

Central Europe Energy Partners

Proposition for the EU-10 countries





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Executive summary



- ▶ The economies of Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia (the „EU-10”) will be catching up with the rest of the EU in terms of their GDP and development of infrastructure. In the medium term, this growth needs to be continued but is threatened by a low level of energy security, growing investment needs, in particular in electricity and gas sectors, and a more restrictive environmental policy.
- ▶ Coal remains an important fuel for energy sector of the EU-10 countries as well as for other industries such as steel or pulp & paper. Growing costs of CO₂ pose a major threat to the competitiveness of key industries of the EU-10.
- ▶ Carbon Capture and Storage („CCS”) technology is currently seen as the best solution for carbon-intensive economies based on coal. However, the overall cost for the EU-10 nations is likely to be too high. In order to deliver reasonable solutions, additional funds and further support from the European Union is necessary. Moreover, the environmental policy should not be further tightened.
- ▶ Integration of the electricity and gas markets is in progress; however, not all countries possess adequate interconnector capacity and further power and gas links are needed. The growing size of investments calls for greater support from the EU to turn projects into reality.
- ▶ Thanks to their geographical location, the EU-10 countries are of key strategic importance to securing supplies of natural gas from the East to the whole Europe. Development of alternative gas transportation corridors is important to decrease dependence on supplies on the Russian gas and improve energy security of the region. The same goal relates to the development of new gas storage and LNG terminals.
- ▶ Refineries of the EU-10 mostly depend on deliveries of crude oil from Russia, via the Druzba pipeline. Alternative oil transportation routes are currently unprofitable which has a negative influence on the security of fuel supplies.
- ▶ Challenges in the energy security area are very similar across the EU-10 group and the countries have clear common interests to influence the EU energy policy together.

With this picture in mind, we propose an EU-10 initiative under the working name „Central Europe Energy Partners” in order to undertake joint and coordinated actions of the EU-10 countries with respect to the energy policy in the European Union arena. This alliance of the EU-10 region should have a significant bearing on the European Commission’s decisions. It will be beneficial for the region to form this initiative relatively quickly in order to take advantage of the Polish presidency in 2011 and the subsequent presidencies of the EU-10 countries.

The EU-10* region will be catching up with the rest of the EU; however, costs of further transformation will be high

- ▶ The EU-10 economies account for 7.6% of GDP and 13.1% of energy consumption in the European Union.
- ▶ The economic standing of the EU-10 is still far behind the EU average - GDP per capita of EUR 9.0k in 2010 was only 31.9% of the EU-15 average GDP per capita.
- ▶ The EU-10 economies are catching up with the rest of the EU, however further transformation processes need to be continued and the expected costs of these processes are high.
- ▶ For example, the EU-10 electricity consumption per capita of 3.8 MWh was only 59% of the average consumption in the EU-15, which indicates potential for growth of electricity consumption.
- ▶ The majority of EU-10 countries have obsolete power generation assets which will have to be replaced in the near future.
- ▶ In the gas sector, EU-10 countries have taken various actions to diversify gas suppliers, build interconnectors and storage facilities, all aimed at ensuring safe, stable supplies of natural gas to their economies.
- ▶ The Central and East European crude oil refineries depend on deliveries from Russia via the Druzba pipeline. Currently alternative delivery options are not cost effective.
- ▶ Further successful integration of the EU-10 with the rest of the EU requires continued support at the EU level focused primarily on expensive yet indispensable investment projects, in particular infrastructure investments in electricity, gas and oil.

Key statistics for EU countries

EU-15

- ▶ GDP per capita (2010) - EUR 28.2k
- ▶ 2006-2010 GDP CAGR - 0.5%
- ▶ Electricity consumption per capita (2010) - 6.4 MWh

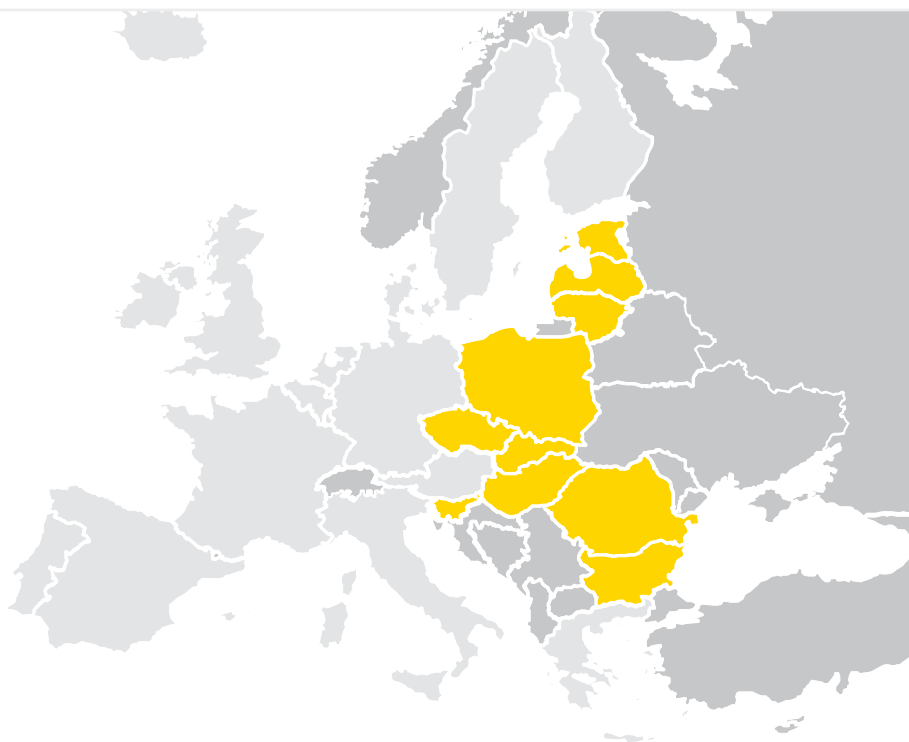
EU-27

- ▶ GDP per capita (2010) - EUR 24.2k
- ▶ 2006-2010 GDP CAGR - 0.7%
- ▶ Electricity consumption per capita (2010) - 5.8 MWh

EU-10

- ▶ GDP per capita (2010) - EUR 9.0k
- ▶ 2006-2010 GDP CAGR - 4.7%
- ▶ Electricity consumption per capita(2010) - 3.8 MWh

Source: Eurostat, ENTSO-E



* EU-10 - group of the following countries: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia

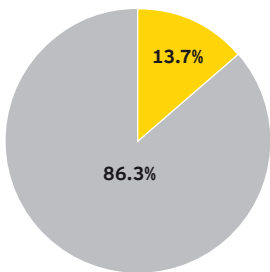


Electricity

The EU-10 accounts for 14% of European power generation but electricity consumption is still relatively low, although growing.

Installed capacity *

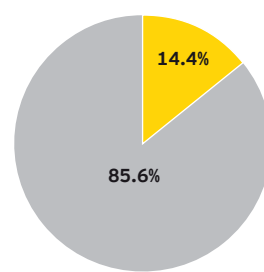
EU27 = 799 GW



■ EU-10
■ Rest of EU

Net production **

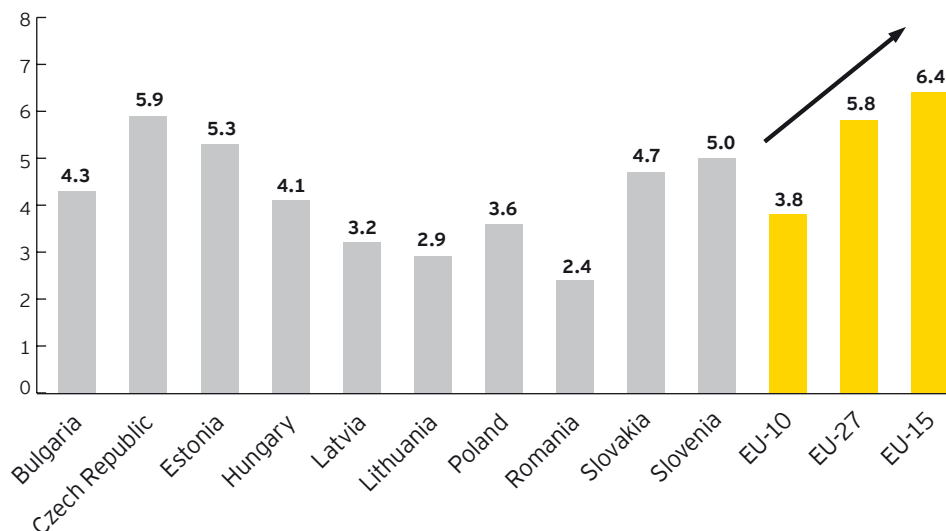
EU27 = 3,270 TWh



■ EU-10
■ Rest of EU

- ▶ Electricity in EU-10 countries is produced mainly from fossil fuel sources (key extraction sites in Poland, the Czech Republic, Estonia, Hungary, and Romania). A significant share comes from nuclear power plants (the Czech Republic, Hungary, Bulgaria, Slovakia, Slovenia, and Romania).
- ▶ As the EU-10 economies are growing to catch up with the „old“ EU countries, it is expected that electricity consumption in the region will rise. This may result in the EU-10 countries becoming electricity net importers instead of their current position as net exporters.

Electricity consumption per capita [MWh]



* 2009

** 2009, estimate

Source: ENTSO-E, country regulatory reports, Eurostat

- ▶ Many EU-10 countries have obsolete power generation assets which will need to be replaced soon. Also stricter environmental restrictions will force the EU-10 to decommission some part of their asset base. To ensure the system adequacy power generation units will require significant capital expenditures.
- ▶ The transformation process from national power systems into regional and then to the single European common electricity market is in progress. The need for integration of EU-10 power systems into the European system and construction of cross-border power interconnection capacities will require further investments.

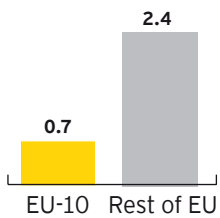
Tightening power reserve margins and growing demand for electricity combined with a relatively old fleet will require significant capital expenditure, mainly in the generation sector. Development of a single European electricity market will generate heavy expenditure for power transmission infrastructure.

Gas

Diversification of gas supplies is necessary - alternative gas pipelines from the East, exploration and production of unexploited reserves, interconnectors, LNG terminals

Proved natural gas reserves

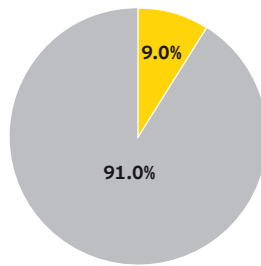
[trillion m³]



- ▶ The EU-10 countries control ca. one-fourth of proved EU natural gas domestic reserves.
- ▶ Possible unconventional gas deposits (mainly shale gas) may be located in Poland, Romania, and Bulgaria. The reserves have not been assessed yet and extraction field development will require a significant amount of capital expenditure. Moreover, the development process is usually very long (large bureaucracy, lengthy procedures, environmental issues, etc.).

Gas production

EU-27 = 168.1 million TOE

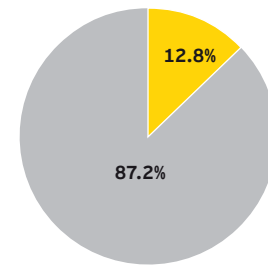


■ EU-10
■ Rest of EU

- ▶ Given the foregoing and the fact that existing EU gas deposits are insignificant from the long-term perspective, the key issue is to develop appropriate infrastructure to ensure secure and reliable gas supplies, and their diversification.
- ▶ All EU-10 countries are strongly dependent on gas supplies from Russia. The average share of Russian gas imports in total imports in the EU-10 countries is 83% compared to the 32% average across the whole EU.

Gas consumption (gross)

EU-27 = 440.7 million TOE

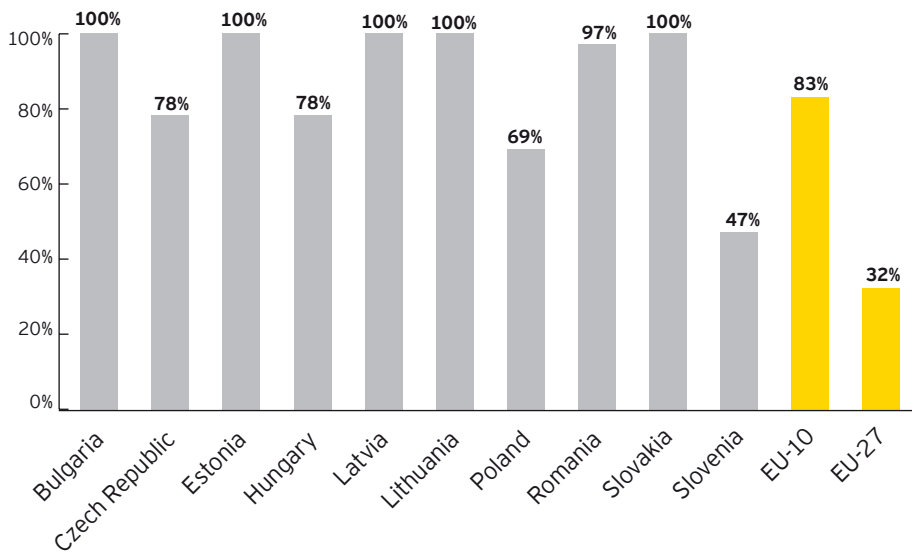


■ EU-10
■ Rest of EU

- ▶ From the perspective of security of the „new“ EU countries, it is therefore crucial to diversify their gas supplies by developing LNG infrastructure, expanding the existing pipelines and interconnectors, and increasing flexibility of the gas system by providing additional storage facilities, but also - in the long term - by exploring deposits of unconventional gas if this exploration is considered to be profitable.



Gas import from Russia to total gas import



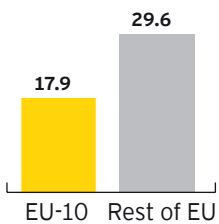
Source: BP Statistical Review of World Energy June 2010, Eurostat 2008

Coal

Coal remains an important source of energy for electricity generation and heavy industries in the EU-10. Its role will be diminishing, but it is not possible to quickly replace coal with fuels characterized by lower CO₂ emission ratios

Hard coal & lignite proved reserves

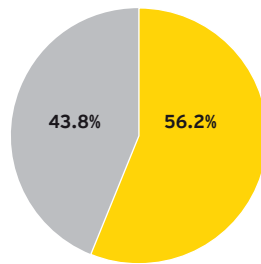
EU-27 = 29.6 billion tones



Source: BP Statistical Review of World Energy June 2010

Annual output

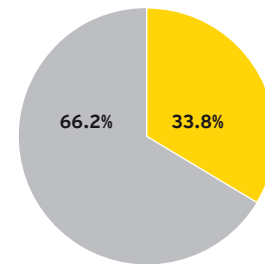
EU-27 = 158.4 million TOE



■ EU-10
■ Rest of EU

Annual consumption

EU-27 = 261.3 million TOE



■ EU-10
■ Rest of EU

- ▶ The EU-10 countries control approximately 60% of total coal and lignite reserves of the EU, with the largest deposits located in Poland, the Czech Republic, and Hungary.
- ▶ A rapid change in the energy sector fuel mix is not realistic. Therefore keeping the coal and lignite deposits operational is absolutely crucial, at least until unconventional resources such as shale gas become commercially operational or other technologies are implemented in the region. The EU-10 countries need further support from the European Union to develop clean coal technologies.
- ▶ Shutting down coal production in the EU-10 without providing an economically acceptable alternative in the form of domestic gas supplies and/ or development of nuclear assets will only further deteriorate the financial situation of the 10 new EU economies.
- ▶ On the other hand, joint efforts of the EU-10 countries are required to successfully lobby for a realistic transition plan for their economies, which try to become lower-CO₂-emission economies.
- ▶ The implementation of the EU climate policy, especially the ETS Directive, will result in a higher cost of coal-based electricity generation, which will lead to higher electricity prices and therefore will decrease the EU-10 countries' competitiveness against other countries.



According to the European Council, in order to further enhance Europe's security of supplies its potential for sustainable extraction and use of conventional fossil fuel resources should be assessed.*

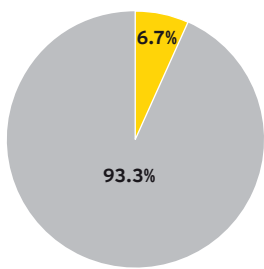
*Source: "Conclusions on Energy", European Council, 4 February 2011

Crude oil

Central and East European refineries depend on deliveries of crude oil via the Druzba pipeline. Alternative oil delivery options are currently not profitable

Crude oil primary production

EU-27 = 105.4 billion tones

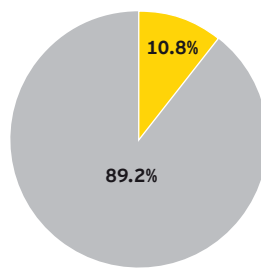


■ EU-10
■ Rest of EU

Source: Eurostat, 2008 data

Total imports

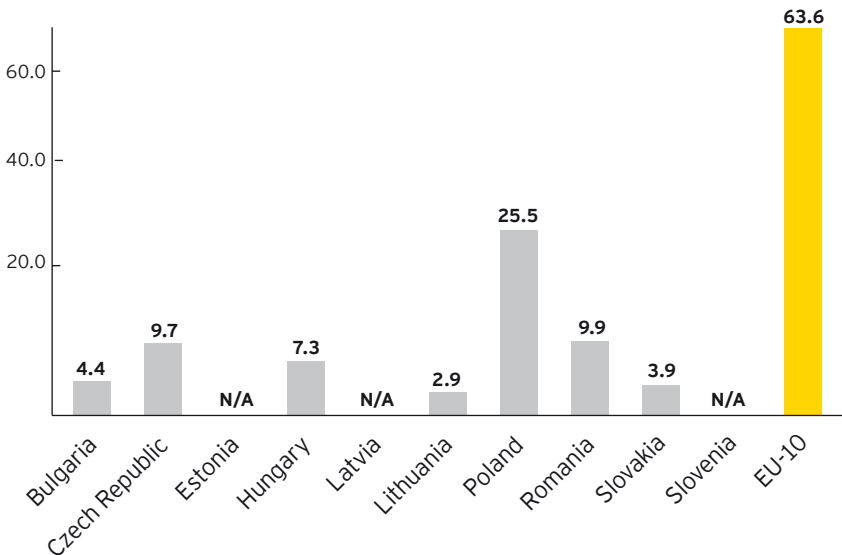
EU-27 = 617.0 billion tones



■ EU-10
■ Rest of EU

Annual consumption* (2009)

EU-27 = 670.8 million tones; EU-10 = 63.6 million tones



- ▶ The EU-10 countries do not play a significant role in the European crude oil upstream sector and depend on importation of crude oil.
- ▶ The EU-10's annual consumption of crude oil and petroleum products (including fuel ethanol and biodiesel) represents 9.5% of the total EU-27 consumption.
- ▶ Most of the EU-10 countries have their local refineries (except for Estonia, Latvia, and Slovenia). Refining is a strategic industry for some of the EU-10 economies; most refineries in the region process Russian crude oil - REBCO.
- ▶ The main pipeline transporting crude oil to the EU-10 countries is the Russian Druzba pipeline, which transports about 80 million tons of crude oil per year. The Druzba pipeline is the main source of crude oil for Poland, the Czech Republic, Slovakia, Hungary, and the Eastern part of Germany. The BrodyPlock pipeline project, which could reduce dependence on the Druzba pipeline and help diversify supplies of crude oil, is not likely to be executed without significant political support.



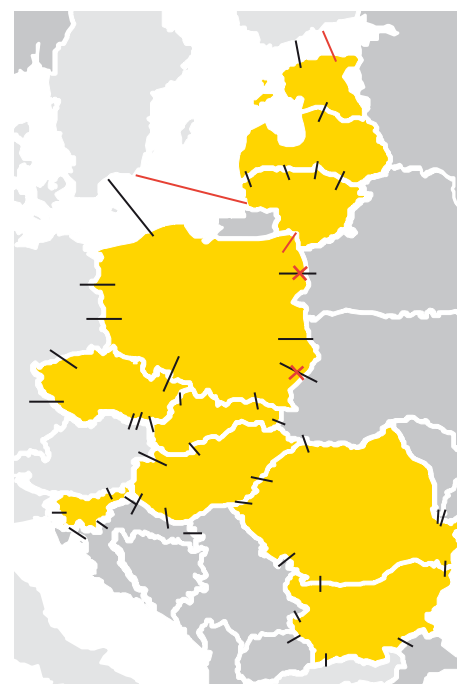
Planned CO₂ legislation may have an adverse effect on the refining industry in the region, especially taking into account that the EU-10 refineries will have to compete with those located in the non-EU countries, which will remain unaffected by the planned legislation.

Electricity markets of the EU-10 are not all well interconnected although various projects are in progress

The European Council stated that no EU Member State should remain isolated from the European electricity networks after 2015 or see its energy security jeopardized by lack of appropriate connections.*

- ▶ Electricity interconnectors between the EU countries are important from the regional perspective and because of the need for further market integration.
- ▶ Development of infrastructure capacities is one of the priorities of the EU-10's national energy policies. It is also a priority set by the European Commission within its „Energy Infrastructure Priorities for 2020 and beyond” program, comprising in particular:
 - ▶ Energy interconnections and market improvement in the Baltic Sea Region, to end the relative “energy isolation” of the Baltic States and integrate them into the wider EU energy market;
- ▶ Complex cross-border projects (such as LitPol Link), which are essential for integration of the markets in this region;
- ▶ Increase cross-border capacity in Central Europe - to increase transfer capacities among South-East European countries in view of their further integration with Central European electricity markets.

Power system interconnectors in the EU-10 countries



- Planned interconnections
- Operational interconnections
- X — Non-operational interconnections

*Source: “Conclusions on Energy”, European Council, 4 February 2011

Environmental policy poses a big threat not only to electricity prices but to competitiveness of the EU-10 economies and the whole EU. The CCS technology should be subject to further assessment

It is crucial for the EU-10 to develop and promote at the EU arena a realistic transition plan, which would not depress local economies yet would result in decrease of CO₂ emissions.

The EU environmental policy

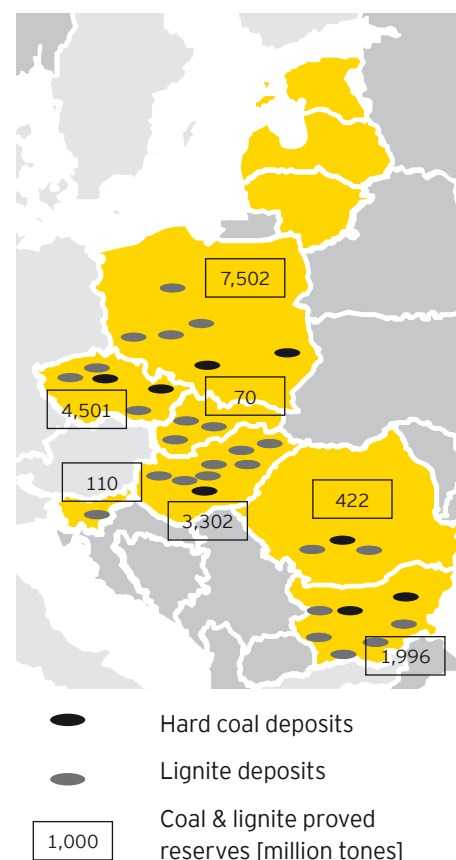
- ▶ Environmental regulations in the EU make fossil extraction and use economically less profitable.
- ▶ For some economies that rely on coal as a primary fuel, costs of electricity after 2012 may increase significantly, forcing many industries to relocate their factories outside the EU-10 (carbon leakage). This may result in rising unemployment in the EU-10 countries.

- ▶ Even with such support, the first large-scale CCS project in the region is very expensive.
- ▶ For those reasons, PGE is currently applying for another EUR 120m from the NER 300 program.
- ▶ The extremely high costs of CCS may be destructive to the competitiveness of the EU-10 economies, not to mention serious concerns over whether CCS is an appropriate solution for the EU to limit the emission of CO₂.

CCS pilot project in Poland

- ▶ The clean coal technology pilot project at the lignite-fired 858 MW unit in Bełchatów (Poland) developed by PGE has already obtained financial support of EUR 180m from the European Union.

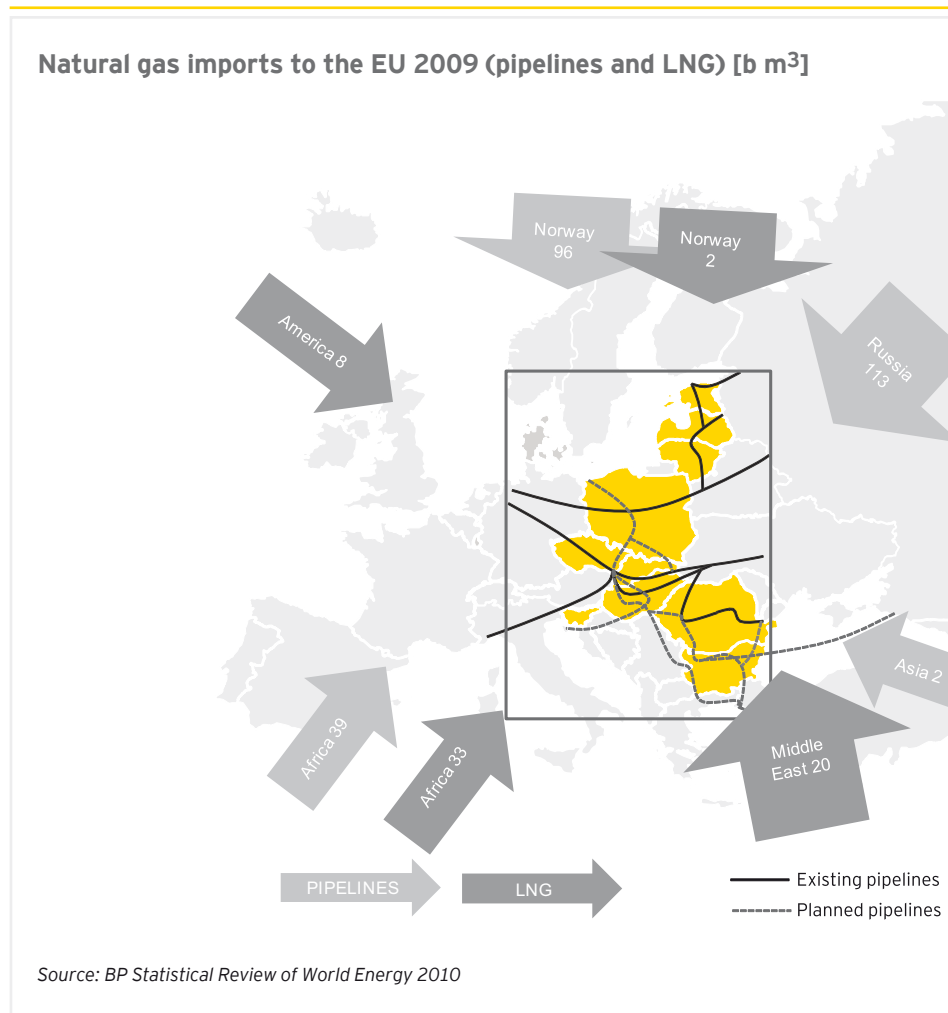
Main coal and lignite deposits in the EU-10 countries



Source: Ernst & Young based on European Association for Coal and Lignite (EURACOAL), BP Statistical Review of World Energy 2010

The EU-10 region is of key strategic importance to securing safe supplies of natural gas thanks to its location at the East-to-West and North-to-South transportation corridors

The EU-10 should work closely with the European Commission to facilitate the development of gas transport strategic corridors and ensure that concrete projects gain support and their construction starts.

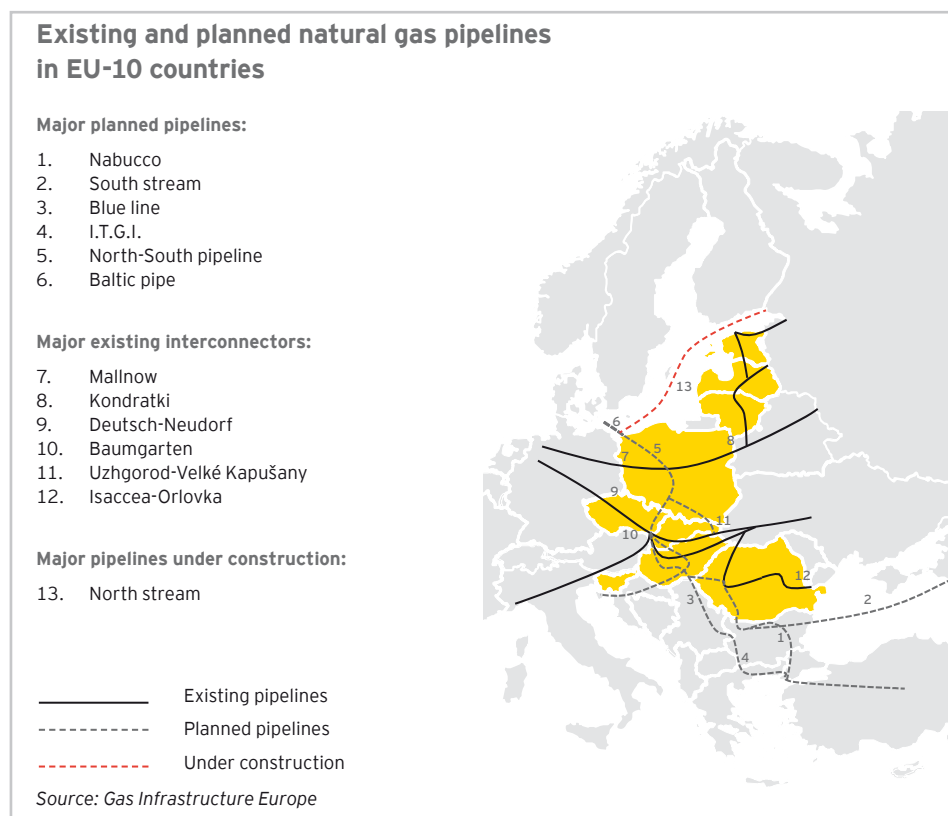


- ▶ The EU-10 countries are natural transit countries for deliveries of gas from the East to the whole European Union and thus an essential part of the international gas network.
- ▶ All EU-10 countries are strongly dependent on Russian gas supplies and will face the necessity of taking active measures to diversify their deliveries.
- ▶ In the aftermath of the gas crisis in 2009, security and diversification of gas supplies have acquired new meaning among the EU countries.
- ▶ Poland, Lithuania, Latvia, Bulgaria, Slovenia and Romania plan to construct LNG terminals on their territories. These investments are designed to enhance not only national energy security of each of the countries but can also be perceived as an emergency buffer for the neighboring countries given that the surrounding gas transport infrastructure is in place.
- ▶ Security of supplies is also supported by existing and planned gas storage facilities located across the region. Western Europe is much less exposed to the risk of unstable supplies as a result of diversification of supplies and the existing transmission infrastructure.
- ▶ The EU has been providing support to new projects in the EU-10 aimed at interconnecting gas networks in the region and thus increasing security of supplies. In this respect of crucial importance are local interconnectors and investments enabling gas reverse flows.

The EU-10 has to develop alternative gas transportation routes to decrease dependence on Russia and increase security of supplies

Joint and coordinated actions of the EU-10 group will increase chances of getting adequate funding necessary for large infrastructure projects. On the other hand, it may be important for the EU-10 to agree to focus on selected key projects only, as some may become mutually exclusive or unprofitable.

- ▶ Securing natural gas supplies is of key importance for the whole EU, not only the EU-10 economies. New gas pipelines from Russia to the Western and Southern Europe (North Stream and South Stream projects) so far have been more successful than those aimed at reducing high dependence on one supplier.
- ▶ Now, the EU-10 needs to successfully develop and construct alternative gas routes to increase gas supplies in the region.
- ▶ Any potential gas infrastructure project involves at least 3-4 countries of the EU-10 group and thus requires coordinated joint efforts to turn ideas into reality.
- ▶ Most of the new projects are too expensive for the EU-10 countries themselves and require continued support from the EU.
- ▶ Major Projects include:
 - ▶ **Nabucco** - gas bridge from the Georgian/Turkish and the Iraqi/Turkish border to Baumgarten in Austria.
 - ▶ **Blue Line** pipeline supplying gas from Russia, across Serbia and along Bulgarian, Hungarian, and Croatian borders to Slovenia and Italy;
 - ▶ **North-South Gas Corridor** linking the Baltic Sea area to the Adriatic and Aegean Seas and further to the Black Sea, covering Poland, the Czech Republic, Slovakia, Hungary and Romania, as well as possibly Austria and Croatia.



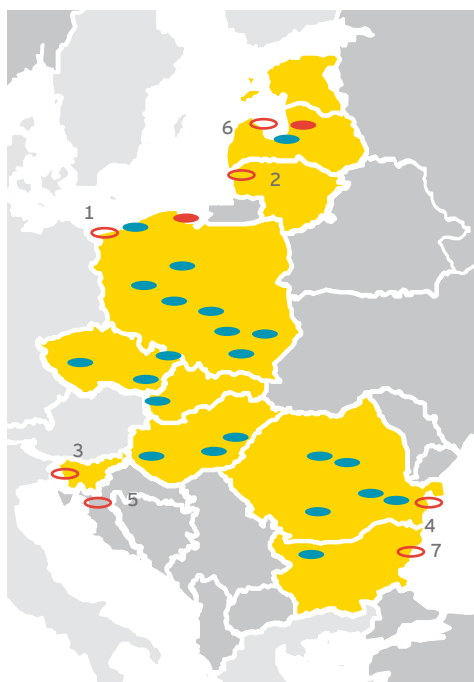
Gas storage and LNG terminals are important and tangible projects aimed at diversifying gas supplies and increasing energy safety

The EU-10 countries plan to construct storage capacities of ca. 6.2* b m³ and several LNG terminals. These investments are capital intensive. It is estimated that the overall cost of the three most advanced LNG terminal projects only will amount to approximately EUR 2b, excluding the cost of developing a gas transmission network.

Storage facilities (existing and planned) and planned LNG terminals in EU-10 territory

Major planned LNG terminals:

1. Świnoujście (Poland)
2. Klaipeda (Lithuania)
3. Trieste offshore (Italy)
4. Constanta (Romania)
5. Island of Krk (Croatia)
6. Riga (Latvia) - currently under consideration
7. Northern Black sea area (Bulgaria) - currently under consideration



Source: GSE 2009, CEDIGAZ 2009, IGU 2009

Gas storage

- ▶ Gas storage capacity significantly varies among the EU-10 countries. Some of them, such as the Czech Republic, Hungary, and Slovakia have gas storage capacity covering at least 35% of their annual consumption, others such as Lithuania and Estonia do not possess any significant storage facilities.
- ▶ Differences in the storage ratios are influenced by historical, geographical, geological and political conditions.
- ▶ The EU-10 countries (Romania, Poland, Latvia, the Czech Republic, and Lithuania) plan to significantly expand their gas storage capacities (in total by ca. 6.2* b m³).

LNG Terminals

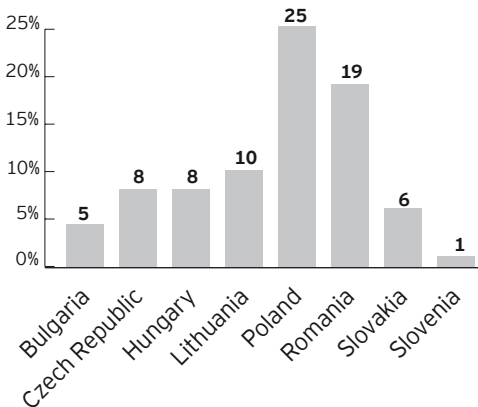
- ▶ Currently none of the EU-10 countries has an LNG terminal.
- ▶ Several terminals are being planned, in Poland, Lithuania, Latvia, Bulgaria, Slovenia and Romania. Croatia is to build a terminal on the Island of Krk.
- ▶ The LNG terminal project in Świnoujście (Poland) is the most advanced one. It has already secured funds from the EU Infrastructure and Environment Fund and is likely to obtain financing from Multilateral Financial Institutions.
- ▶ The scheme seems to be an appropriate approach to financing this type of projects. Like in the case of the Polish LNG Terminal, further support from the European Union is needed for other projects.

The EU-10 countries do not have significant reserves of oil and depend on import of Russian crude oil

A further increase in compulsory stock levels (to 120 days) may lead to insufficient storage capacity in the region and the need to build new facilities which will require significant capital expenditure. Heavy investments will be also needed for the expansion of the pipeline infrastructure to increase security of supplies.

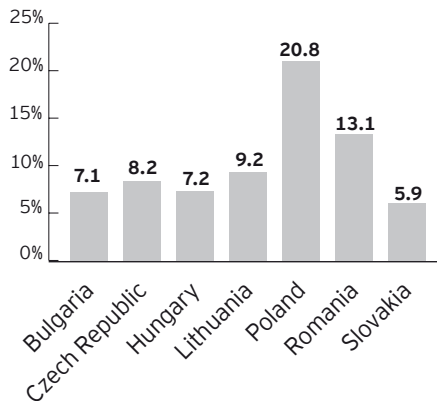
Annual primary refining capacity

EU-27 = 786, EU-10 = 82 million tones



Crude oil consumption in refineries

EU-27 = 655.8, EU-10 = 71.6 million tones



- ▶ The EU-10 countries' oil refining capacity amounts to ca. 10% of the total refining capacity in the European Union.
- ▶ The EU-10 crude oil stocks at the end of 2008 were 8.1 million tones, which is 13.3% of total EU stocks.
- ▶ The key item of the oil transport infrastructure in the region is the Druzba pipeline.
- ▶ The Odessa-Brody pipeline was originally constructed to supply crude oil from the Caspian Sea Region to Poland. However, the Polish section is still in the planning phase. The pipeline had been used to transport Russian gas in the reverse direction - to the East, from Brody to Odessa. Recently the pipeline has started crude oil deliveries to the West - it transports crude oil from Azerbaijan to the Mozyr refinery in Belarus.
- ▶ Another significant step to increase energy security in Central Europe is exploration of salt caverns for crude oil and other fuel storage facilities.

Oil pipelines (existing and planned) and refinery facilities and terminals in EU-10 countries

Major existing pipelines:

1. Druzha
2. PEOP
3. Odessa - Brody
4. Adria *

Major planned pipelines:

5. AMBO
6. Brody - Plock
7. Burg - Alex

* The Druzha - Adria Pipeline Integration is a proposal to link Adria and Druzha pipeline and allow Russia to more easily export its vast oil supplies. Due to environmental issues the project was suspended and since 2002 has been under discussion.

- Existing pipelines
- - - Planned pipelines
- - - Existing idle pipelines
- 🏭 Existing major refineries
- Existing major terminals

Source: European Petroleum Industry Association, Annual Report 2009

The EU-10 countries undertake various projects but all have common interests - increase security of supplies, diversify supplies and develop renewable sources of energy

Poland

*"...Key directions of the Energy Policy are: increase security of fuel and energy supplies, diversify power generation mix by introducing nuclear energy, develop renewable energy sources, (...) and reduce environmental impact of the energy sector..."**

- ▶ First nuclear plant in 2020
- ▶ LNG terminal
- ▶ LitPol Link (with Lithuania)
- ▶ Expansion of gas storage
- ▶ North-South Gas Corridor

**"Polish State Energy Policy until 2030"*

The Czech Republic

*"The basic priorities of the State Energy Policy are: independence, safety, and sustainable development. Independence from foreign energy sources, from energy sources in risky regions, reliability of supplies from foreign sources..."**

- ▶ Participation in the North-South Gas Corridor project
- ▶ Expansion of gas storage facilities

**"State energy policy of the Czech Republic"*

Romania

*"...The government's strategy emphasizes boosting renewable energy, diversifying import sources and transport routes, protecting critical infrastructure..."**

- ▶ Two new nuclear power units
- ▶ LNG terminal
- ▶ Gas interconnection with Bulgaria and Hungary
- ▶ North-South Gas Corridor
- ▶ Nabucco pipeline

**"National Energy Sector Strategy (2007-2020)"*

Slovakia

*"...The objective of Slovakia's Energy Policy in the long-term perspective is to ensure safe and reliable supplies of all forms of energy in the requested quantity and quality, in particular (...) decrease dependency on energy supplies from risk-stricken regions - diversification of acquiring energy sources as well as transport routes..."**

- ▶ Extension of capacity of existing nuclear plants
- ▶ North-South Gas Corridor project

**"Energy Policy of the Slovak Republic"*

Lithuania

*"... Strategic principles of the Lithuanian energy sector are energy independence, competitiveness, and sustainable development (...). The main goal is ensuring energy independence before the year 2020..."**

- ▶ Building a new nuclear PP
- ▶ LNG terminal
- ▶ Power interconnectors - LitPol Link and NordBalt
- ▶ Poland - Lithuania Gas link

**"National Energy (Energy Independence) Strategy"*

Slovenia

Slovenian national energy strategy focuses on sustainability. In particular, the objective is to stimulate the use of renewable sources and high efficient cogeneration.

- ▶ Sostanj new coal generation unit
- ▶ Another nuclear unit under consideration
- ▶ LNG terminal construction project

Bulgaria

*"...The main priorities of the State Energy Policy are maintaining a safe, stable and reliable energy system and focusing on clean and low-emission energy (...) safety in terms of diversification of energy supplies, construction of the necessary infrastructure and strengthening solidarity between the Member States and coordination of the relations of the EU with third countries..."**

- ▶ Gas interconnection with Romania, reverse flow gas interconnection with Serbia
- ▶ Nabucco pipeline project
- ▶ South Stream

**"Energy strategy by 2020"*

Hungary

*"...The main pillars of the energy policy are to maintain and improve continuity and security of energy supply, and to enforce the principles of sustainable development..."**

- ▶ Two new nuclear power units until 2020
- ▶ Gas interconnection with Romania
- ▶ Nabucco pipeline
- ▶ North-South Gas Corridor

**"Energy Policies of IEA Countries: Hungary"*

Estonia

*"...The State's vision is the Estonian power system with varied and sustainable electricity production which is very well connected with the neighboring countries and which ensures power supply to consumers at a justified electricity price at any moment in time..."**

- ▶ EstLink 2 - power interconnector

**"Development Plan of the Estonian Electricity Sector until 2018"*

Latvia

*"...The main directions of the energy policy are aimed at improving security of the country's energy supplies by encouraging diversification of supplies of the primary energy resources, (...) preventing isolation of the regional power market through new interconnections, (...) promotion of use of renewable and local energy resources and environmental protection..."**

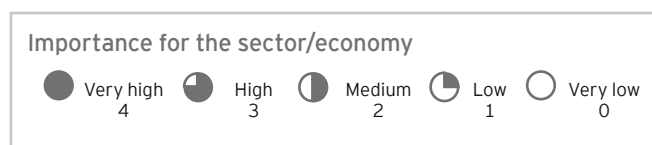
- ▶ Considering construction of an LNG terminal

**"Energy Development Guidelines for 2007-2016"*

EU-10 countries have common interests in the power sector, especially in the area of CO₂ legislation, maintenance of adequate power reserve margins, interconnectors and renewable energy sources

	Poland	Czech Republic	Romania	Bulgaria	Hungary	Slovakia	Lithuania	Slovenia	Estonia	Latvia	Rating
Power											
High dependence on external fuel supplies	○	◐	◐	●	◐	◐	●	◐	●	●	29
Excessive cost of CO ₂ emission allowances after 2012/ need for development of low-emission generation capacities	●	●	●	●	◐	○	◐	◐	●	○	27
Fulfillment of EU obligations regarding renewable electricity sources (RES)	◐	◐	◐	●	●	●	◐	○	◐	●	27
Low level of power reserve margin posing risk of potential black-outs in the short-term future	●	◐	◐	◐	●	◐	◐	◐	◐	●	25
Insufficient interconnection capacity to secure system stability	◐	◐	◐	◐	○	◐	◐	◐	◐	●	22
Undiversified fuel generation mix	●	◐	○	○	◐	○	●	○	●	◐	17

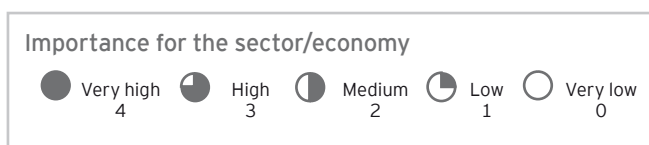
Order of countries according to annual electricity production volume



Common interests of the EU-10 countries in the gas sector encompass reduction of dependency on Russian gas supplies and development of cross-border gas interconnectors

	Poland	Czech Republic	Romania	Bulgaria	Hungary	Slovakia	Lithuania	Slovenia	Estonia	Latvia	Rating
Gas											
Overdependence on supplies from Russia	3	3	4	4	3	4	4	2	4	4	35
Insufficient interconnection capacity and isolation from pan-European pipelines / other transport facilities	4	2	3	3	3	2	3	3	3	3	29
Insufficient storage capacity	4	1	1	4	0	4	4	1	4	1	24
Oil											
Concerns over security and diversification of supplies	3	3	1	1	3	3	3	3	1	1	22
Overdependence on supplies of crude oil from Russia	3	4	1	4	3	3	3	0	0	0	21
Possible need to increase storage capacity for compulsory stocks	2	2	2	2	2	2	2	2	2	2	20
Adverse effect of CO ₂ legislation on the industry	2	2	2	2	2	2	2	0	0	0	14

Order of countries according to annual electricity production volume



**There is a common playfield for the EU-10 countries overall.
The following joint projects and initiatives are to bring
benefits to the whole region**

	Poland	Czech Republic	Romania	Bulgaria	Hungary	Slovakia	Lithuania	Slovenia	Estonia	Latvia
North-South gas corridor	○	○	○	○	○	○	○	○	○	○
LNG terminals	○	○	○	○	○	○	○	○	○	○
Nabucco pipeline	○	○	○	○	○	○	○	○	○	○
Nuclear power plants	○	○	○	○	○	○	○	○	○	○
Renewable energy sources	○	○	○	○	○	○	○	○	○	○
Gas storage facilities	○	○	○	○	○	○	○	○	○	○
Gas interconnectors	○	○	○	○	○	○	○	○	○	○
Power interconnectors	○	○	○	○	○	○	○	○	○	○

○ Directly Interested ○ Indirectly Interested

The challenges for the power, gas and oil sectors of the EU-10 countries are actually challenges to the economy of the region and require joint efforts of the EU-10 group in the EU arena

The new EU members face enormous investments resulting from the following factors:

- ▶ Need to ensure diversification and security of fuel supplies;
- ▶ Growing economies lagging behind the EU-15 countries require further investments into the energy sector to fuel that growth;
- ▶ EU-10 energy infrastructure requires significant CAPEX which results from lack of major investments during political and economic transformation from the collapse of the communist system;

- ▶ Environmental restrictions, especially concerning emissions of green house gases, for existing installations and lack of commercially viable technology for that purpose (i.e. CCS) ;
- ▶ Necessity for change in energy generation fuel mix;
- ▶ Improving the energy efficiency in line with the EU obligations.

The challenges will have an impact not only on the energy sector but on the economy as a whole.

An uncoordinated investment program in the energy sector may adversely affect all the EU-10 economies:

- ▶ Individual investment plans without a wider support program may lead to delays in crucial energy investments due to lack of a stable investment environment;
- ▶ Insufficient energy supplies combined with expected demand will lead to increasing energy prices;
- ▶ Emergency (ad-hoc) solutions are usually costly and may lead to a further increase in the total energy bill paid by an average household.

First steps towards integration of energy markets within the EU-10 countries have already been made

Baltic Energy Market Interconnection Plan (BEMIP)



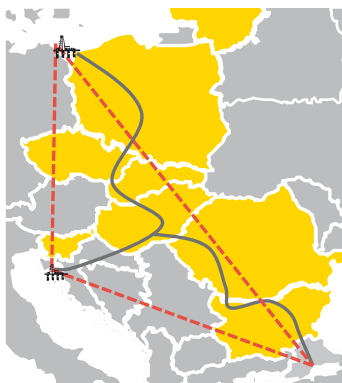
As for the Baltic States, the EU has proposed a market integration scheme called the "Baltic Energy Market Interconnection Plan" (BEMIP).

Two main goals of the BEMIP initiative are:

- ▶ full integration of the three Baltic States into the European energy market, through
- ▶ strengthening of their interconnections with the EU neighboring countries.

BEMIP's basic assumption is that the Baltic States should create a regional power market integrated with NordPool. The target year for the full implementation of the common Baltic market integrated with NordPool Spot has been fixed at the year 2015.

Natural gas supply triangle (11 countries)



The initiative of the North-South-East gas supply system has been set up in order to ensure energy security in a region poor in its own resources as well as to help diversify supply sources and routes.

The so-called „gas supply triangle“ is outlined by:

- ▶ the Nabucco natural gas pipeline, which will create the eastern corner of the triangle;
- ▶ the liquefied natural gas (LNG) terminal in Croatia (southern corner); and
- ▶ the LNG terminal in Poland (northern corner).

It is believed that these projects could be completed by 2014 or 2015.

New European Transmission System (NETS)



The New European Transmission System (NETS) is a Hungarian project designed to unite Central and South Eastern Europe's natural gas transmission networks through the creation of a common gas transmission system operator (TSO).

Two major objectives of the initiative are:

- ▶ facilitating the development of a competitive, efficient and liquid regional gas market that will also reinforce security of supplies;
- ▶ creating a unified infrastructure platform (through a higher level of cooperation / integration between the regional TSOs).

Today CEEP proposes cooperation of the EU-10 countries to successfully lobby for common regional interests in the European Union arena

- ▶ The level of economic development and the conditions prevailing in the energy sector in the EU-10 countries are in many aspects significantly different from those in the EU-15 countries. The EU-10 countries need solutions tailored to their particular challenges.
- ▶ In the European arena, concepts tailored to the needs of the 10 new EU countries may not always obtain an adequate understanding and support if they are promoted by individual countries. The need for joint and coordinate efforts of the 10 countries is obvious.
- ▶ The combined strength of the EU-10 countries will increase chances for the actual delivery of important infrastructure initiatives by securing EU funds and implementing flexible solutions dedicated to the EU-10 countries.
- ▶ The joint and coordinated actions of the EU-10 countries will have a particularly strong impact on the European Commission's decisions in 2011 under Hungarian and Polish presidencies. Therefore a political consensus on an action plan should be developed as quickly as possible.

Proposed Action Plan

- ▶ Developing a common strategy on energy sector challenges for the EU-10 countries.
- ▶ Setting up a Steering Committee consisting of representatives of each of the EU-10 countries. The Committee will be responsible for the development of joint proposals of the EU-10 group for the purpose of discussing energy policy in the EU arena, in cooperation with independent organizations such as the Central Europe Energy Partners AISBL (CEEP).
- ▶ Drawing up a report on the analysis on energy needs of the EU-10 countries and proposed measures to be presented in the EU arena.

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