CAPACITY IN ENERGY EFFICIENCY PROJECT
PREPARATION IN SERBIA

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Current state of energy consumption

- **Low energy consumption per capita (vs EU)**
  - 1.9 toe/cap - Up to 3 times less primary energy consumption
  - 3.5 MWh/cap - Up to twice less electricity consumption

- **High energy intensity**
  - Low energy efficiency at demand side but also low effectiveness of the economy
  - EI 0.9-0.58 toe/1000$ (several times higher than EU-15)

- **High losses in energy conversion and transportation** (FE to PE ratio ~ 51%)

- **Relatively low import dependency** (~40%)

- **FEC in tertiary sector - non convenient structure** (~50% electricity, ~0.12 gas)
Existing Legal framework

- **Energy Law (2004)**
  - Energy policy:
    - Creating conditions to increase energy efficiency
  - Institutional Framework
    - Energy Agency (Regulator)
    - Energy Efficiency Agency – SEEA
    - TSMO – Transmission and Market System Operator

- **Structural Changes**
  - Public Energy Companies restructuring

- **New Actors**
  - Individual Power/Heat producers
    - Privileged Power/Heat Producers
  - Eligible customers

- **Law on environmental protection**
- **Law on Construction**
Energy Policy Objectives

<table>
<thead>
<tr>
<th>Rate (%)</th>
<th>Scenario</th>
<th>Dynamic</th>
<th>Moderate</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>4.62</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>EI</td>
<td>-2.2</td>
<td>-1.1</td>
<td></td>
</tr>
<tr>
<td>EI industry</td>
<td>-2.1</td>
<td>-1.6</td>
<td></td>
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Existing Strategic framework

- **Strategy on economic development of Republic of Serbia** (GoS)
- **National Environmental Strategy** (GoS)
- **Strategy on cleaner production** (under development)
- **CDM strategy** (under development)
- **Strategy on sustainable development** (under development)
Energy Sector Development Strategy by 2015 - Priorities

I Priority of continuous improvement of technological and operating performance of energy sources and facilities

II Priority of rational use of energy products and increase of energy efficiency (production, distribution and utilization)

- Substitution of power for thermal services in Building sector with gas or DHS
- Increased operating efficiency of thermal sources in industry and municipal services
- Decrease losses of electrical (DS) and thermal energy in DHS, Industry and buildings
- Introduction of new energy efficient electric appliances/equipment/systems
**Existing Institutional framework**

- **Ministry of Mining and Energy**
  - Energy policy, legislation

- **Ministry of Environmental Protection**
  - Environmental protection policy, legislation

- **Ministry of Science**
  - Scientific development

- **Serbian Energy Efficiency Agency**
  - Programs, measures, technical regulations for increase of EE
  - Implementation of EE projects

- **Regional Energy Efficiency Centers**
  - Implement EE projects

- **Serbian Industrial Energy Efficiency Network**
  - Awareness and training, benchmarking

- **Energy Managers in Municipalities and Industry**
  - to be introduced

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**Institutions**

- **Serbian Energy Efficiency Agency**
- **Regional EE Centres**
  - Belgrade
  - Novi Sad
  - Nis
  - Kragujevac
  - Kraljevo

**Industrial EE network**

*Grant by the Kingdom of Norway*

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POS 2007-2012*

Module on Energy Efficiency - Barriers

- Low motivation of energy consumers
  - low energy prices and price disparity
  - relatively high investment costs and low life standard
- No incentive instruments
- Low institutional capacities
- Expensive loans and non attractive loan conditions
- Low financial capability of industry and citizens
- Undeveloped market of EE products and services
- Lack of awareness and information
- Ongoing privatization of municipal companies which largely contribute to energy consumption

POS 2007-2012
Module on Energy Efficiency – Measures

- Create favorable regulatory framework
  - Law on energy efficiency and corresponding secondary regulation (Energy management, EU EE directives etc)

- Introduction of stimulating financial measures for EE
  - Energy Efficiency Fund, tax alleviation and other subsidies
  - “Green” public procurement,
  - Creating conditions for work of ESCO companies
  - CDM Projects

- Strengthen Institutional framework
  - MoME
  - SEEA
  - REECs
  - SIEN
  - Energy managers

- Rising awareness, promotion, education
Technical measures:

- Industry:
  - Utilization of waste heat (savings 20%)
  - Replacement of electrical motors (4000MW) with eef1 I eef2 (saving el energy 188 GWh/y)
  - ...

- Buildings:
  - Fuel switching (electricity for heating to other en sources - (annual savings 1500 GWh)
  - Replacement of incandescent bulbs ((annual savings 701 GWh)
  - Replacement of insulation (annual savings 350 GWh)
  - Replacement of windows (annual savings 740 GWh)
  - ...
Programmes/Projects 2000-2007

- EU (EAR) – grant € 5 M (2002-2006)
  - € 3.75 M for programs
  - Grant for running costs of SEEA
  - Reconstruction of heating system in Clinical center of Serbia
  - EE retrofitting of social services buildings
  - Reconstruction of heating systems in the Clinical center of Nis
- Kingdom of Norway (2003-2007)
  - Technical assistance to MoME, SEEA, REECs and SIEN grant around €300,000 annually
- National Energy Efficiency Program - around € 1 mil. annually, state budget, Ministry of science RS
  - Studies

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SEEA Multi Annual Programs

- Alignment of Serbian Government Policy with energy efficiency trends / no funding
- Energy Efficiency in Buildings / EU (EAR)
- Energy Efficiency in Municipalities / EU (EAR)
- Energy Efficiency in the Industry / EU (EAR)
- Energy Efficiency in Transport / postponed / no funding
- Renewable Energy Sources / EU (EAR)
- Cogeneration / USTDA
EU - Special Fund Structure 3.75 M €

**Structure by sector**

- Buildings 1.65 M € 44%
- Industry 0.9 M € 24%
- RES 0.2 M € 5%
- Municipalities 1 M € 44%

**Structure by activity**

- Demonstration projects 52%
- Training 32%
- Measurement Equipment 1%
- Information 15%
Demonstration in buildings

Investments projects - Grant EU (EAR)

- 16 public buildings
- 900,000 € grants (max 70%)
- School, kindergarten, cultural, health and administrative buildings

Investment projects - WB IDA loan

- Phase 1 – 28 buildings + Maternity hospital
- Technical monitoring
- Social monitoring
- Consultancy: BDSP-London/Energoprojekt-Entel

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SEEP – Methodology

ANALYSE

MEASURES

MEASURING

INTERVIEW

EVALUATION

PROCESS

‘BEFORE’

WORKS

‘AFTER’

INTERVIEW

MEASURING

Graph: Monthly Total Demand for Combined Zones in Odzaci, Srb.
Schools

- Total number of buildings: 16/ 54,035 m²
- Heat required for heating (MWh/y)
  - Before 12,439 -> after 7,132 (-42.7%)
- Specific power consumption for heating average
  - Before 230 kWh/m²,year -> after 132 kWh/ m²,year
- Emissions CO₂
  - Before 3,303 t/year-> after 1,844t/year (-44.2%)
  - Emissions reduction CO₂ of 29.5kg/m²,year
- Specific investments cost
  - Average 38.8 €/m² in the range of 18.1 to 97.4 €/m²
**Hospitals**

- Total number of buildings: 11/ 50,934 m²
- Heat required for heating (MWh/y)
  - From 14,600-> 8,695 (-40.4%)
- Specific power consumption for heating average
  - From 366 kWh/m², year -> 218 kWh/ m², year (-40.4%)
- Emissions CO₂
  - Before 4,668 t/year-> after 3,101 t/year (-33.6%)
  - Emissions reduction CO₂ of 30.8 kg/m², year
- Specific investments cost
  - Average 36.7 €/m² in the range of 20.1 to 58.8 €/m²
Capacity building of municipal energy managers

- MoME has completed the training of Municipal energy managers which are currently preparing a database of energy indicators in their municipalities.

- MoME plans to further train these managers to prepare project proposal for funding from EU funds, the training will be made possible with the donation of the Norwegian government.
International commitments

Treaty Establishing the Energy Community
- Entered into force 1 July 2006
- Implementation of the Acquis on energy, competition, Environment and
- Possibly obligation for implementation of EU EE Directives will be added

Ratification of Kyoto Protocol
- UNFCCC - ratified on May 12, 2001
- Kyoto Protocol – Ratified in the parliament in October 2007
  status: Non Annex 1 Country
  ➜ Serbia eligible for CDM projects
- I National Communication (with GHG Inventory) – under development
CDM Projects – Awareness

**UNDP**
- Assessment of CDM potential in Serbia
- Workshop to present and discuss the results of national CDM assessment
- In-depth study of CDM potential in one selected sector
- Support development of selected CDM project ideas up to PIN stage

**Norwegian assistance – CBF for Serbian inst**
- Capacity building of Serbian institutions (MoME, SEEA, REECs, SIEN)– PIN development
- Raising awareness of industrial companies

**Italian assistance**
- Assessment of CDM potential in Serbia
- Capacity building of Serbian institutions
Conclusions

- Sufficient technical capacity of Serbian experts
- Nonexistent legal obligations in terms of EE
  - Adoption of Energy conservation
- Lack of systematic approach to implementation of energy management and energy audits
  - Legal framework
  - Training
  - Licensing
- Lack of incentives for EE projects, due to insufficient legal framework for introducing government funding
  - Establishment of EE fund and other incentive measures
- Lack of public awareness of EE importance
  - Further awareness raising and training
THANK YOU FOR YOUR PATIENCE

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