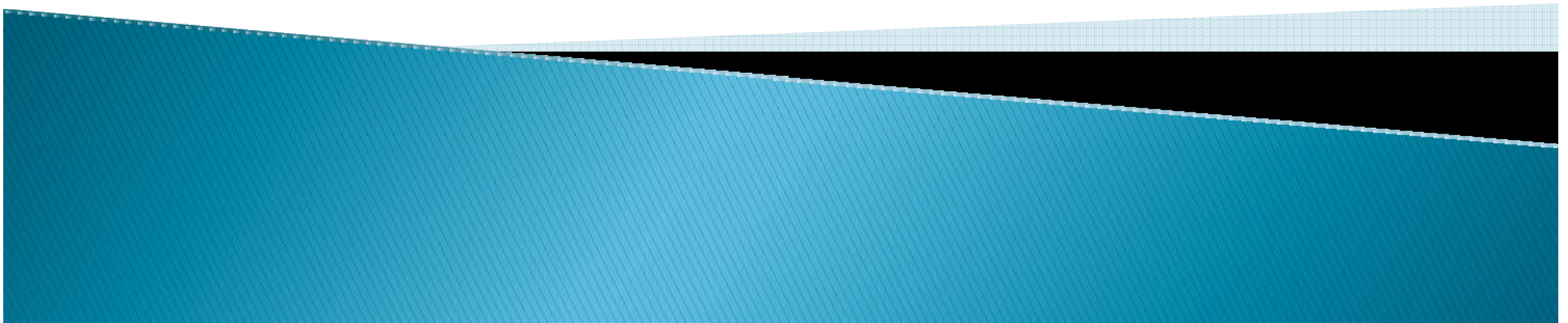


# POLICY REFORMS TO PROMOTE ENERGY EFFICIENCY AND RENEWABLE ENERGY INVESTMENTS

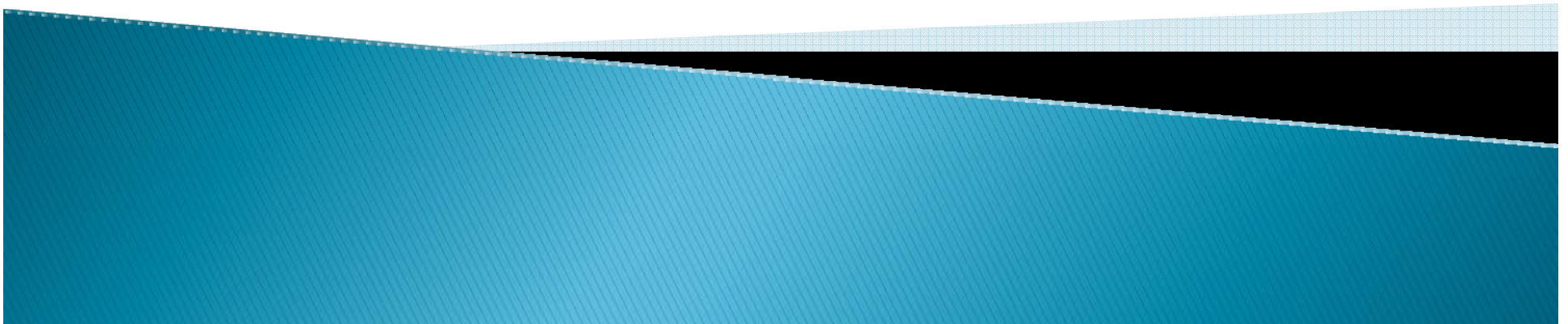
REPUBLIC OF MOLDOVA

Geneva, 7–9 October 2009

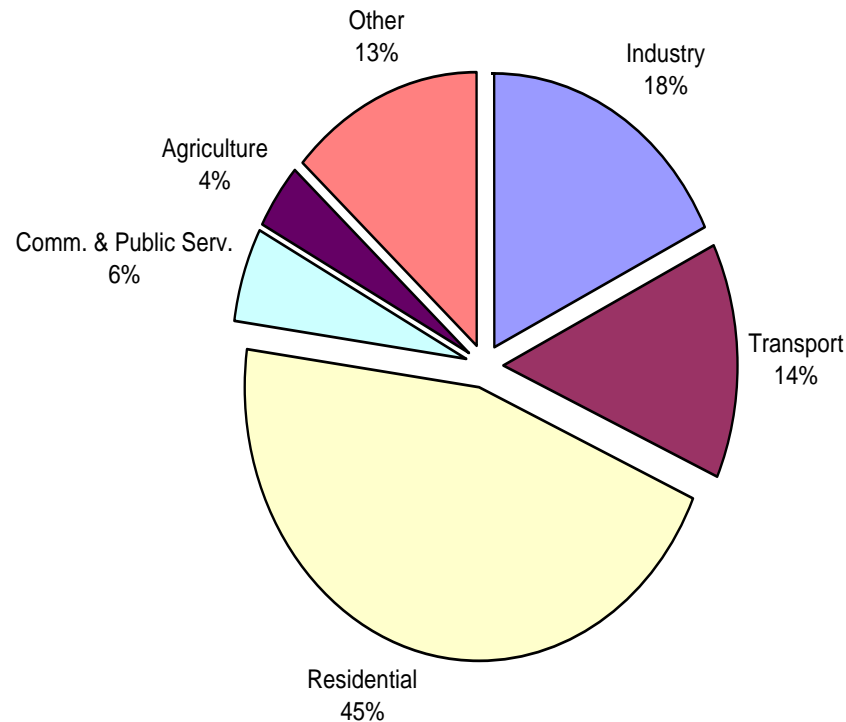


# Background

- ▶ The Republic of Moldova is highly dependent on energy imports.
- ▶ 97% of the energy needs (fossil fuels and electricity) are covered from imports.
- ▶ The weight of expenses for energy imports in the national product is high, thus straining the national economy to an utmost extent. In absence of national fossil energy resource, promotion of energy efficiency and development of renewable energy resources is the best means to reduce this strain.



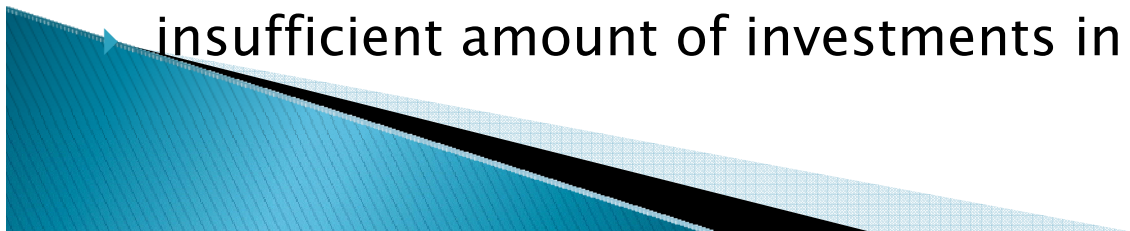
# Energy Consumption Breakdown



- ▶ The residential sector of Moldova consumes 45% of total energy
- ▶ Industry is the second largest consumer with 18%, followed by the transport sector with 14%.

# Key challenges for the Moldovan energy system

- ▶ lack of indigenous energy resources (natural gas, oil, coal);
- ▶ low energy efficiency;
- ▶ low level of use of renewable energy sources;
- ▶ fuel mix deviation from the optimal (with dominance of imported natural gas);
- ▶ non-uniform location of electricity generation capacity on the territory of the Republic of Moldova, which creates considerable supply-demand imbalance (insufficient generation capacity located on the right bank of Dniester River, where electricity generation represents only 30% of total consumption);
- ▶ advanced level of decay of the equipment (about 60–70%) of power stations, high voltage power lines and distribution networks;
- ▶ insufficient amount of investments in the energy sector.



# LEGAL FRAMEWORK

## **Energy Strategy 2020**

The country has set forth the goal of increasing the weight of RE in the country's energy balance up to 6% in 2010 and 20% in 2020.

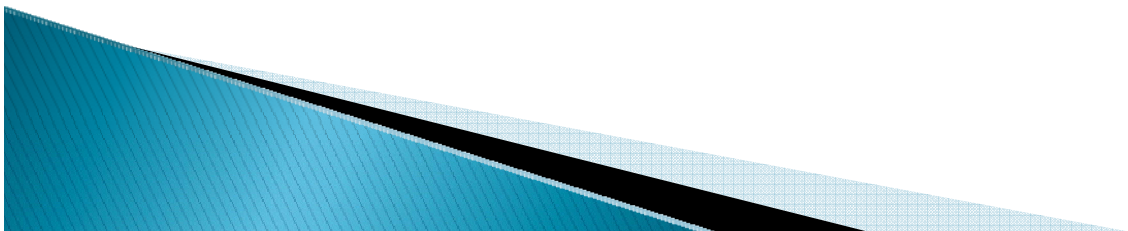
- ▶ If the targets stated above are reached, they will result in an annual reduction of CO<sub>2</sub> emissions by 167-210 thousand tones of CO<sub>2</sub> equivalent. A substantial part of this reduction can be cashed as monetary benefit through CDM projects.

## **Law on Renewables**

- ▶ Mandatory purchase of energy and fuels produced from renewable energy sources by suppliers.
- ▶ Obligation of the national regulator to approve tariffs for a term of 10 years to stimulate investments. The tariffs shall be based on the approved methodologies on feed-in tariff, which will provide for return of investments, as the case might be, in construction, extension, modernization of installations, as well as in the lines for connection, transportation and distribution of energy and fuels.
- ▶ Creation of a revolving fund, entitled Energy Efficiency Fund, which is non-budgetary, i.e. financially independent. The fund will finance both renewable and EE projects. Preliminary estimates showed the ideal size of the FEE would be 20 mil. Euro as to hit the 20% EE improvement target by 2020. The same law stipulates the Government commitment to contribute 10%.
- ▶ Creation of the Agency for Energy Efficiency (AEE).

# LEGAL FRAMEWORK

- ▶ The Law on State Budget for 2009 provides 6,0 mln. MDL for the creation of the Agency for Energy Efficiency and the Energy Efficiency Fund.
- ▶ National Energy Conservation Program until 2010, which stipulates reduction of energy intensity by 2-3% annually.
- ▶ Law on Energy Conservation to be replaced by the EE Law (a draft EE Law exists).



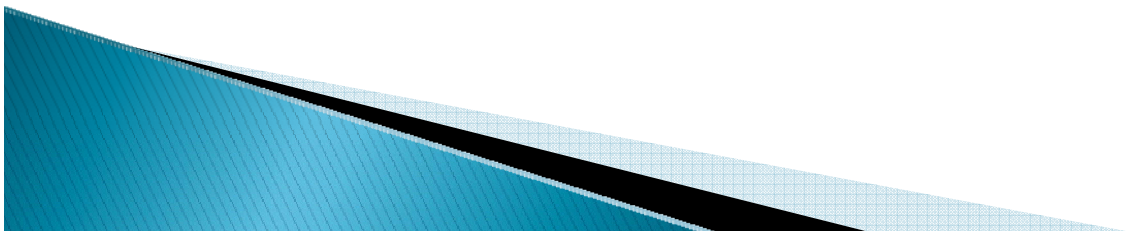
# LEGAL FRAMEWORK

## **Law on science and technology parks and innovation incubators**

Approved by Parliament Decision nr.164-XVI of 13 Julie 2007

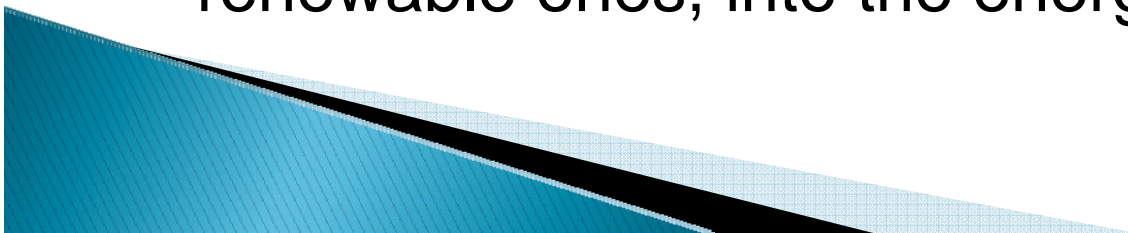
### **Incentives for the residents of the science and technology parks**

- ▶ No value added tax on import of goods and services
- ▶ No custom tax on import of goods and services
- ▶ No value added tax on goods and services bought on the RM territory
- ▶ No profit tax



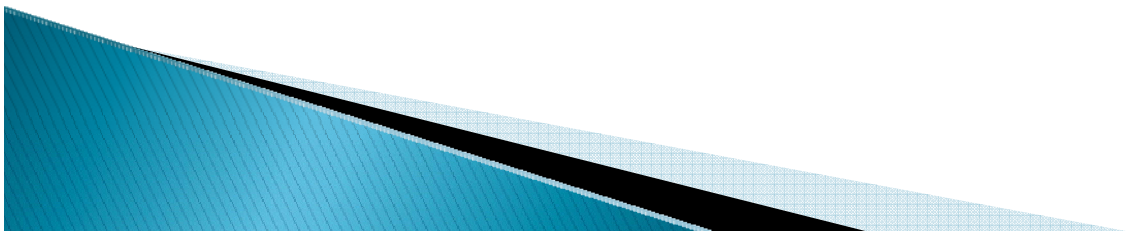
# Objectives towards economic and energy efficiency

- ▶ increasing the energy efficiency of generation, transmission, distribution, supply and consumption of energy and fuels
- ▶ diminishing costs and establishing cost-reflective prices for energy and fuels;
- ▶ attracting private investments into the rehabilitation and construction of energy facilities;
- ▶ involving local energy resources, including renewable ones, into the energy balance.



# REGULATORY FRAMEWORK

- ▶ ANRE adopted the methodology on calculation of tariffs for the energy produced from RES;
- ▶ ANRE approved the Regulation on Guarantee of Origin for the green energy;
- ▶ ANRE had developed the Green Energy Supply Contract.



# Adopted Technical Regulations and Standards

- Technical Standards in Construction (TSC) NCM E.04.03-2008 „Energy Conservation in Buildings ” – establishes technical conditions for heating and rational use of energy for project designs.
- “Heat protection of buildings”: (Intergovernmental construction norms NCM E 04.01-2006 (MCH 2.04-02.2004) new EE indicators of buildings.
- Intergovernmental Pool of Rules for design of thermal protection of buildings.
- Technical Rules for external thermal protection (CP E 04.02-2003).
- Mansard Design and Construction Rules were recently adopted in addition to the existing standard SNiP 2.08.01-89 “Residential Buildings and Design Rules”.



# National Energy Strategy till 2020: Planned Activities on Energy Efficiency and RES

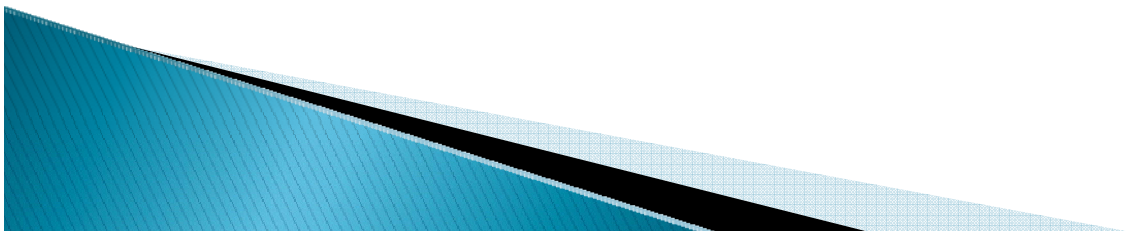
6.1	Re-launch EEA, including	2008-2009	MET, MF		Status
	<ul style="list-style-type: none"> <li>- New Regulation</li> <li>- Tender for the position of Director</li> <li>- Amending the normative basis for EEA purposes</li> </ul>		EEA		Draft Completed Draft amendments
6.2	<b>Law on Energy Efficiency</b>	<b>2009-2010</b>	<b>ME, EEA</b>	<b>600 €</b>	<b>Draft</b>
6.3	Draft and adopt the Law on amending the Administrative Offenses Code.	Completed	ME, EEA		State budget
6.4	Secondary Legislation:	2007-2012	ME, EEA	5.000 €	No No No No
	- <b>Energy Audit Regulation adopted</b>				
	- <b>Regulation on Expertise of EE projects</b>				
	- <b>Energy audit cost calculation methodology</b>				
	- <b>Methodology to calculate the cost of state expertise for EE</b>				

# National Energy Strategy till 2020: Planned Activities

<b>6. Energy Efficiency</b>					
<b>6.1</b>	<b>Re-launch EEA, including</b>	<b>2009-2014</b>	<b>ME, MF</b>		<b>Status</b>
6.5	<b>Draft EE standards</b>	<b>2009-2011</b>	<b>ME, EEA</b>	<b>10.000 €</b>	<b>NO/seeking TA</b>
6.6	Demo Scientific Centre for EE and RES	2009-2010	TUM, ME, EEA	10.000 €	NO/TA sought
6.7	Develop and implement EE Sector Programs	2009-2012	EEA, LGA		No
6.8	<b>New building standards, new EE requirements</b>	<b>2007-2020</b>	<b>MCTD, ASM</b>		<b>No</b>
6.9	Financial support of EE projects	annual	Fund, EEA		Allocation of funds from the State budget
6.10	<b>EE expertise for EE projects in construction</b>	<b>2007-2020</b>	<b>EEA</b>		<b>NO</b>
6.11	Energy Audit at public institutions and economic agents and implementation of EE recommendations	2007-2020	EEA		Sporadic in commercial sector and in public sector, supported by donors. No requirement in the law, so far
6.13	<b>Pilot Efforts of EE projects</b>	<b>2008-2010</b>	<b>EEA, institutions</b>	<b>30 M€</b>	<b>Sporadic, mostly in commercial sector, driven by economic needs. No Gov Programs</b>
6.14	ESCO creation	2010-2020	ME		No/TA sought

# AVAILABLE RES

- ▶ Biomass, hydro energy, solar and wind energy and sources with reduced thermal potential are available on the territory of the Republic of Moldova.
- ▶ In 2005, the share of renewables in energy consumption was 71.4 ktoe, just 3.6% of the total primary energy supply.
- ▶ 63 GWh were produced from hydro energy, while biomass was used for the production of 12 TJ of heat.



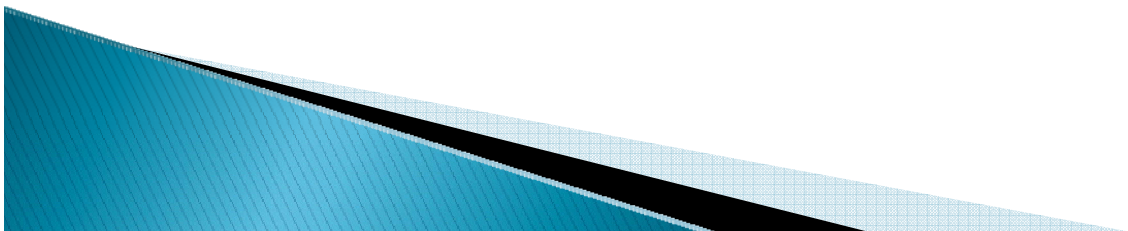
# AVAILABLE RES

RES potential has been estimated at 2,7 mtoe

Type of RES	Technical Potential		
	PJ	Ths.toe	
<b>Solar</b>	<b>50,4</b>	<b>1,2</b>	
<b>Wind</b>	<b>29,4</b>	<b>0,7</b>	
<b>Hydro</b>	<b>12,1</b>	<b>0,3</b>	
<b>Biomass</b>	<b>Agricultural wastes</b>	<b>7,5</b>	
	Fire wood	4,3	
	<b>Wood processing wastes</b>	<b>4,7</b>	
	Biogas	2,9	
	Biofuel	2,1	
	<b>Total biomass</b>	<b>21,5</b>	
<b>Total RES potential</b>		<b>113,4</b>	<b>2,7</b>
<i>Low thermal potential energy sources, including geothermal energy*</i>		<i>&gt; 80,0</i>	<i>&gt; 1,9</i>

# RES POTENTIAL

- ▶ Wind (technical potential) 1.0 GW producing 11 TWh/yr;
- ▶ Small Hydro (economical potential) 200 kW of medium and small HPPs;
- ▶ Biomass/Fuel Wood 820 ktoe (plus 1.8 ktoe biogas);
- ▶ Solar (Hot Water) 1250 kWh/m<sup>2</sup>/yr.

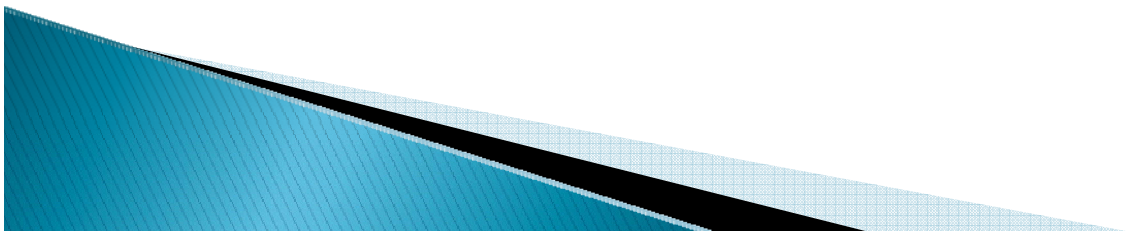


# EE Projects in Public Buildings

- ▶ Energy Audit was implemented in 13 public buildings, Norway TA and as a result, an Energy Audit Center was created

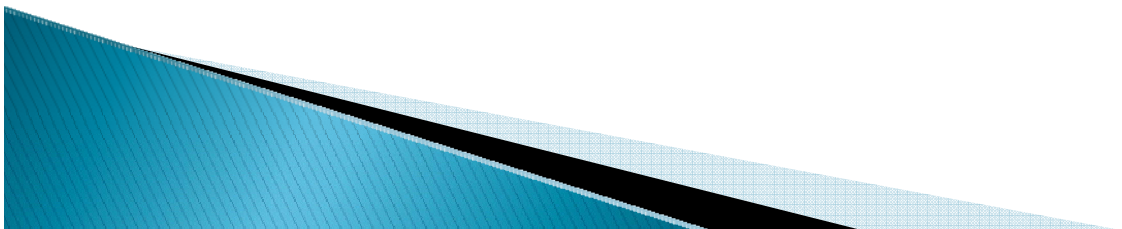
	<b>Heated area [m2]</b>	<b>Energy savings [%]</b>	<b>No. of measures</b>	<b>Tot. inv. [USD]</b>	<b>Savings per year [kWh] [USD]</b>		<b>Payback [years]</b>
Total, energy saving measures	27 500	14	22	86 400	771 500	44 700	1,9
Total, incl. renovation		15	24	119 000	856 000	46 300	2,6

- ▶ The identified energy saving measures require investments of 86 400 USD, giving savings of 44 700 USD/year with a payback of in average 1,9 years.



# Energy Auditing Capacities

- ▶ In December 2005, TUM established Energy Audit Center (EAC).
- ▶ EAC is based in the department “Heat- and Gas Supply and Ventilation”, has the necessary equipment, materials, software.
- ▶ A webpage was launched in 2007.



# Mother and Child Care Center/ Demo project



- ▶ Audit and implemented EE measures –replacement of windows in Buildings 3, 4, 6, 7 of Mother and Child Care Center
- ▶ Out of the proposed measures in the Energy Audit Report, the Ministry and Management of the EAC prioritized replacement of windows in buildings 3, 4, 5, 7 as the first step for improving the indoor temperatures during the heating season and for energy savings.
- ▶ The implementation of this measure was completed by the end of September 2006. The Ministry of Health Care provided 32 000 Euro, while the Norwegian program provided 25 000 Euro as conditional grant for co-financing of this measure.

# EE in Residential Buildings

## Third Parties Financing

Mansard, Trandafirilor St., 32



Measures proposed and implemented:

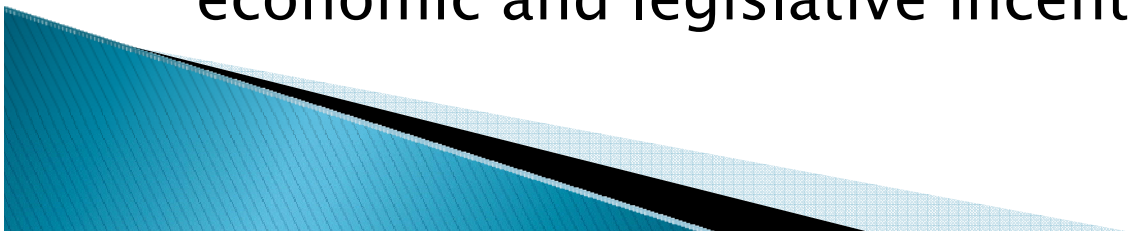
1. Raising an extra floor
2. Renovating the balconies
3. Changing the entrance doors
4. Repairing the basements
5. Changing the windows

Results:

1. Improvement of indoor comfort;
2. 20% savings according to the bills

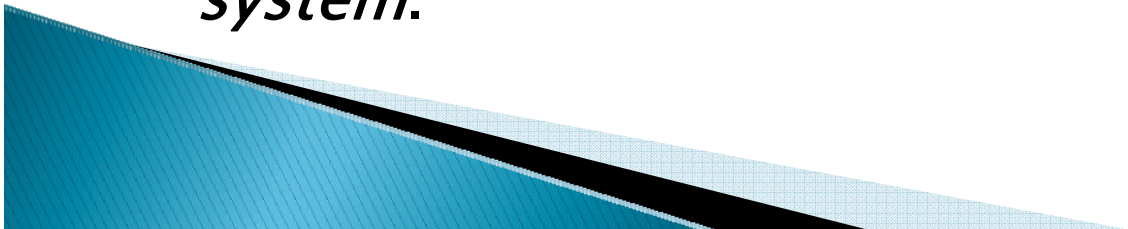
# EE Further Actions

- ▶ ***Institutional capacity building:*** Create an Energy Efficiency Agency in charge of recommending, developing, promoting, implementing and monitoring the national EE and RES undertakings.
- ▶ ***Develop EE and RES financing mechanisms.*** Energy Efficiency Fund has been set under the Law on Renewables and needs contributions from donors.
- ▶ ***Private sector involvement:*** Create conditions for ESCO development by introducing appropriate economic and legislative incentives.



# EE Further Actions

- ▶ *Develop the legal framework:* EE Law, Energy Auditing, Energy Performance of Buildings, etc.
- ▶ *Creation of Professionals:* develop a set of educational programs for energy auditors, energy managers, energy inspectors, and other stakeholders.
- ▶ *Public Awareness:* conduct a public awareness and education campaign with the final consumers.
- ▶ *Cost recover tariffs:* bring the energy tariffs to cost recovery level and *reexamine the energy subsidy system.*



# Thank You for Your Kind Attention

*Galina PARSIAN*

Ministry of Economy  
MD-2033, mun. Chisinau,  
str. Piata Marii Adunari Nationale 1  
Tel/fax: (+373 22) 233267;  
E-mail: [galina.parsian@mec.gov.md](mailto:galina.parsian@mec.gov.md)  
[gparsian@yahoo.com](mailto:gparsian@yahoo.com)

