Energy Efficiency Measures in the Romanian Residential Sector: Policy Prospective

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THE PRIORITY OBJECTIVE OF ROMANIA:

- **INTEGRATION IN THE EUROPEAN UNION IN 2007**

THE MAIN CONDITION:

- reducing the existing development gap

WAY TO GO:

- legislative and institutional development
- 'Acquis Communautaire' transposition
- increase of competitivity
- sustained economical development

THE NATIONAL DEVELOPMENT STRATEGY AND THE SECTORIAL STRATEGIES, ARE FOCUSED ON THE ACHIEVEMENT OF THE OBJECTIVE:

- establish the possible targets and the dead-lines
- evaluate the necessities
- establish the tools to be utilized
- the decrease of primary intensity for 2004-2015 period, with 40% compared to 2001 (basic scenario)

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NATIONAL PROFILE
YEAR 2003

Official name	**Romania**
Capital	**Bucharest**
Area (1000 km^2):	**238**
Population (millions):	**22.3**
Population density (per km^2):	**94**
Urban population (%):	**55**
Gross national income (GNI) (per capita):	**US$ 2,310**
Gross domestic product (per capita):	**US$ 1,780**

PRESENT SITUATION OF ROMANIA

WEAK ISSUES:

too low development rhythm in order to significantly reduce the gap high energy intensity - especially due to the structure of the national economy low penetration of electrical power increasing dependency of the imported energy resources

28.0% - 2002
34% - 2003
47% - expected in 2010

STRONG ISSUES:

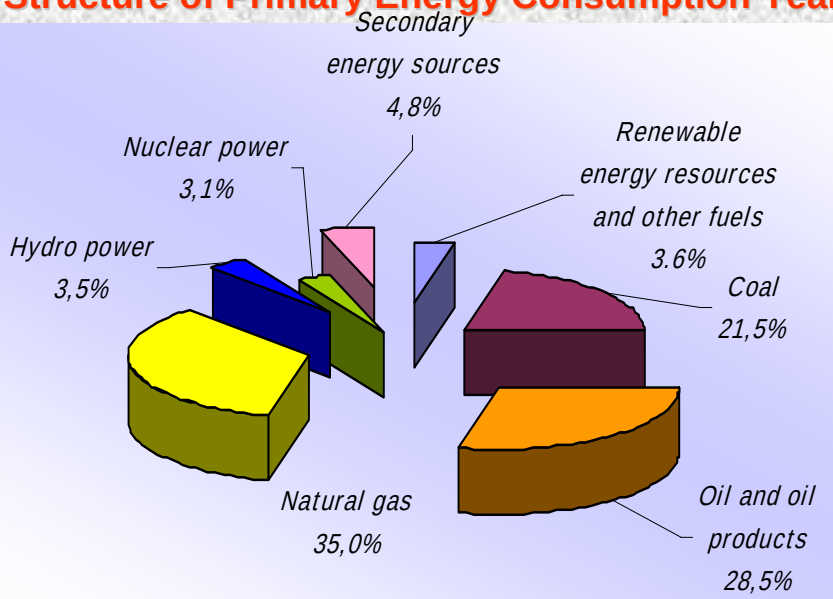
1,8% annual increase of total energy consumption vs. 3,5% economical growth
3% increase of total electrical power consumption
decrease of global energy intensity (still too slow)

Energy indicators	România	U.E. - 15
GDP growth % (2000 – 2005)	3.5	2.38
GDP(€ 2000) / inhabitant	1,796	22,565
Primary energy intensity (toe/103 $ '95) corrected with the purchasing power parity	0.265	0.177

Intensified increase of energy prices – July 2005 residential energy prices are (including VTA 19%)

Natural gas	230 Euro/1000 m3
Electricity	119 Euro/MWh
District heating	28 Euro/ Gcal

Structure of Primary Energy Consumption Year 2003



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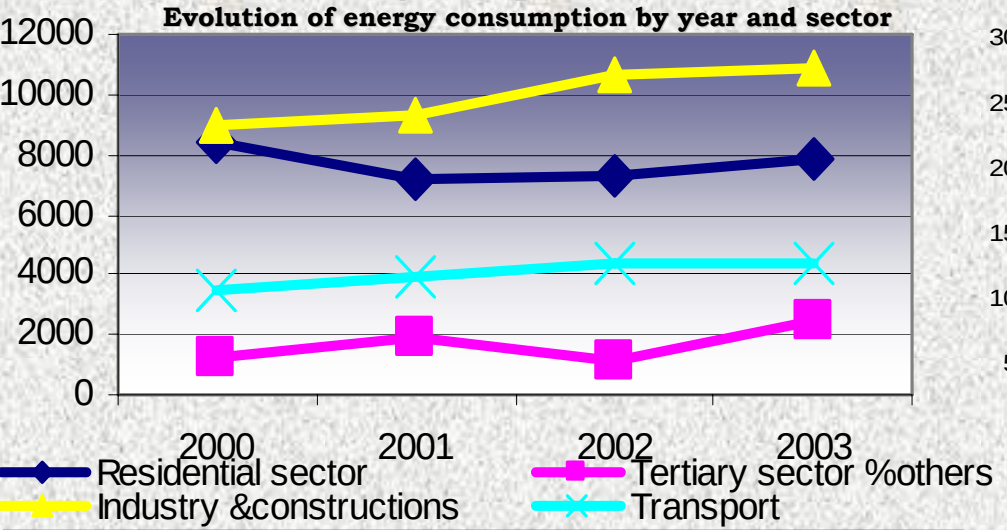
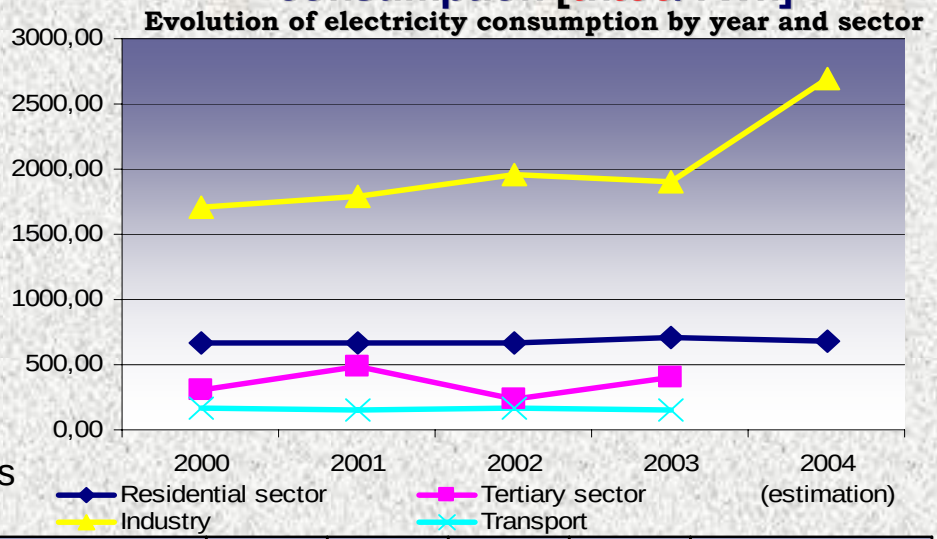
General data regarding the energy consumption [thtoe/TWh]



General data regarding the electricity consumption [thtoe/TWh]



	2000	2001	2002	2003
Residential sector	8433	7197	7282	7879
	98.05	**83.68**	**84.67**	**91.61**
Tertiary sector %others	1207	1915	1159	2440
	14.03	22.26	13.47	28.37
Industry &constructions	9017	9315	10616	10892
	104.84	108.73	123.44	126.65
Transport	3508	3975	4319	4319
	40.79	46.22	50.22	50.22
TOTAL	22165	22438	23376	25153
	257.73	260.90	271.81	292.47

	2000	2001	2002	2003	2004 (estimation)
Residential sector	662.2	662.2	670.8	705.2	679.4
	7.7.	**7.7**	**7.8**	**8.2**	**7.9**
Tertiary sector	309.6	481.6	232.2	404.2	
	3.9	5.6	2.7	4.7	
Industry	1711.4	1788.8	1952.2	1909.2	2700.4
	19.9	20.8	22.7	22.2	31.4
Transport	163.4	154.8	172	154.8	
	1.9	1.8	2.0	1.8	
TOTAL	2915.4	3121.8	3061.6	3225	3491.6
	33.9	36.3	35.6	37.5	40.6

Energy-efficiency legislative background (1)

- **Legislative background on energy in buildings:**
  - ***Ordinance 29/2000 and related Law 325/2002, on the thermal rehabilitation of the existing building stock and stimulating the energy saving.***
  - ***Ordinance 174/2002, and the related Law 211/2003 relating to the establishment of special measures for the thermal rehabilitation of multi-storeyed buildings - block of flats***
  - ***Order no. 550/2003 approving the Technical regulations "Guide to the authorization of energy auditors for buildings and the related installations"***
  - ***Law no.372 /2005 transposing the Directive on the energy performance of buildings (2002/91/EC).***

Energy-efficiency legislative background (2)

- **Majority of technical standards and norms are related to heat in buildings. Few on electricity use, as:**
  - ***the Norm PE 136-1998 relating to the rational use of electricity for artificial lighting and domestic utilization. The design, execution, and operation of installations for artificial lighting used both in industry and domestic construction are regulated.***
- **Energy efficiency standards have been introduced for most household appliances, transposing the EU Directives :**
  - ***Dishwashers, lighting lamps, ballasts for fluorescent lighting, freezers, air-conditioners, electric ovens etc.***

1. During the period 2004-2005, the total number of the companies that supplies the thermal energy by centralized system:

- ***129** companies, out of which:*
  - ***9** companies buy the heating agent from third parties;*
  - ***120** companies produce and distribute the thermal energy by heating stations and co-generation power stations of their own*

2. Number of metering connections: 110.446,

- ***representing 64% of the total.***

3. By applying the government decisions no 55/2004, subsidies for heating were awarded to:

- ***520.074** apartments connected to thermal networks;*
- ***519.638** apartments connected to natural gas networks;*
- ***388.564** apartments that use other kind of fuels.*

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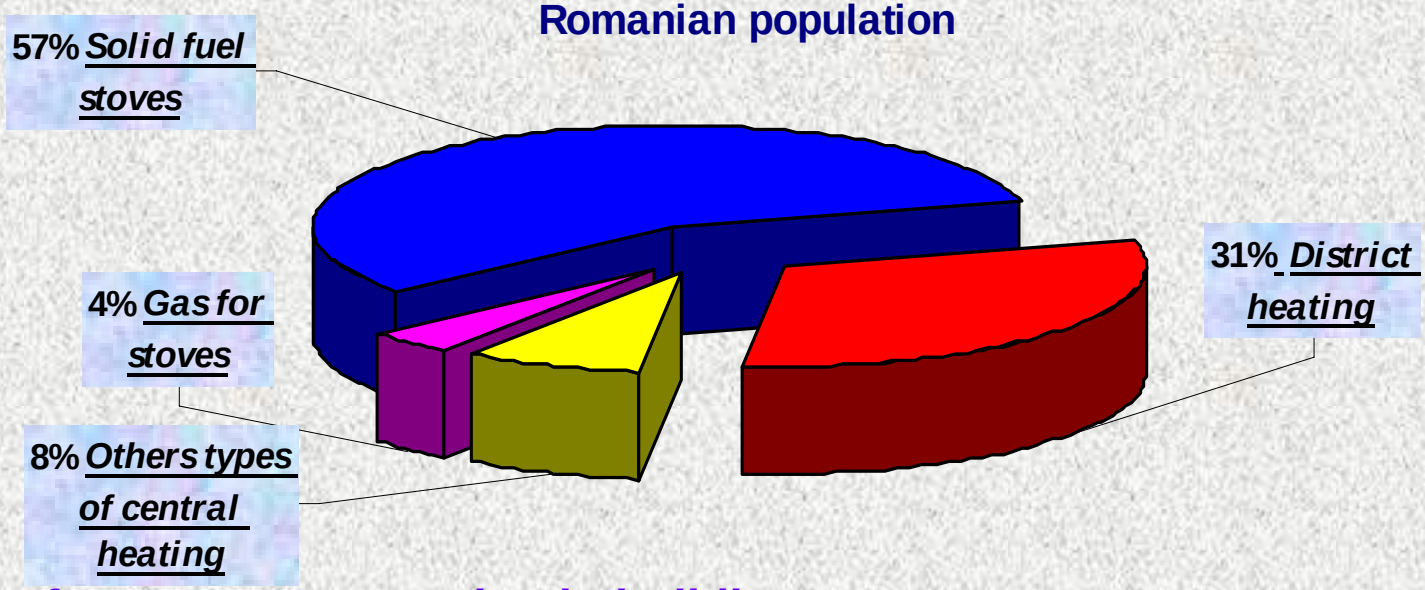
Statistics regarding the heating system used by the Romanian population



Structure of energy consumption in buildings

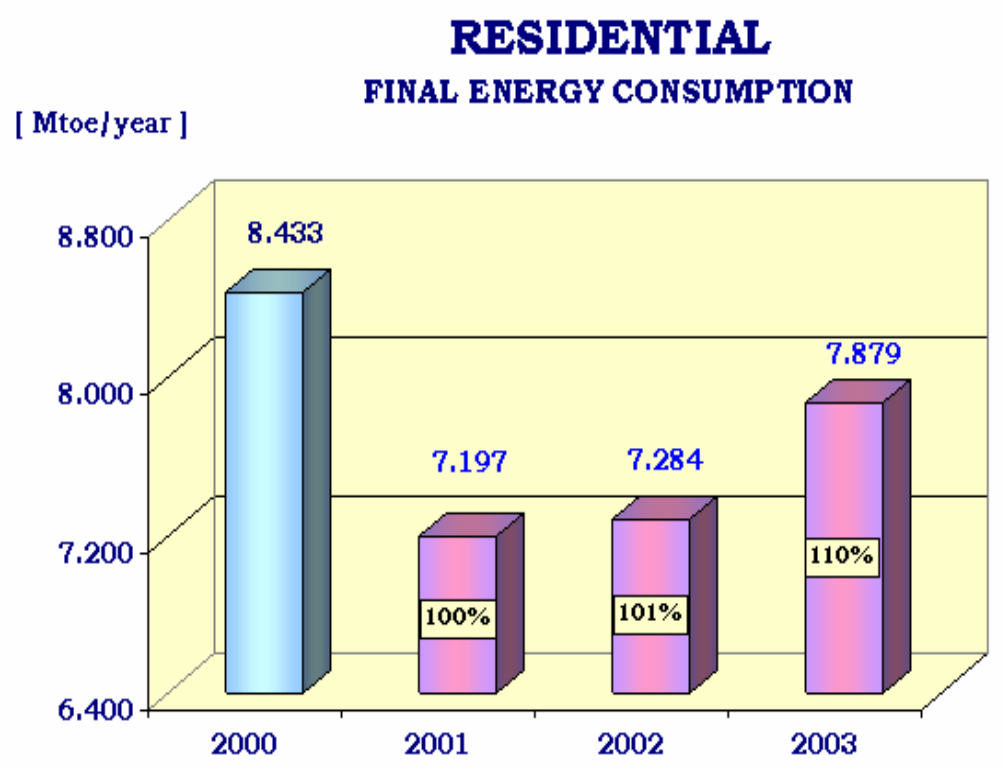
Household type	Heating	Hot water	Cooking	Lighting/Appliances
Apartment in block connected to District heating system (urban)	55.5%	19.5	9.7	13.9
Apartment in block with individual boiler (urban)	49.6%	20.7%	19.0%	10.6%
Individual house with stove (urban)	73.2%	3.5%	16.2%	7.0%
Apartment in block with individual boiler (rural)	56.3%	22.2%	11.2%	10.2%
Individual house with stove (rural)	65.8%	6.4%	16.4%	11.4%
Other house with stove (rural)	67.9%	5.8%	14.8%	11.5%

ENERGY IN THE RESIDENTIAL SECTOR, 2000 - 2003

The residential sector comes with the highest potential for energy conservation, 35 - 50% of the total (average 41.5%).

The technical analyses revealed that the medium value of the specific investment is around 167 € / toe.

The final energy consumption of the residential sector represents 31,3% of the total final energy consumption of Romania in 2003. Compared to the year 2001, the residential energy consumption increased.



Source: National Institute of Statistics – "Romanian Statistical Yearbook 2004"

Energy efficiency activities (1)

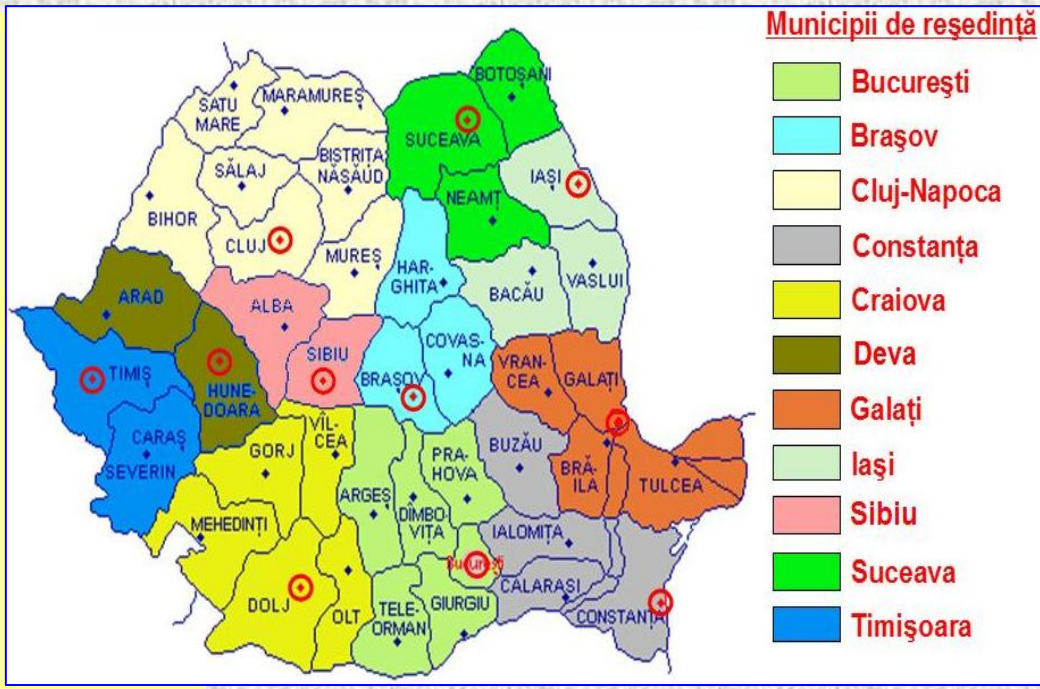
- *the Romanian Agency for Energy Conservation- ARCE co-ordinates and implements the government's energy efficiency policies*
- *starting 2002, ARCE strengthened his administrative capacity. The framework for the self-financing of certain activities has been ensured too.*

ARCE- territorial branches :
13 mobile laboratories in operation for energy consumption measurements

No. of on site energy surveys: **973 / year**
No. of recommended energy efficiency measures: **1,778**
Estimated energy savings: **387 ktoe / year**
No. of already implemented measures: **727**
Total energy savings achieved: **174 ktoe / year**

•**NGO Partnership: ANCER**- industry;
OER- municipalities; **APER** – EE policy;

ENERO - renewables



Energy efficiency activities (2)

Short term energy strategy 2001-2004: priority for energy efficiency

Main Energy Efficiency Programs to stimulate investment:

- **1) Energy Management Program (in progress)**

–Target groups: a) energy auditors; b) energy managers

–Concept : Promotion of M&T systems by low-cost measures

–Actions: Training and authorization

Short term energy strategy 2001-2004. Main Energy Efficiency Programs to stimulate investment:

- **2) Energy Efficiency in District Heated Housing Sector-**

–Technology : individual regulation and metering TRV+HCA

–Demo project : 5 MEURO - PHARE

–Total cost :~ 140 MEURO - 2.5 M apartments in DH sector

ARCE' CONTRACTS (1)

The project *FISHE* for energy programme 2001 –
Energy efficiency in District Heating Housing Sector

Goal of the project was to improve the energy efficiency for heating purposes concerning buildings (blocks) connected to district heating systems.

Task 1:
Analysis of data received from cities/selection of cities/selection of equipment

Task 2:
Estimation of procurement/installation costs and selection of blocks

Task 3:
Technical Assessment and Cost Estimation of Proposed Project

Task 4:
Identification of Demonstration Project:

ARCE' CONTRACTS (2)

Building - End-Use energy and Efficiency Measures in Targu – Mures

PHARE Programme Romania Energy Sector – Energy Efficiency in Buildings Household Survey and Emergency Energy Saving Measures in Collective Dwellings – Coordinated by NOVEM – 1995- 1997

Budget – 160.000 Euro (Consultant services and Romanian subcontractors)

Tasks:

- detailed household survey of the present energy demand trends and patterns
- recommendation on technical measures
- implementation of emergency energy saving measures
- evaluation of the results
- preparation of an awareness campaign

Barriers to energy efficiency (1)

- week integrative effort with the political, macroeconomic, social and regional policy targets;
- lack of knowledge and experience in preparing bankable feasibility studies;
- not operational fiscal and financial incentives for RES investments (subsidies, taxes exemption);
- limited visibility of these projects in banking sector from Romania and abroad.
- shortage of investment capital;
- underdevelopment of energy saving service and equipment industry;
- uneconomic pricing policy & uncertainty over ownership; restructuring and privatisation of the energy sectors; example, the privatization of the distribution utility ELECTRICA.
- slow progress in energy sector reform and flawed tariff policies

Barriers to energy efficiency (2)

- although direct subsidies from the central budget have already been abolished, the existing methodologies for calculating energy prices by traditional producers do not fully account (or do not account at all) for certain expenses
- relatively limited supply of advanced technologies on the domestic market and the fact that the equipment is quite expensive by regional standard.
- limited know-how and technology in the field of energy efficiency and renewable energy sources. Leading world manufacturers of such equipment must work out a specific, regional marketing strategy to penetrate these markets. This would include convenient leasing schemes and reduced prices for products.

Conclusions

- High potential of savings in energy consumption in buildings

- Slow and hesitant development due mainly on legislative and financial barriers legislative and financial barriers

- The mechanisms of the market economy are barely emerging in Romania, and they alone try to determine the orientation of consumers towards a rational utilization of energy

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ARCE

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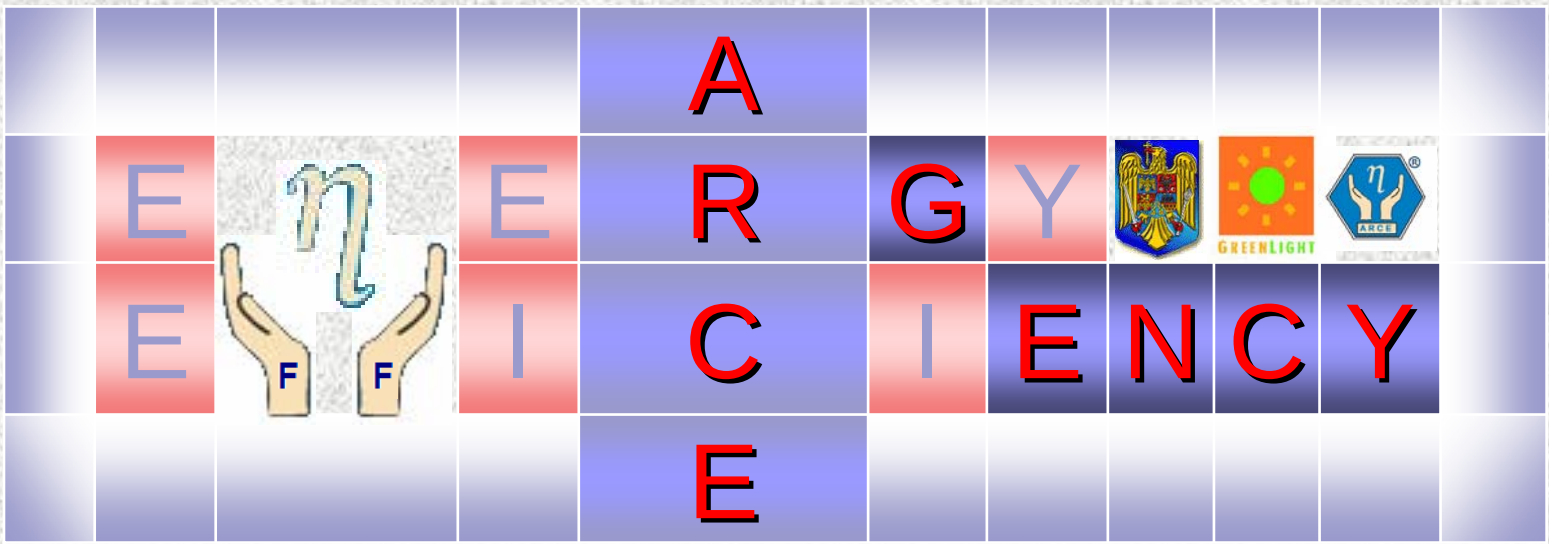

THANK YOU FOR YOUR ATTENTION !