JICA Training and Dialogue Program

Moldova: Energy Security Policies and Problems

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General Overview

Area-33846 km2

Population-3,5 mln

Situated south-east of Europe

Density of population 121.9/km2

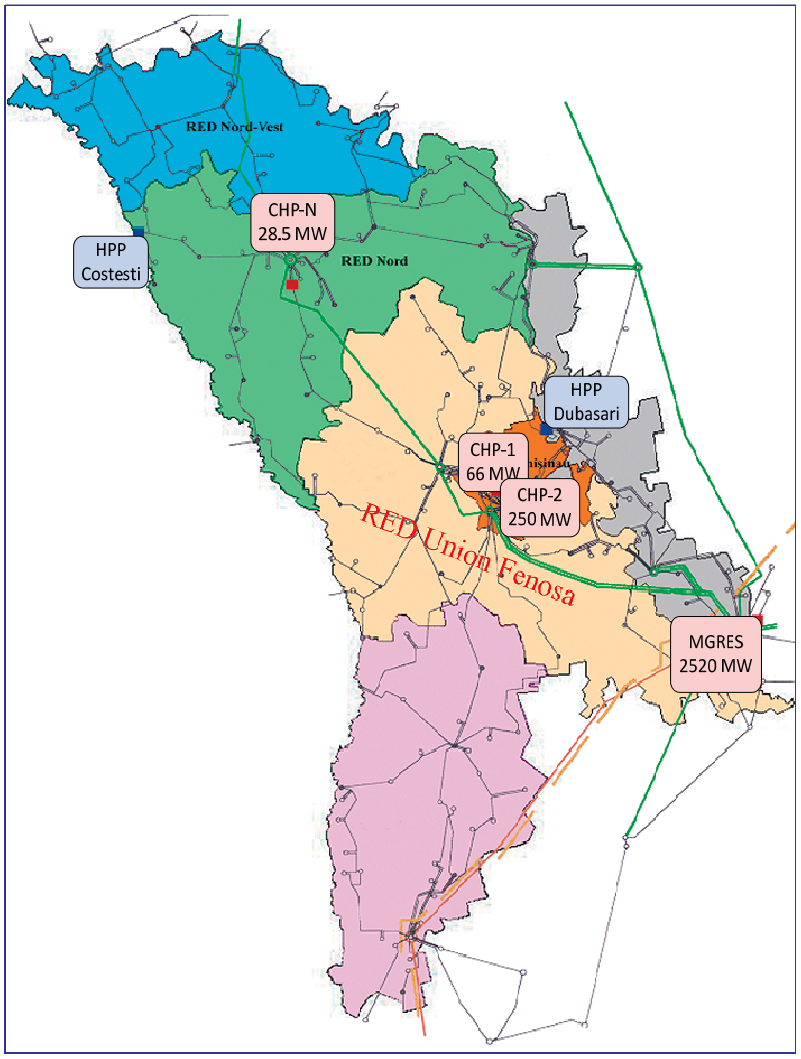
Economy- based on sevices 75%
agriculture 19%
industry 11%

Moldovan Energy System overview

- Power supply system:
  * Power market - partially open (3 eligible customers, equivalent to ~10%);
  * According to the Law on Electricity, opening of the power market shall be performed in stages:
    1st for non-household customers till Jan 1, 2013;
    2nd for household customers till Jan 1, 2015.
- Natural gas supply system/"market":
  * De jure, natural gas market - fully opened;
  * De facto, no alternative suppliers (natural gas imported from one source only).
- District heating supply systems;
  * 15 regulated companies, which generate up to 3 mil. Gcal of heat;
  * One supplier per locality (no alternative suppliers), except Chişinău and Bălți.
- Petroleum products supply market:
  * Fully opened market;
  * 168 licensees (import, wholesale and/or retail trade of petroleum products)
  * Full competition between participants ensured.

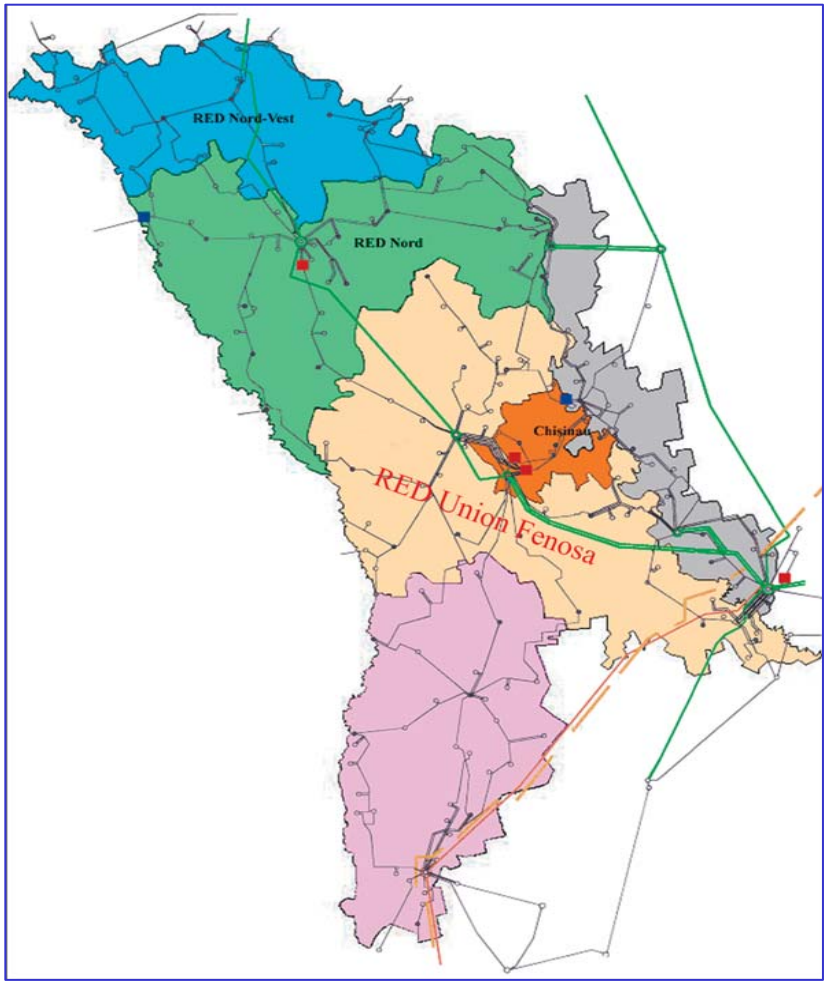
Power system, Electricity generation

- Three co-generation Power Plants:
  - CHP-1 (66 MW)
  - CHP-2 (240 MW)
  - CHP-North (24 MW)
- Two Hydro Power Plants
  - HPP Costesti (16 MW)
  - HPP Dubasari (48 MW)
- Kuchurgan Thermal Power Plant (MGRES, 2520 MW)
- 10 CHPs at Sugar Factories (98 MW)



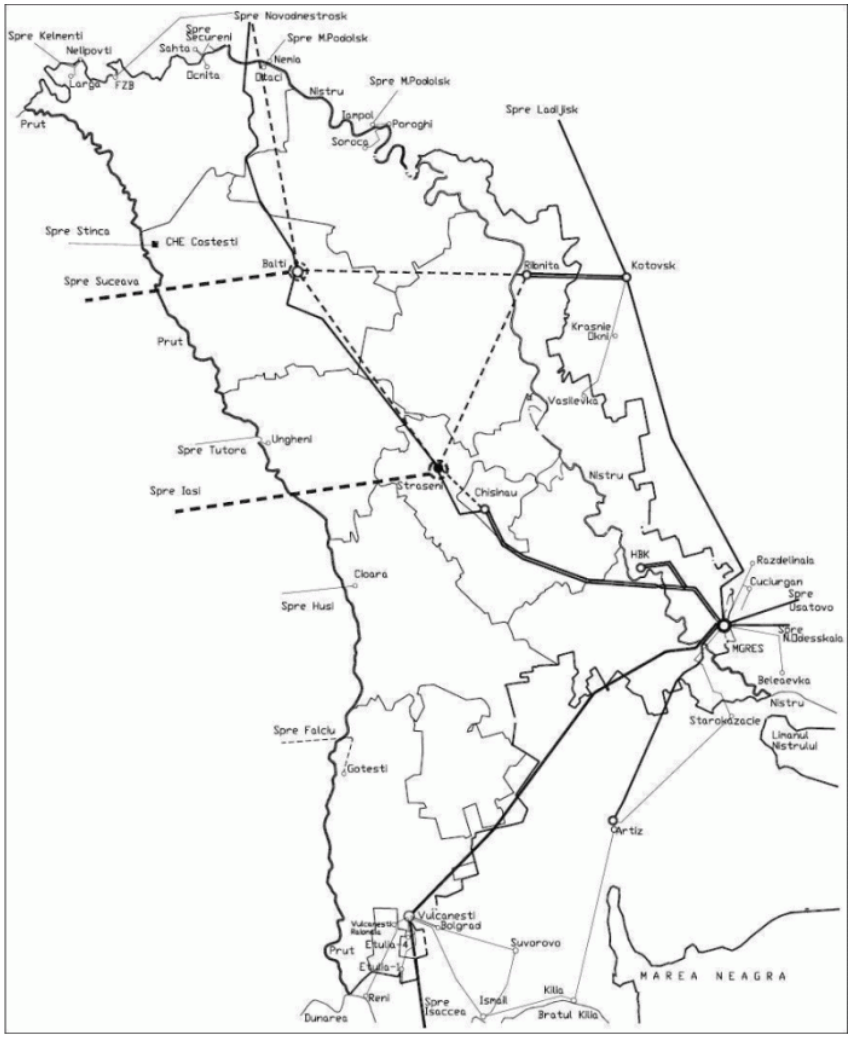
Power system, Transmission and Distribution of Electricity

- Transmission and dispatch: SE „Moldelectrica”
- RED Union Fenosa: 65% of the total number of customers and 72% of the total supply of electricity (private company);
- RED Nord: 22% of the total number of customers; 17% of the total supply of electricity (state-owned company);
- RED Nord-Vest: 13% of the total number of customers and 9% of the total supply of electricity (state-owned company);
- One eligible customer - 2% of total electricity supply.



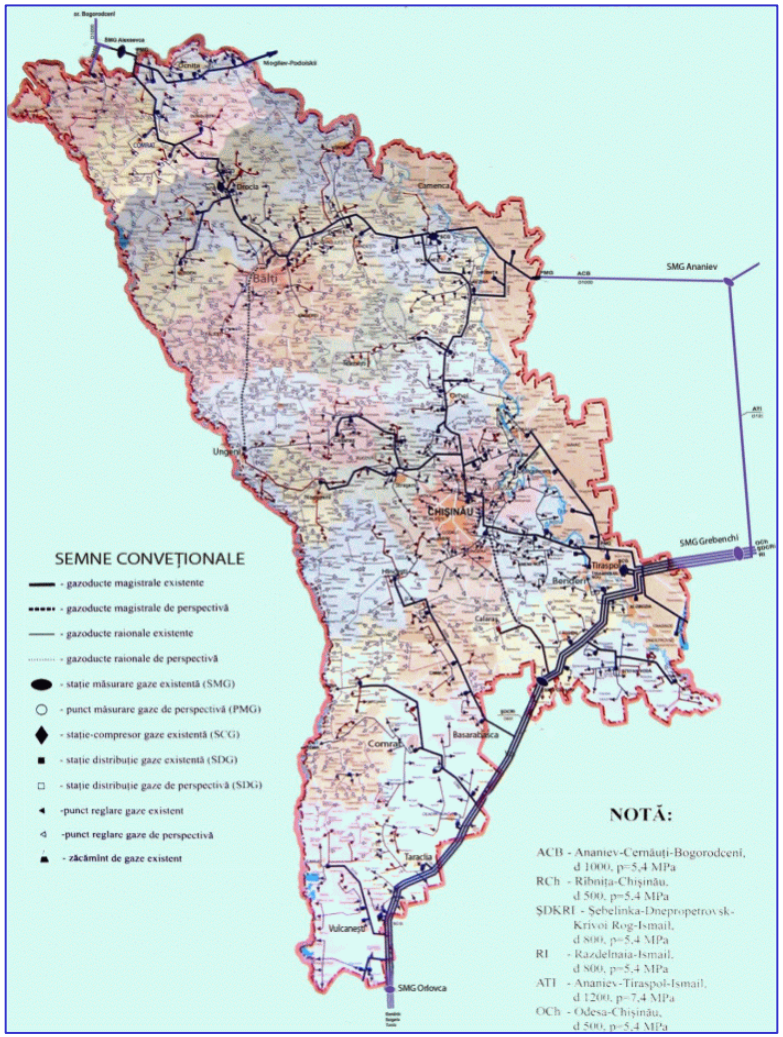
Power system,
Interconnection electric networks

- Seven 330 kV and 14 110 kV overhead power lines ensure parallel operation of Moldova's power grid with Ukraine's power system;
- Moldovan network is interconnected with Romanian power network through three 110 kV and one 400 kV line.



Gas infrastructure, Transmission and distribution of natural gas

- TSO: LTD “Moldovagaz”:
  - 50% shares owned by “Gazprom” (Russia),
  - 36.6% - Government of the Republic of Moldova and
  - 13.4% by “Tiraspoltransgaz”
- 27 DSOs (12 owned by JSC “Moldovagaz”);
- 4 natural gas transmission pipelines (for transit of natural gas);
- 4 compressor stations: Drochia, Tiraspol (2), Vulcanesti;
- 18000 km gas pipelines, including cca. 570 km of transit pipelines;
- Over 90% of localities have access to the natural gas;



Energy System of the Republic of Moldova: current situation

- Lack of own energy resources (natural gas, oil, coal) - 94% of the energy consumption is covered from import;
- High energy intensity and poor energy efficiency;
- Low level of renewable energy sources utilization;
- Fuel mix deviation from the optimal one (the imported natural gas prevails);
- Insufficient investments in the energy sector, etc.

The lack of own resources and high energy intensity sets the energy efficiency and use of renewable energy sources as a top priority

Energy Security Objectives

- Promotion of energy efficiency measures and use of renewable energy sources;
- Strengthening energy interconnections with Ukraine and Romania;
- Accession to ENTSO-E (UCTE);
- Improvement of investment climate in energy sector;
- Diversification of fuel types used on the territory of the country as well as the sources of imports of energy resources.

Security of Energy Supply - Legal framework

- **Law on Electricity, no. 124 from 23.12.2009** to transpose the Directive 2003/54/EC concerning common rules for the internal market in electricity.

- **Law on Natural Gas no. 123 from 23.12.2009** to transpose Directive 2003/55/EC concerning common rules for the internal market in natural gas.

- **Law on energy efficiency no. 142 from 02.07.2010** to transpose Directive 2006/32/EC on energy end-use efficiency and energy services.

- **Other legal acts** to address the problems of heat supply and ensure legal harmonization with EU *aquis*.

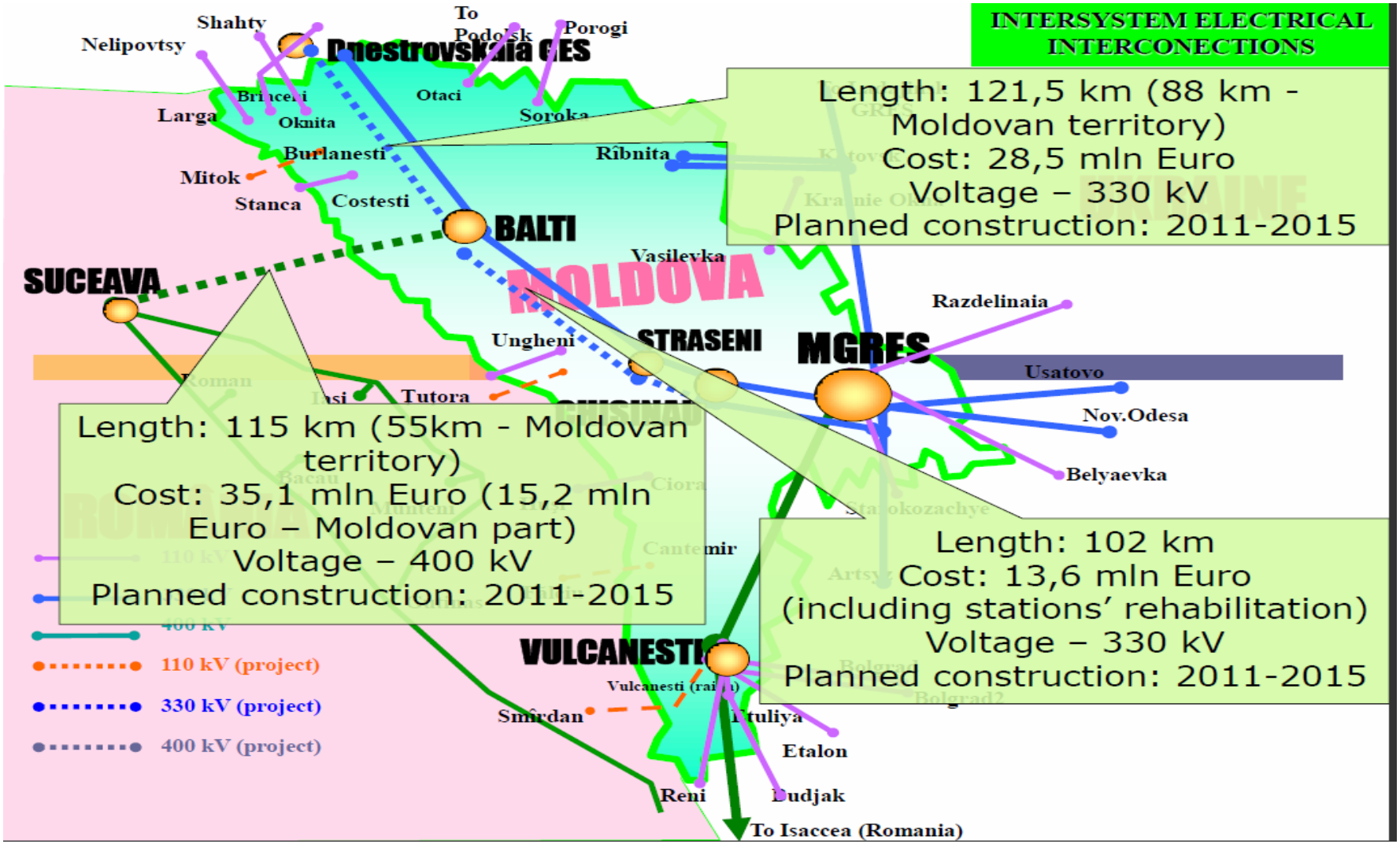
Legal and institutional framework for promotion of EE and RES

1. Law on renewable energy (No. 160 as of July 12, 2007)
2. Law on energy efficiency (No. 142 as of July 2, 2010)
3. Energy Community Treaty – accession as of May 1, 2010;
4. Energy Strategy until 2020 – to be updated and extended until 2030;
5. National Energy Efficiency Program 2011-2020 - approved by Government Decision No. 833 as of November 10, 2011;
6. Energy Efficiency Agency – created by the Government Decision No. 1173 as of December 21, 2010;
7. Energy Efficiency Fund – to be put in place in 2012.

Measures undertaken by the Government to ensure the security of energy supply

- The process of synchronous accession of Moldovan and Ukrainian electricity systems to ENTSO-E was launched;
- Negotiations regarding the financing opportunities for feasibility study concerning the accession to ENTSO-E were carried out;
- The designing of the 400 kV HVL Balti -Suceava was started
- Reconstruction of substation of 330 kV from Balti was performed;
- The construction of HVL 110 kV Falciu (RM) – Gotesti (Romania) is on the final stage;
- The construction of gas pipeline Ungheni-Iasi with a length of 18 km, ensuring the connection with Romanian Gas Supply System, is under implementation.

Increasing electricity supply security



Energy Consumption
1.Natural gas supply (2011)

- Number of customers: 615 220
- Consumed volumes: 1 036 mil. M^3 (4,9% less than 2010),
- Price paid by the national TSO 339,3 $/1000 M^3, 2010 - 250,1 $/1000 M^3 , increase 35%
- Price paid by the consumers 438 $ $/1000 M^3 , 2010 – 341 $ $/1000 M^3 , increase 28,4%
- Consumption, by category:

  Population: 340.5 mil. m^3 (31%)

  Energy sector: 457.8 mil. m^3 (42%)

  Industry: 291.5 mil. m^3 (27%)

- Gas transit to other countries: 16 670,5 mil. m^3

Energy consumption, 2.Electricity supply (2011)

- Number of customers: 1 283 815
- Supplied electricity: 3.905 billion kWh, increase with 1,9% comparing 2010
- Structure of import:

  Imported (Russia, Ukraine): 3071 mil. MWh, increase 3% comparing 2010, costs 62 $/1 MW

  Network losses 13%

  Local generation: 837 mil. MWh, decrease 5% comparing 2010, costs 90 $/1MW

  Price paid by the consumer 110,34 $/1 MW

- Exported to Romania (MGRES): 369.9 mil. kWh

Energy consumption
3. Oil market

- Overall consumption: 625 th. tons, increase 9,2 % comparing 2010
- Local production: 3636 tons, decrease 4% comparing 2010
- Structure of imports:

  - Gas: 193 th. tons, increase 3,8% comparing 2010

  - Diesel: 353,6 th. tons, increase 14,1% comparing 2010

  - LPG: 78,1 th. tons, increase 16,9% comparing 2010
- Price structure:

  - Gas: 1014 $/ton, increase 32,2% comparing 2010

  - Diesel: 1022$/ton, increase 36,9% comparing 2010

  -LPG: 844$/ton, increase 30,8% comparing 2010

Current objectives and issues in fulfilling them

As Moldova joined the Energy community, it has to fulfill a series of obligations. On the policies direction there are the following barriers to overcome:

- Implementation of the 3rd energy package, concerning the unbundling of the market. Important issue: S.R.L.Moldovagaz (SAD Gazprom) opponence to the demonopolisation of the gas market.
- District heating: optimisation of activity, increase of efficiency, privatisation of the generation capacities, sensibilisation of population on the payments for the consumed energy. Promotion thru different instruments of energy eficiency measures
- Implementation of regulatory documents in energy efficiency and use of RES , for further development of the sector and increase of the independence and security of supply.

Suitable topics for development

In the context of the above mentioned information it would be oportunical to study the following subjects:

- Unbundling of the energy market
- Optimisation of district heating, experince of Japan in the sector.
- Energy efficiency at both house hold and industry sector – as a measure to tackle the increasing demand and prices
- Promotion and utilisation of the Renewable Energy Sources, as a measure of diminishing the dependance from fossil and imported fuels
- Measures for attraction of investments in the energy sector

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Thank you for your attention!

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