

# Study "Legal and Regulatory Environment for the Construction and Operation of CNG Filling Stations in European Countries"

### BACKGROUND TO THIS PROJECT (2011-2012)

- Sponsor: European Business Congress
- Primary Contractor: National Gas Vehicle Association Russia, assisted by Clean Fuels Consulting
- Project Scope
  - 21 European NGV Country Profiles (West & East Europe) – PowerPoint file
  - Legal & regulatory environment to build fuelling station network – Excel File
  - Strategic approaches to create NGV fuel infrastructure – PowerPoint file
  - **NGV Infrastructure Calculation Tool (NICA)** – Excel File

The European market for natural gas vehicles has been expanding steadily since 1994 when there were 524,000 natural gas vehicles (NGVs) and 1,693 CNG fuelling stations. Today the European market has expanded to 1.5 million NGVs and 4,000 fuelling stations; growth of 286% and 236% respectively.

While NGVs and the fuelling infrastructure are a practical potential business opportunity they compete with the 'politically attractive' technologies such as hydrogen fuel cells and electric battery vehicles. Thus, the time is right for the wider European business community to be made aware of the 'NGV potential.' This is best done by highlighting the excellent opportunities to invest in a sustainable fuel and technology that addresses today's important concerns about energy and the environment through the wider use of NGVs, whether they run on fossil natural gas, liquefied natural gas or renewable biomethane.

The European Business Congress has recognized this need and now is seeking a way to inspire new investments in the CNG fuelling infrastructure across Europe. Once in place, this can lead to a much more widespread development of the European NGV market in individual countries that are linked across Europe along the normal transportation corridors.

**The project sponsors wish to thank the following individuals for their dedicated research and analysis in making this project possible**

- EBC Project Coordinator: Detlef Wessling, E.On Ruhrgas
- NGVRUS Project Manager: Eugene Pronin, Gazprom
- Clean Fuels Consulting
- Principal Investigator: Dr. Jeffrey M. Seisler
- Research Assistant: Marco Dal Pont
- Project engineer for the Natural Gas Infrastructure Calculation Tool (NICA): Gijs van Schoonhoven (Ingenieurbüro van Schoonhoven)

NGV Country profiles provide, in a PowerPoint format, a template of information that represents in-depth analyses on a country-by-country basis. The profiles focus on the specific elements that are important to understand the investment environment to develop a CNG fuelling infrastructure. Taken together, these country profiles provide a unique window into individual markets that may be attractive to different commercial interests investing in the NGV infrastructure.

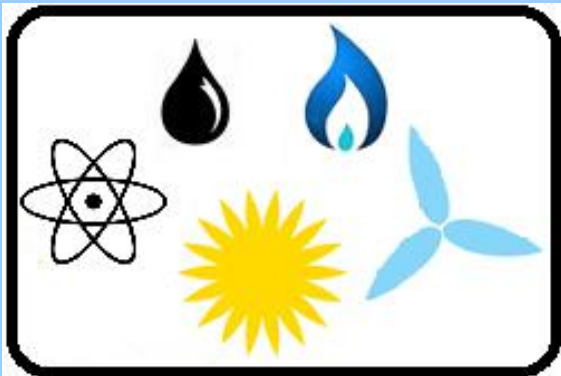


- NGV Profile
- Motivation
- Energy Profile (oil & gas/imports & exports)
- Vehicles
- Fuelling Infrastructure
- Government Support
- Gas Industry Support
- Conclusions

- Number of NGVs: 5.000
  - NGVs are 0.0079% of total vehicle population
  - 1.4 NGVs per 1000 population
  - CNG fuelling stations: 24-68\*
  - 73.5 - 208 vehicles per fuelling station (depending on accepted stations numbers)
  - Price differential CNG-Petrol/diesel:
    - CNG equivalent per liter gasoline: €0.37/liter
    - Regular Gasoline: €1.047/liter
- Natural gas costs 65% less than gasoline

\* IGU Report 2011 shows 24 stations, Metanoauto.it lists 68 stations

- Economics





- Moldova has almost no internal energy resources of coal, natural gas or oil
- Moldova is almost completely dependent on imported energy resources (approximately 98%), mainly from Russia and Ukraine
- Low level of use of renewable energy sources

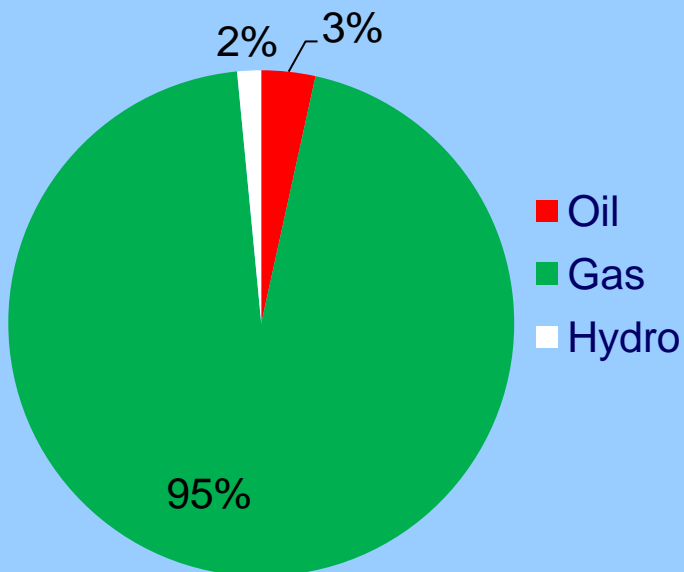


- **Oil**
  - production: 0 bbl/day
  - consumption: 20.000 bbl/day
  - imports: 14.730 bbl/day
  - exports: 714 bbl/day
  - reserves: 0 bbl
- **Natural gas**
  - production: 60.000 m<sup>3</sup>
  - consumption: 3,176 billion m<sup>3</sup>
  - imports: 2,33 billion m<sup>3</sup>
  - exports: 0 m<sup>3</sup>
  - reserves: 0 m<sup>3</sup>

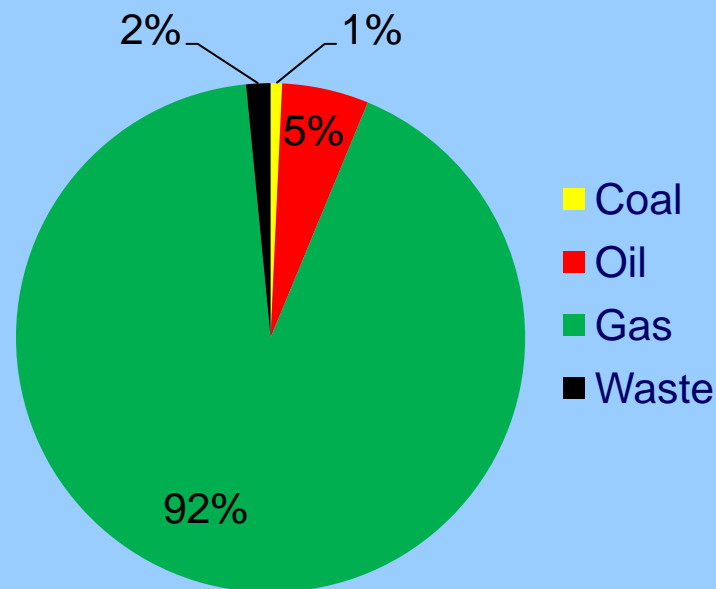
Source: CIA World Factbook 2011

## Dominance of imported natural gas in electricity and heating production

Electricity production



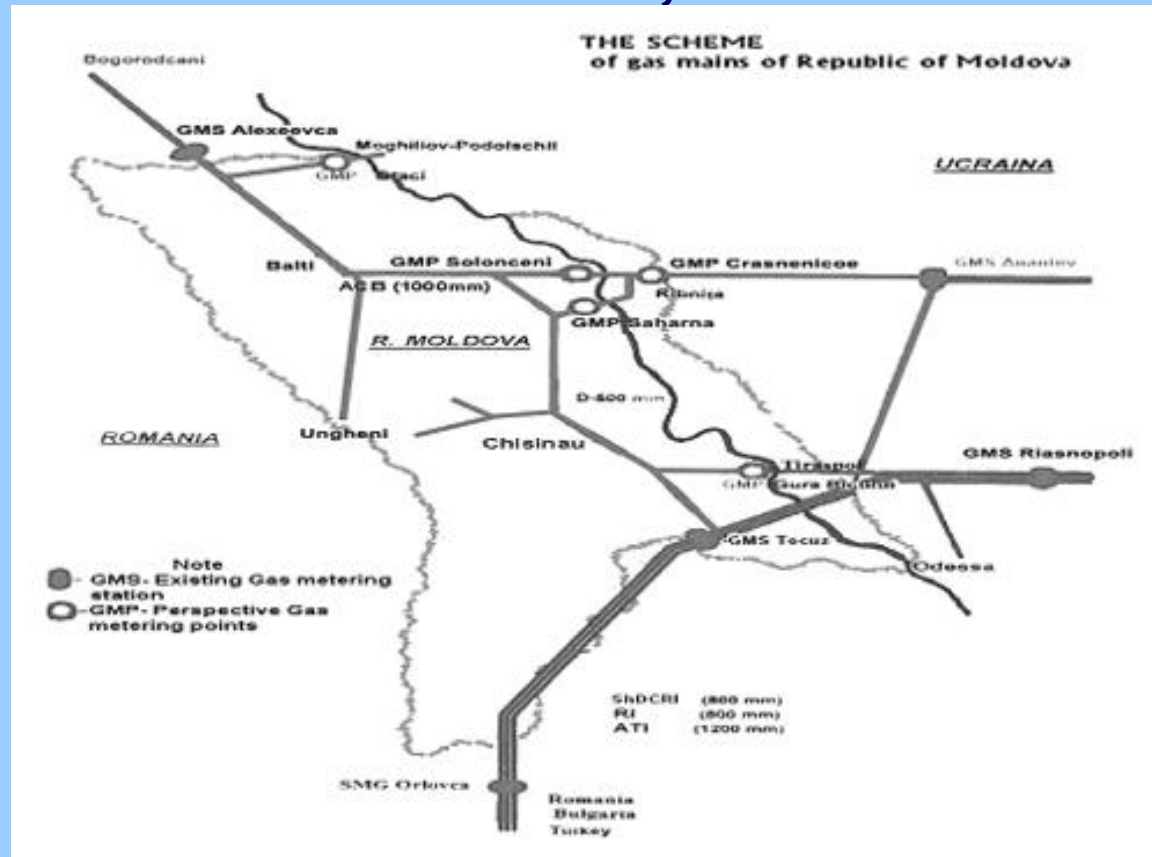
Heating production



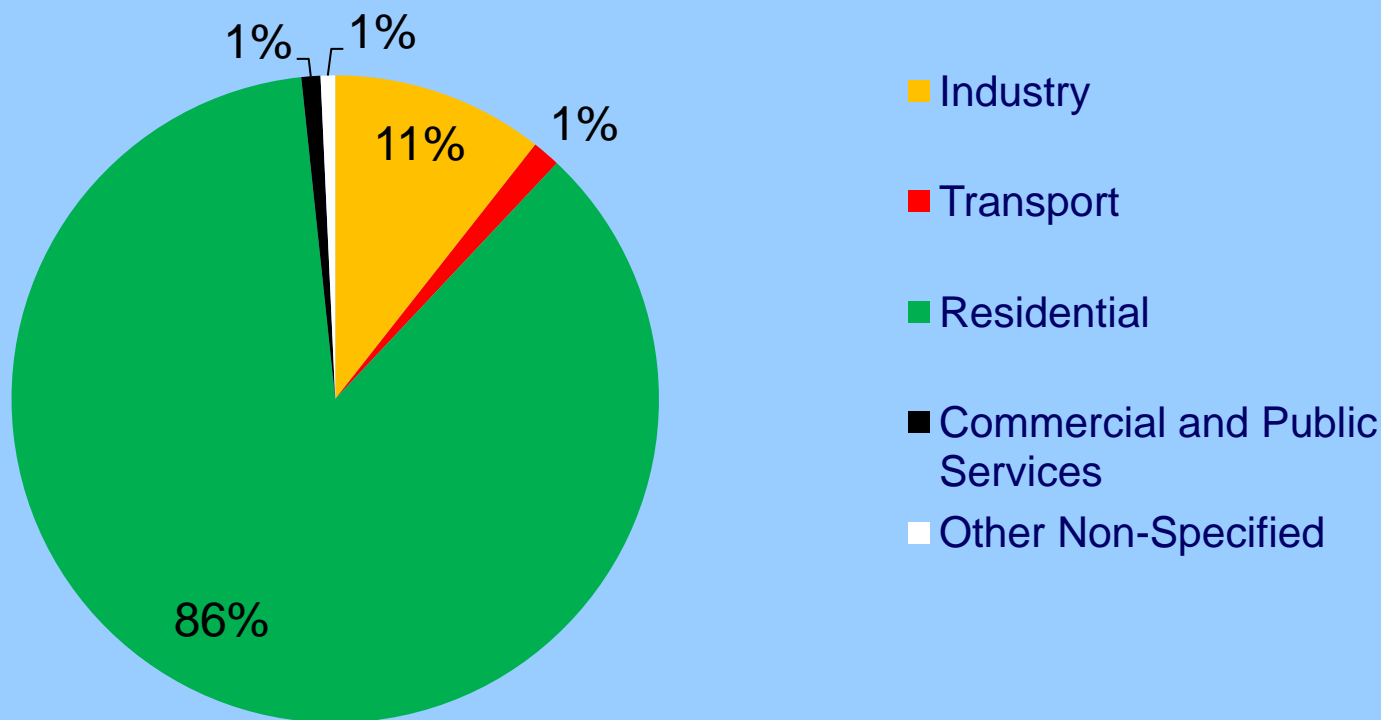
Source: IEA statistics



Moldova imports all of its gas from Russia and distribution is through a pipeline network of 1,906 km



Despite the significant usage of natural gas in energy production only 1% of gas is used in the non-road transport sector



Source: IEA statistics, 2011



## Moldova wants to open negotiations with Ukraine on participating in an LNG terminal in the Black Sea region

- LNG could be an alternative energy solution, cheaper than natural gas transported by pipeline
- Main barrier: the construction of an LNG terminal could cost several billion euro, and to become a partner, Moldova will have to contribute significant sums. As one of the poorest countries in Europe, this could be a challenge

Source: energetika.net, Moldova interested in co-operating with Ukraine on LNG terminal, 28 September 2011



**Energy Strategy 2020 has set forth the goal of increasing the use of renewable energy in the country's energy balance up to 6% in 2010 and 20% in 2020**

- The potential of biogas production in Moldova is estimated at about 3.700 m<sup>3</sup>
- In order to achieve the Energy Strategy's targets, it is necessary to increase the fermentation installation capacity up to 7.100 m<sup>3</sup>

Source: Academy of Sciences of Moldova, Bioenergy in Moldova, December 2009





## Small potential market for NGVs and competition from LPG is strong, with 4 times the market

On-road vehicles	Gasoline	Diesel	LPG	CNG	Total
Passenger cars	337.300	60.963	9.186	3.600	411.049
Trucks	31.756	100.109	8.712	1.150	141.727
Buses	4.505	14.646	1.958	250	21.359
Motorcycles	27.183				27.183
Farm Tractors		30.615			30.615
Other	68	1.635			1.703
<b>Total</b>	<b>400.812</b>	<b>207.968</b>	<b>19.856</b>	<b>5.000</b>	<b>633.636</b>

Source: IGU country report 2011

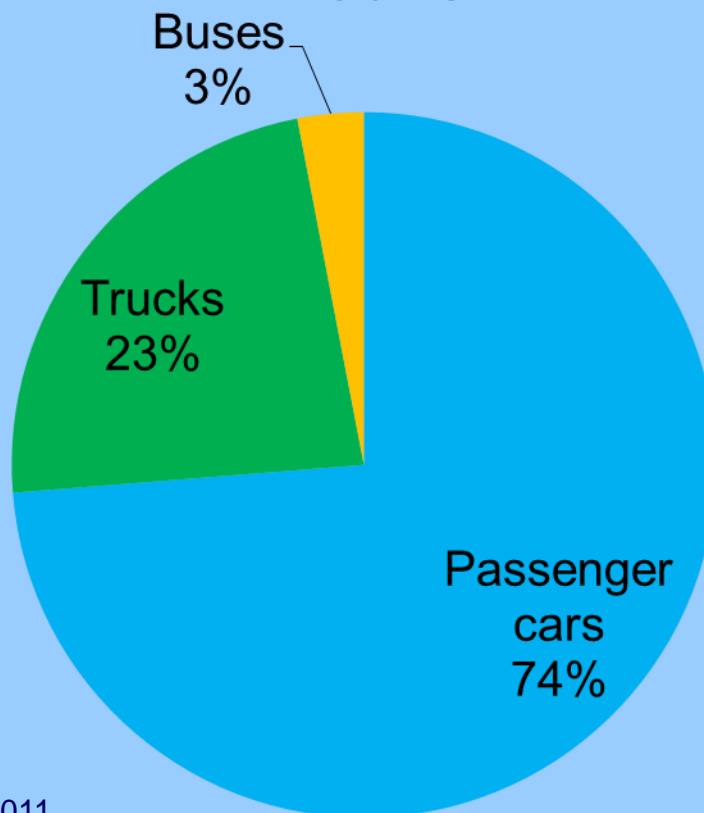


**65-70% of passenger cars *newly* registered in Moldova are 2<sup>nd</sup> hand. More than a quarter of registered cars are 20+ years old; 80% are 11+ years old**

	0-5 yrs	6-10 yrs	11-15 yrs	16-20 yrs	>20yrs
Passenger cars (%)	6.51	7.93	18.89	20.15	19.81
LDV and HDV (%)	0.85	4.01	4.87	6.59	5.83
Buses and microbuses (%)	0.13	0.41	1.18	1.69	1.15
Cars total (%)	7.49	12.35	24.94	28.43	26.79

Fuel Quality Vehicle and Emission Standards Overview for the Azerbaijan Republic, Georgia, etc. (Caucases countries), Regional Environmental Center for the Caucuses,, January 2008

## Three quarters of the total NGVs in Moldova are comprised of passenger cars



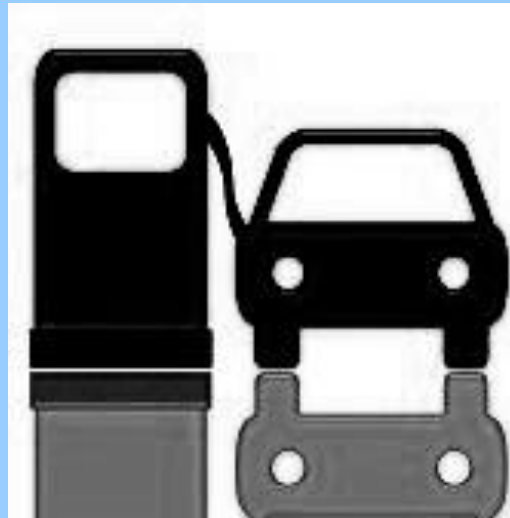
Source: IGU country report 2011



## No NGV industries are present in Moldova

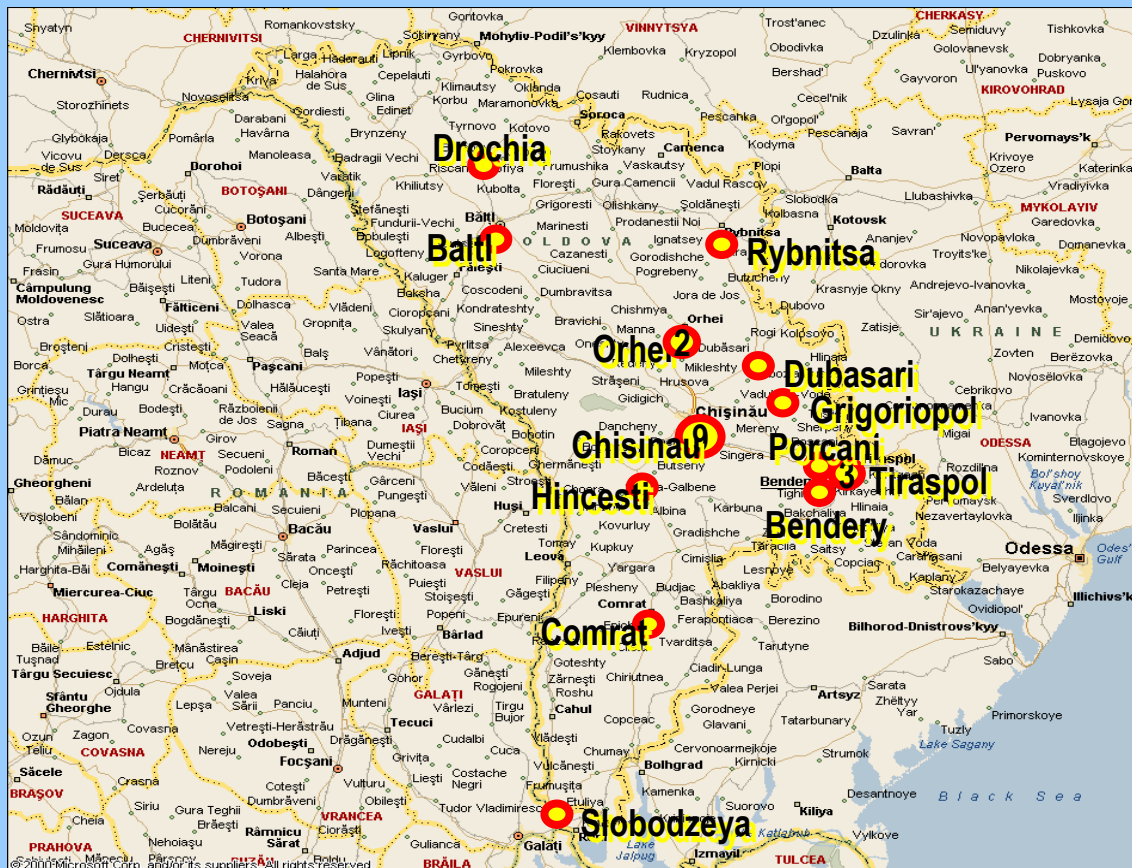
- All NGV related equipment – conversion kits, cylinders and compressors – are imported

Source: NGV Global





## Majority of CNG fuelling stations are located in the South-East of the country



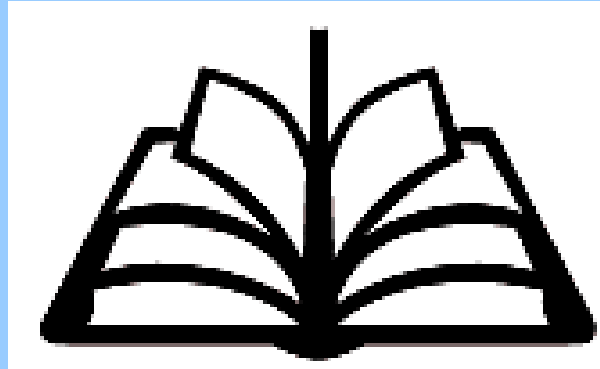
Source: IGU country report 2011

Today, "Moldovagaz" is the only company importing natural gas, which supplies natural gas to the Moldovan market in accordance with national and international quality standards, including for use as motor fuel



In January – June 2011  
Moldovagas sold 2,41  
Mcm of natural gas to  
vehicles

Source: Moldovagaz





- Multi-fuel stations: **allowed**
- No limits on opening hours
- Self service: **not allowed**
- Payment practices at the pump: cash, credit card and company fuel cards



## Moldova uses UN ECE vehicle regulations, which include R.115 and R.110 applying to NGVs

- 16 January 2007 Moldova decided to accede to the Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles, of 25 June 1998. The Agreement entered into force for Moldova on 17 March 2007.
- The 1998 Agreement provides the legal framework for the development of global technical regulations for vehicles and their components, with the aim of increasing their active and passive safety, reducing their pollutant emissions and improving their security (anti-theft) performance.

Source: United Nations Press release 24 January 2007, [http://www.unece.org/press/pr2007/07trans\\_n02e.html](http://www.unece.org/press/pr2007/07trans_n02e.html)



**The government has claimed its *intention* to use more gaseous fuel but political action in this direction is limited**

- Switching of motor vehicles to gas '*planned*'
- State stimulation of biofuel indicated in law
- State Energy Strategy implies transposition of Directive 2003/30/EC\* into national legislation by 2020 and increase of use of cleaner fuels including gaseous motor fuel

\*Promotion of the use of biofuels or other renewables for transport.

- No incentives are offered by the state**
- There is no dedicated NGV legislation in Moldova
- Low price of CNG compared to diesel and gasoline is actually the only incentive for the drivers to switch on to natural gas

Source: NGV Global





## The main operator on the gas market is the Moldo-Russian joint venture Moldovagaz

- According to the Agreement of September 1994, “Moldovagaz” were ceded to Gazprom because of the debts of the Republic of Moldova
- Gazprom holds 51% of shares in Moldovagaz. The Moldovan state holds 35.3% of the shares, Transnistria has 13.44%
- The two gas crises of 2006 and 2009 between Russia and Ukraine had led to temporary cuts of Russian gas supplies to Moldova, illustrating dramatically its dependence on foreign sources of energy



## "Moldovagaz" plans to expand its own network of CNG filling stations

- To accommodate motorists to refuel CNG throughout the Republic of Moldova
- According to the investment plans of "Moldovagaz" medium-term plan to build a CNG car in seven localities of the Republic (Kishinev, Rubber, Edinet Cahul, Balti, Floresti and Causeni)



Source: Moldovagaz





## Lingering state interference in the private sector increases economic risk in a volatile political environment

- Lingering bureaucracy and a lack of transparency often make the formation and operation of private enterprises costly and burdensome

Source: The Heritage Foundation, 2011 Index of economic freedom



## Non-tariff barriers and a lack of transparency increase the cost of trade

- Although foreign and domestic investors are treated equally, the overall investment regime is not conducive to dynamic investment growth
- The financial sector is relatively stable, but the level of overall financial intermediation remains shallow

Source: The Heritage Foundation, 2011 Index of economic freedom

- Energy environment
- Gas industry support
- Government support
- NGV market development
- Legal and regulatory framework for CNG station development
- Investment environment

## Energy Environment

- Natural gas a main energy source but is not considered in the transport sector as a strong contender to petroleum
- There are about four times as many vehicles using LPG, so the competition of petroleum fuels *and* LPG presents a big challenge to increasing NGVs
- Implementation of a renewable energy strategy could help displace oil-fuelled vehicles

## Gas Industry Support

- There is only one gas company owned by Russian Gazprom focused in the implementation of gas pipeline network to connect all the South East Europe
- Moldovagas indicates an interest in expanding the CNG network, however, with relatively low NGV numbers and lack of support from government, the rate of increase is likely to be slow

## Government Support

- Lack of any form of support. NGVs are not considering NGVs in any current political policies
- Municipality fleets or public transport services could be good opportunities to develop the market but challenging economic conditions would suggest that government support could be one of the only avenues to help build a domestic market for NGVs



## NGV Market Development

- The relatively small NGV market is dominated by passenger cars, which will not provide fuel demand that is of long-term interest to the energy suppliers
- The very old car parc does not lend itself to rapid expansion of the NGV market
- The absence of incentives from the State is a principle barrier
- Greater use of NGVs in the public transport sector could help spur the market



## Legal and regulatory framework for CNG station development

- There are no standards or regulations specifically governing the CNG fuel stations

## Investment Environment

- Lack of transparency and lingering state interference doesn't help foreign investment

