerbaijan
- Belarus
- Bosnia & Herzegovina
- Bulgaria
- Croatia
- Estonia
- Georgia
- Hungary
- Kazakhstan
- Kyrgyzstan
- Latvia
- Lithuania
- Macedonia
- Moldova
- Montenegro
- Poland
- Republic of Slovakia
- Romania
- Serbia
- The Czech Republic
- The Russian Federation
- Ukraine
- Uzbekistan

..... and Norway, Sweden and China
Capacity Building on Project Development, Financing, Implementation and Operation/Monitoring

- Identification
- Scanning
- Energy Auditing
- Business Planning
- Implementation
- Operation

*Capacity Building = enabling others to do the same, several times*
Efficient Capacity Building: Combined Training and Project Development

Result:
Projects ready for implementation
Energy Auditing of Buildings

Existing building + Inspection and evaluation/analysis by energy auditor (expert) = Energy Audit Report

Building xx

Session 1

Session 2

Session 3
Financing of Projects

International Financial Institutions

Owners of good projects

There are no good projects

It is impossible to get a loan

Financial Engineering

Session 1

Session 2

Session 3
Financial Engineering for Small Scale Hydro Power Stations

Goal:

Train project developers, specialists and managers in how to develop Business Plans for small scale hydro power stations.

Finance and implement demonstration projects

Session 1
Session 2
Session 3
Russian Programmes on Financial Engineering

“Revolving Facility for Cleaner Production Investment”

First Programme, 1998:
9 Business Plans, 7 projects granted financing.
Training of Consultants/Project Developers; capacities and skills available in the local market
### Results Northwest Russia: Energy Efficiency Projects in Buildings

**Energy Saving Programme (1999-2004)**

36 projects implemented together with the Centres (Capacity Building):

<table>
<thead>
<tr>
<th>Centre responsible</th>
<th>No. of projects</th>
<th>Investment (USD)</th>
<th>Savings (USD/year)</th>
<th>Reduced CO₂ (tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEEC</td>
<td>15</td>
<td>1 721 000</td>
<td>507 000</td>
<td>12 000</td>
</tr>
<tr>
<td>AOECC</td>
<td>14</td>
<td>4 231 000</td>
<td>988 000</td>
<td>19 600</td>
</tr>
<tr>
<td>KAEEC</td>
<td>5</td>
<td>566 000</td>
<td>349 000</td>
<td>1 750</td>
</tr>
<tr>
<td>MOEEC</td>
<td>1</td>
<td>284 000</td>
<td>57 000</td>
<td>620</td>
</tr>
<tr>
<td>Tver</td>
<td>1</td>
<td>100 000</td>
<td>26 000</td>
<td>420</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>36</strong></td>
<td><strong>6 902 000</strong></td>
<td><strong>1 928 000</strong></td>
<td><strong>34 400</strong></td>
</tr>
</tbody>
</table>

Average Payback of 3,6 years
Results Northwest Russia: Energy Efficiency Projects in Buildings (2)

Energy Saving Credit Facility (2005- )

Municipal EE projects developed by the Centres, financed by the NEFCO ESC:

- 14 projects
- Total investment: 4 mill euro
- Payback less than 5 years

Commercial consultancy contracts for the Centres:

Development of Energy Audits, Business Plans, Project Management for Implementation, and Monitoring/Reporting
## Results Northwest Russia: Energy Efficiency in Industry and District Heating

<table>
<thead>
<tr>
<th>Centre</th>
<th>Project name and type</th>
<th>Investment (USD)</th>
<th>Savings (USD/Year)</th>
<th>Reduced CO₂ (t/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOECC</td>
<td>1. Sawmill 25</td>
<td>9 738 000</td>
<td>3 103 380</td>
<td>43 010</td>
</tr>
<tr>
<td>KEEP</td>
<td>2. Zheshart boiler conversion</td>
<td>597 000</td>
<td>424 000</td>
<td>15 000</td>
</tr>
<tr>
<td>MOEECC</td>
<td>3. Verkhnetulomskij boiler conversion</td>
<td>820 000</td>
<td>290 000</td>
<td>9 600</td>
</tr>
<tr>
<td>MOEECC</td>
<td>4. Energy efficiency Rasvumchorr Mine</td>
<td>74 000</td>
<td>39 000</td>
<td>7 750</td>
</tr>
<tr>
<td>KEEP</td>
<td>5. Frequency converters at Prigorodny greenhouse</td>
<td>86 000</td>
<td>91 380</td>
<td>--</td>
</tr>
<tr>
<td>KAEECC</td>
<td>6. Esoilla boiler conversion</td>
<td>2 020 000</td>
<td>203 000</td>
<td>4 890</td>
</tr>
<tr>
<td>KAEECC</td>
<td>7. Vayrtsila boiler conversion</td>
<td>3 030 000</td>
<td>203 330</td>
<td>2 610</td>
</tr>
<tr>
<td>KEEP</td>
<td>8. Vuktyl boiler conversion</td>
<td>534 000</td>
<td>423 000</td>
<td>6 090</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16 899 000</strong></td>
<td><strong>4 777 090</strong></td>
<td><strong>88 950</strong></td>
</tr>
</tbody>
</table>

Average Payback of 3.5 years
## Municipal Energy Efficiency Plan, Almaty City

Plan 2007 - 2016 approved in the City Council June 2007
Expected results: Energy Costs in the city budget reduced by 25%

<table>
<thead>
<tr>
<th>Actions</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning (no. of buildings)</td>
<td>40</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Energy Audit and Business Plan (no. of buildings)</td>
<td>20</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Implement projects (no. of buildings)</td>
<td>28</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Energy Monitoring (no. of buildings)</td>
<td>28</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Update database (no. of buildings)</td>
<td>735</td>
<td>735</td>
<td>735</td>
</tr>
<tr>
<td>Residential database (no. of buildings)</td>
<td>3 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Passports (no. of buildings)</td>
<td>method</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Information activities, training</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“Centre of Energy Efficiency and Cleaner Production” in Almaty, Kazakhstan
34 Capacity Building Programs on Financial Engineering

- Pécs - Hungary 1996
- St. Petersburg - Russia 1997
- Moscow - Russia 1998
- Nizhny Novgorod - Russia 1998
- St. Petersburg, Russia 1998
- St. Petersburg, Russia 1998
- Korolev - Russia 1998/99
- Vladimir - Russia 1998/99
- Sofia - Bulgaria 1999
- ……
- Minsk - Belarus 2001
- St. Petersburg - Russia 2001/02
- Bălți - Moldova 2001/02
- Baltic countries 2002
- Belgrade - Serbia 2002/03
- Bucharest - Romania 2003
- Moscow - Russia 2004
- Zagreb - Croatia 2004
- Bishkek – Kyrgyzstan 2004/05
- Bucharest - Romania 2005
- Zagreb 2005/06
- Bishkek 2005/06
- Georgia 2006/07
- Bishkek 2006/07
- ……

750 project owners, developers and trainers trained.

250 Business Plan; a substantial part got approved financing!

Total effect > 1000 Business Plans?
Capacity Building to Develop Energy Efficiency Investment Projects

Main Experiences and Lessons Learned ?
Training of Consultants/Project Developers; availability of capacities and skills in the local market is critical.

Continuous Capacity Building needed; experts are leaving and new are coming into the business.
Training of Trainers – A Sustainable Approach

Bulgaria – a “replicable” example?
Close Cooperation with Financial Institutions; Increased Rate of Financing

ENSI Trainers

Support

Training course

Session 1
Homework
Session 2
Homework
Session 3
Homework

Financial Institution

BP = Loan Application
Implementation
Combined Training & Project Development; Efficient Approach

Training Sessions

Project Presentations

Individual Consultations

Session 1

Session 2

Session 3

Practical guidance and support needed – “seminars” not sufficient. Selection of right participants critical for long-term results.
Capacity Building supported by extensive Materials

Practical and useful Tools for Project Developers:

- Manuals and Guidelines
- Software
- Templates
- Examples
- ...
Concern: no future role for “Western” Consultants ??
Capacity Building to Develop Energy Efficiency Investment Projects;

Needed in Developing Countries

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…and then we implemented energy efficiency measures