June 2004

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North Central Europe

North Central Europe is important to world energy markets because it is a key transit point for Russian oil and natural gas pipelines.

Note: Information contained in this report is the best available as of June 2004 and is subject to change.

GENERAL BACKGROUND

Poland, the Czech Republic, the Slovak Republic (commonly referred to as Slovakia), and Hungary are members of the Visegrad Group, created in February 1991 at the northern Hungarian town of Visegrad. After World War II until 1989-1990, these countries were Communist states, as well as members of the Warsaw Pact. (On January 1, 1993, the Czech and Slovak Republics, previously Czechoslovakia, split to form two separate states).

During the past decade, the Visegrad group has made the transition to democracy and to market-based economies. On May 1, 2004, the Visegrad countries became members of the European Union (EU). In 1999, Hungary, Poland, and the Czech Republic became the first former Warsaw Pact countries to join the North Atlantic Treaty Organization (NATO). Slovakia is a member of NATO's Euro-Atlantic Partnership Council. The Czech Republic became a member of the Organization for Economic Co-operation and Development (OECD) in 1995, Hungary and Poland joined in 1996, and Slovakia in 2001. As members of the Visegrad Group, the four countries also belong to Central European Free Trade Agreement (CEFTA). Slovenia, Romania, and Bulgaria are members too.

The Visegrad countries are dependent on trade with the EU, in particular with Germany. These four countries also continue to face economic restructuring challenges, including: modernizing large, and to a certain extent, antiquated agricultural sectors (especially in Poland); implementing more energy efficient processes for industry in order to decrease energy consumption (although energy intensity is decreasing); absorbing the costs from cleaning up heavily-polluting industries; and adapting industries and services to EU standards.

REGIONAL ENERGY ISSUES

The Visegrad countries are neither large producers nor consumers of energy. Coal is the single abundant fossil fuel in the region, with only Poland and the Czech Republic having significant quantities. In 2002, coal accounted for 45.6% of the Visegrad countries' total primary energy consumption. The Visegrad countries import most of their crude oil and natural gas requirements, mainly from Russia. This dependence on Russian natural gas and oil imports has also been a point of contention for these countries, particularly Poland, which experienced a natural gas supply cut-off in February 2004. Furthermore, as Visegrad Group privatize their energy markets in line with EU directives, some government officials have argued against giving up control in state energy companies as privatization not only could compromise national energy security, but also increase Russian-based companies control through acquisition. During the past decade, the Visegrad countries have diversified their energy supplies to reduce their dependence on Russia by connecting national oil and natural gas networks to Western European. The strategic importance of the region, however, lies largely in the crude oil and natural gas pipelines which traverse the Visegrad countries on their way to Western Europe.

Oil Transit

The Druzhba (Friendship) pipeline transports Russian crude oil to the Visegrad countries and onward to Western Europe. The pipeline splits in Belarus into northern and southern branches. The 1-million-barrel-per-day capacity northern branch brings oil to Poland and Germany. The 1.2-million-barrel-per-day-capacity southern branch splits in Uzhgorod (Ukraine), with one section going through Slovakia and the Czech Republic and the other section going to Hungary, where it connects to the Adria pipeline. The Adria pipeline in turn transfers oil to Serbia and to Croatia. In December 2002, the governments of Russia, Belarus, Ukraine, Slovakia, Hungary and Croatia signed an agreement to integrate and expand the capacity of the Druzhba and Adria pipeline systems in order to facilitate the transportation of Russian crude oil to the Croatian deepwater port of Omisalj. This would allow direct shipments of Russian oil to North America, which Russia's oil company Yukos, one of the main supporters of the project, envisions. However, the 110-mile segment of the Adria mainline between Omisalj and Sisak, Croatia, can only accommodate imports (See: Figure 1). This section will need to be reconstructed in order to allow both the importing and exporting of crude oil.

The Odessa-Brody pipeline allows Caspian Sea region oil that is piped to Black Sea ports to be shipped across the Black Sea to a terminal near Odessa. The oil is then transported to Brody, where it connects with the southern Druzhba pipeline for shipment to Slovakia, Hungary, and onward. There is discussion of extending the Odessa-Brody pipeline to Gdansk, Poland, allowing Caspian crude oil to reach Poland, Germany, and other Baltic states.

Natural Gas Transit

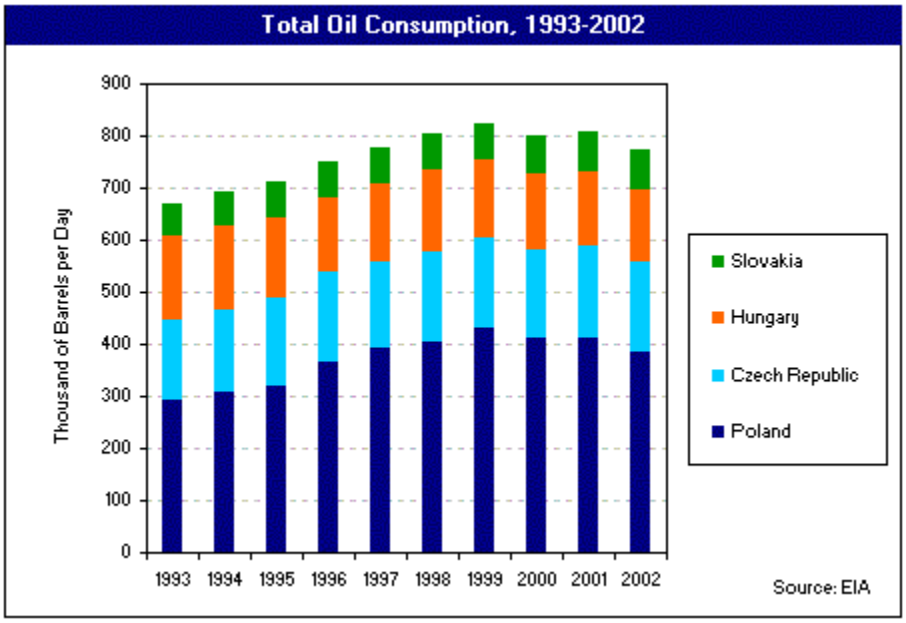
The Visegrad region is a key transit center for Russian natural gas exports to Western Europe. The Yamal-Europe pipeline, which is routed through Belarus and Poland to Germany, is Russia's only natural gas export pipeline to Europe that does not cross Ukrainian territory. The pipeline has a capacity of 1.1 trillion cubic feet per year (Tcf/y). Most of this natural gas is destined for German markets. A second natural gas pipeline, the Yamal II, is planned, but the pipeline has not been formally approved. If built, the combined annual capacity of the two pipelines would be 2.3 Tcf/y. The Brotherhood and Soyuz natural gas pipelines that pass through Ukraine to Slovakia have capacities of about 1 Tcf/y each. The natural gas that transits Slovakia represents about 25% of the natural gas consumed in Western Europe and about 70% of the Russian natural gas exported to Western Europe. In 2003, Slovenský plynárenský priemysel (SPP), the operator of Slovakia's natural gas grid, reported that 2.36 Tcf transited the country onto Western Europe.

Regional Integration

The Visegrad region shares the CENTREL electricity system, which links the Czech Republic, Slovakia and Hungary. In 1995, the CENTREL system was connected with Western Europe's grid. Poland also has electricity connections with Ukraine and Belarus. Currently, both north-south and east-west connections are being expanded, as part of the EU's Trans-European Energy Network project, including a new link to Lithuania. The four countries of the region are also members of European electricity transmission system Union for the Coordination of Transmission of Electricity (UCTE). UCTE coordinates the interests of transmission system operators in 20 European countries.

OIL

The Visegrad countries have total proven oil reserves of approximately 222.9 million barrels, with 102.5 million barrels of that located in Hungary, as of January 2004, according to the *Oil and Gas Journal*. Poland has proven reserves of 96.4 million barrels, while the Czech Republic and Slovakia have only 15 and 9 million barrels, respectively.



Total oil production (including crude, natural gas liquids, and refinery gain) in the Visegrad region is minimal, averaging 85,900 barrels per day (bbl/d) in 2003. Hungary is the largest producer of oil in the Group, with approximately 45,700 bbl/d, followed by Poland with 23,500 bbl/d, Czech Republic with 13,200 bbl/d, and Slovakia with 3,500 bbl/d.

In 2003, the Visegrad countries met 10.4% of their total oil demand of 828,000 bbl/d from domestic production, making them heavily dependent on imports. Most of the imports came from Russia via the Friendship pipeline. Poland also receives limited amounts of oil from the "Naftoport" terminal at Gdansk. The Czech Republic imports oil from Russia, as well as from other sources, via the Ingolstadt-Kralupy nad Vltavou-Litvínov (ILK) pipeline, which allows the land-locked country to import crude oil from the Italian port of Trieste via the Trans-Alpine pipeline (TAL). The ILK pipeline, operated by Mero CR, has enabled the Czech Republic to reduce its reliance on Russian oil.

Other Potential Import Pipelines

The Odessa-Brody pipeline in the Ukraine could diversify the oil supply of the Visegrad countries. The pipeline was originally planned to transport Caspian Sea crude oil from the newly completed Black Sea marine terminal, Pivdenniy (or Yuzhniy) in Odessa to Brody, where it connects with the southern Druzhba pipeline. From there, the crude oil would be shipped to Slovakia, Hungary, and onward. However, the pipeline, completed in December 2001, has been largely dormant, as the operator UkrTransNafta has been unable to secure a supplier. The reason behind the delay has been disagreement as to whether the line should be used according to its original plan or be reversed to transport Russian crude oil to Odessa for export. It appears, however, that this disagreement was

resolved in early June 2004, with the government of Azerbaijan committing to supply Ukraine with Caspian oil to transport on to Europe. Polish pipeline system operator, Pern, and UkrTransNafta, reportedly plan to form a joint-venture to extend the Odessa-Brody pipeline to Plock, Poland, allowing Caspian crude oil to be transported directly to Poland and eventually to Gdansk. It remains unclear whether this project will materialize.

Exploration

Despite almost negligible oil reserves from a global point of view, firms continue to explore the region for oil deposits. For example, in the Czech Republic, exploration has been taking place in the Western Carpathians, an area bordering Austria and Slovakia (See: figure 2). Australia's Carpathian Resources, which is leading the exploration and production activities in this region, reported that it has been producing oil, albeit sporadic due to water influx and weather problems, from two wells (Ks7 and Ks8) at the Krásná oil field. Carpathian Resources also holds three exploration licenses in Slovakia for the Koròa, Miková and Kežmarok fields, of which the first two have demonstrated non-commercially-viable oil deposits after preliminary testing. According to a Slovak government sponsored study (1993-1996), the Kežmarok field was deemed the deposit with the greatest potential, containing 31 million barrels of oil and 420 Bcf of natural gas. It is unclear how much of these reserves might be recoverable.

According to its three-year (2003-2005) strategic plan, the Hungarian Oil and Gas Company (MOL), aims to double its oil exploration and extraction, investing $40-$50 million annually on exploration activities in Hungary. In 2003, Mol reported that it had increased its crude oil production in Hungary 8% year-on-year. Internationally, MOL is involved in a joint-venture with Russia’s Yukos to explore and develop the 145 million barrel Zapadno-Malobaik oil field in Western Siberia. Oil production from the field is expected to reach 55,000 bbl/d by 2005. In Poland, PetroBaltic, owned by Poland's State Treasury, produces crude oil from the B-3 field in the Baltic Sea. The company also conducts exploration activities internationally, such as in Syria, Yemen, Russia, and Nigeria. The Polish Oil and Gas Company (POGC) is the other major crude oil producer in Poland.

Sector Organization (Restructuring)

The Visegrad countries have been in the process of restructuring their oil sectors by privatizing and unbundling former wholly-owned state oil companies. In Poland, the two key oil companies are PKN Orlen, established in 1999 after a merger of two large former state-owned enterprises, P’ock refinery and fuel distributor Centrala Produktow Naftowych and Grupa Lotus (GL), formed in 2003 (formerly the Gdansk refinery). In September 2002, the Polish government adopted a restructuring and privatization program for the country’s oil sector. The government created Nafta Polska to be in charge of privatizing the Polish oil sector while the government retained 100% ownership in PERN, the country’s oil transportation company, and a 35% stake in petroleum logistic company Naftobazy. Nafta Polska reportedly transferred 10% stakes in three southern refineries (Czechowice, Jaso, and Nafta Glimar) and a 75% stake in Petrobaltic to GL in March 2004. The Polish government currently controls directly and indirectly 85% of GL. The main goal the country's restructuring process is to prepare the country's fuel sector for increased competition in the European market through consolidation of the country’s own oil assets and diversification of suppliers.

Poland’s attempt to consolidate its oil sector has been slow, however, mainly due to political disagreements. PKN Orlen, of which 28% remains controlled by the Polish government, signed a declaration of intent on strategic cooperation with Hungary's MOL in November 2003. A merger between the two companies could create a large regional company, able to compete with other large oil companies. For Poland, it could allow the country to lessen its dependence on Russian crude oil

(Mol owns an oil import terminal in Croatia). Some analysts have warned, however, that a PKN/Mol merger could result in not only the Polish government losing control of PKN Orlen, but also in the form of a merged entity being taken over by Russian oil company, such as Yukos. The Russian oil company controls a reported 10% of Mol (Yukos stake in Mol has not been confirmed, however). Politically, it is expected that both states will grapple over who controls a merged entity.

Meanwhile both companies have been increasing their strategic presence regionally. In July 2003, Mol acquired a 25% stake in Croatia's state-controlled oil company INA, bolstering the company's other key acquisition, Slovakia's refiner and petrochemical company Slovnaft, in which it has a 98.4% stake. In June 2004, PKN Orlen purchased a 63% stake in the Czech oil firm Unipetrol, consisting of over 20 companies, including refineries, gas station chains and a pharmaceutical firm.

Downstream
Poland has 350,000 bbl/d in refining capacity, the largest in the region. Ceská rafinérská is the Czech Republic's largest crude oil refinery, owning and operating two refineries: Litvinov and Kralupy. The two refineries have a combined capacity of 178,000 bbl/d.

Hungary has one crude oil refinery in operation, the 161,000-bbl/d Szazhalombatta refinery. In October 2003, Mol invested $59 million in a new hydrodesulfurization unit at the company's Szazhalombatta refinery. Once the unit is complete, along with a diesel desulfurization unit that is under construction, Mol's refinery will be able to produce low-sulfur gasoline and diesel required by the EU beginning on January 1, 2005. Mol also controls Slovakia's only refinery, Slovnaft, with a capacity of 115,000 bbl/d.

Slovakia's oil transportation company, Transpetrol (Slovak Ministry of Economy 51% and Yukos 49%), agreed with Austrian oil company, OMV, to construct and operate jointly a 38-mile pipeline from Slovnaft's refinery outside of Bratislava to OMV's Schwechat refinery near Vienna, Austria. The pipeline will have an initial throughput capacity of 72,000 bbl/d, expandable to 100,000 bbl/d with the installation of additional pumping stations. The pipeline will enable OMV to import directly Russian oil, which the company previously imported solely from the Trieste oil terminal in Italy.

Strategic Oil Reserves
As a prerequisite for admission to the EU, each of the Visegrad countries must have 90 days of oil storage capacity. In November 2002, Hungary and Slovakia signed an agreement on an oil storage partnership, which will allow both countries to meet EU regulations. Poland expects its strategic oil reserve to be completed in 2008. In the Czech Republic, CR Mero owns and operates the country's central oil storage facility in Nelahozeves, where it hopes to complete four new oil tanks by September 2004, bringing the country in line with EU regulations.

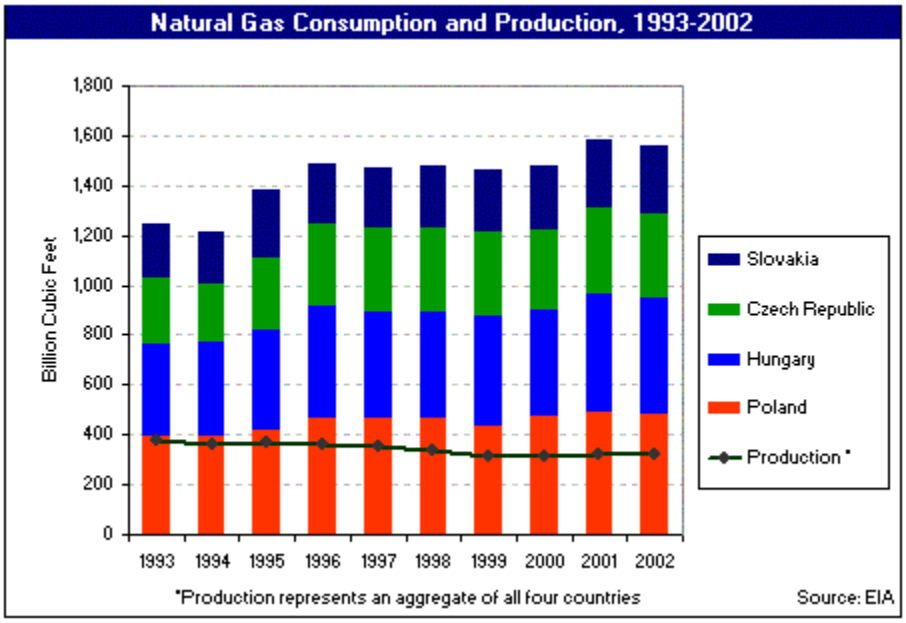
NATURAL GAS
Proven reserves of natural gas are also minimal in the Visegrad countries, with a combined total of 7.7 Tcf, as of January 2004. Poland, with roughly 75% of the Group's total, has an estimated 5.8 Tcf of natural gas reserves, with Hungary at 1.2 Tcf. Slovakia and Czech Republic contain 530 billion cubic feet (Bcf) and 140 Bcf, respectively. In 2002, Poland produced 196 Bcf, which met 41% of its domestic natural gas demand. Hungary produced 110 Bcf, accounting for almost a quarter of its demand. Slovakia produced only 7.5 Bcf and the Czech Republic just 5.4 Bcf.

As the Visegrad countries strive to meet EU membership criteria, natural gas is becoming increasingly important to the region's energy mix. Increased consumption of natural gas, as an

alternative to coal, is considered to be a key component of the region's plan to meet the stricter EU energy use and environmental regulations. In 2002, natural gas represented approximately 22.5% of the Group's total primary energy consumption, up from 16.1% in 1993. In 2002, Slovakia's per capita natural gas consumption was the highest among the Visegrad Group countries, with Hungary a close second.

Russia supplies most of the Visegrad group's natural gas requirements via the Yamal and Brotherhood pipelines. Poland and the Czech Republic import small amounts of natural gas from Germany and Norway. About 80% of Hungary's natural gas imports come from Russia through part of the Brotherhood pipeline. Hungary also imports natural gas via the Gyor-Baumgarten pipeline, which is connected to Western Europe's natural gas grid. The following companies are responsible for operating each countries' national pipeline grid: Transgas (Czech Republic); Mol (Hungary); Polish Oil and Gas Company (POGC) (Poland); and Slovenský plynárenský priemysel (SPP) (Slovakia).

Poland Natural Gas Imports



Given increased domestic natural gas production (up 2% year-on-year in 2002) and flat demand, Poland has had difficulty in maintaining its Russian, Danish, and Norwegian current contracts in their present form, with the POGC amending or deferring some of the contracts. Nonetheless, POGC currently is looking to diversify its natural gas suppliers, particularly after Gazprom cut off supplies to Belarus in February 2004, thus affecting Poland's natural gas supply. One option is the construction of a new pipeline from the German town of Bernau to Poland's Szczecin. In March 2004, Bartimpex, the company leading the project, announced that it wants to move ahead with the pipeline which would have an annual capacity of 88 Bcf, with the potential of increasing to 177 Bcf per year.

Russia

In February 2003, POGC and Gazprom renegotiated their original 25-year take-or-pay Yamal pipeline contract signed in 1996, reducing Poland's imports from Russia by about a quarter, from 7.7 Tcf to 5.7 Tcf, in the years 2003-2022. The Polish government reportedly is looking to amend once again the current contract in order to allow Poland to re-export natural gas to other surrounding countries. This amendment would likely be similar to amended contract between Italy's Eni and Gazprom, which allowed Italy to re-export natural gas.

The Yamal pipeline, which began operations in September 1999, transports natural gas from the Yamal (West Siberia) field in Russia to Poland, where it is further distributed to Germany and to other Western European countries. EuRoPol Gaz operates the Polish section, in which both POGC and Gazprom each hold a 48% share. A consortium of Polish firms called Gas Trading owns the

remaining 4%. The pipeline is not yet transporting natural gas at capacity, as it requires the construction of three additional compressor plants -- Szamotuły, Ciechanów and Zambrów. Construction of the third compressor Ciechanów reportedly began in March 2004. Plans to build a second pipeline (Yamal II) have also been postponed indefinitely.

Denmark and Norway

In July 2001, POGC reached an agreement with Dansk Olie og Naturgas (DONG) to import 565 Bcf of natural gas over eight years, starting in 2003. This would be done through a planned $330 million, 186-mile pipeline under the Baltic Sea. The project, however, was deferred because Poland's natural gas demand was less than expected. POGC and DONG have since extended the implementation of the contract until the end of 2004. Both parties reportedly have been considering revising down gas deliveries, as well as ways to re-export gas delivered to Poland.

In December 2003, POGC and Norway's Statoil terminated their original natural gas supply agreement (signed in September 2001), due to insufficient natural gas demand projections in Poland to justify building a new Baltic seabed import pipeline. Statoil is currently in a dialogue with the POGC over reduced natural gas deliveries to Poland, which would have to be sent through new or existing infrastructure. The original contract included the delivery of 2.6 Tcf of natural gas over 16 years, as well as the construction of $1.1 billion, 683-mile pipeline.

Another alternative to Russian supplied natural gas is the planned Nabucco pipeline, bringing natural gas from the Caspian Sea region to Europe. A consortium, comprising Mol, Botas, Boru Hatlari ile Petrol Tasima AS (Turkey), Bulgargaz EAD (Bulgaria), and SNTGN Tranzgas (Romania), OMV (Austria), is heading up the project which could start deliveries as early as in 2009.

Sector Liberalization

Natural gas liberalization along EU requirements is proceeding at different rates in the Visegrad countries. In 2002, a second EU Directive on natural gas (2003/55/EC) was adopted under which industrial and commercial users should be able to choose their suppliers by July 1, 2004, and that all customers should be able to choose their suppliers by July 2007. The second Directive requires vertically integrated natural gas monopolies to unbundle transmission operations by July 2004 and distribution operations by July 2007, as well as to establish a market regulator and a power exchange. Along with divesting and unbundling state owned natural gas companies, governments are required to open their natural gas market to outside competition, thus allowing customers to choose their own supplier.

In Slovakia, the natural gas market is expected to open in July 2004, excluding household consumers. This means that each customer (except from in the residential sector) will have the right to choose its supplier. The opening of the natural gas market for all customers will follow in July 2007. Slovenský plynárenský priemysel (SPP) (EdF 24.5%, Ruhrgas 24.5% and Slovak National Property Fund 51%) is responsible for natural gas imports, transit, and distribution. The company's subsidiary, Nafta Gbely, operates Slovakia's natural gas storage of 60 Bcf. SPP is currently unbundling its natural gas assets according to EU requirements.

In June 2004, the Hungarian government approved a new Gas Act, establishing a regulatory framework for a liberalized natural gas market in Hungary. The Act calls for partial liberalization of the country's gas market, allowing all residential users to choose their supplier by July 2004, and for all consumers by July 2007. Along with opening the market liberalization, Mol, as required by the Gas Act and EU regulations, has unbundled its gas business activities (supply, storage, and transmission) into three 100% Mol-owned independent entities. The Gas Act created a new tariff

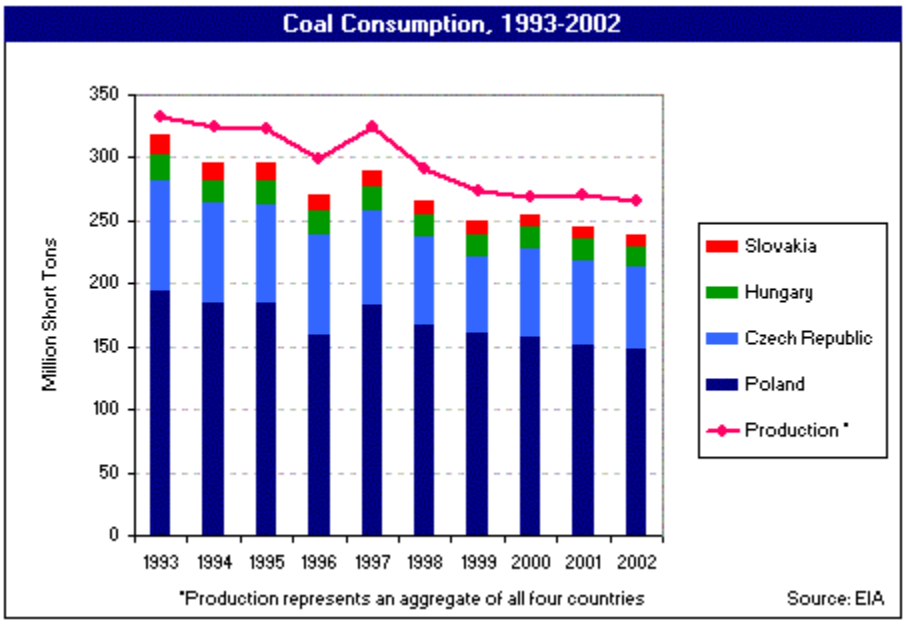
regime, which came into effect in October 2003. Previously, the government required Mol to sell consumers natural gas at below-market rates while buying at world prices, resulting in huge losses for Mol. Under the new price regime, Mol will continue to subsidize residential consumers but on a smaller scale in order to make the transition to higher prices less abrupt. Hungary's natural gas sector is organized around six regional distributors: Fögáz (Budapest region); Tigáz (northeast region); Dégáz (southeastern region); Ddgáz (south Danube region); Kogáz (west and Mid-Danube region); and Egáz (northeast region), with Mol still controlling most of the country's upstream and downstream natural gas activities. The regional distributors have all been privatized, with RWE, E.ON Energie, Ruhrgas, Eni and EdF holding majority and minor stakes in them.

According to the Czech Republic's State Energy Policy, which was approved on March 10, 2004, the country's natural gas market is scheduled to open for all customers with continuous metering, beginning on January 1, 2005; for all customers except households starting on January 1, 2006; and for all end customers from January 1, 2007. Natural gas transmission and distribution operations are scheduled to be unbundled by January 1, 2005 and December 31, 2006, respectively, at the latest. Much of the country's natural gas sector has already been privatized, with Germany's RWE holding a 100% stake in Transgas and majority stakes in all but two of the country's eight regional distributors (see links). Transgas is responsible for importing and transiting natural gas, the inland pipeline grid and underground storage facilities. RWE will have to unbundle these assets according to EU regulations.

In August 2002, the Polish government adopted a plan to restructure and privatize wholly state-owned oil and natural gas company POGC. According to the plan, POGC would remain responsible for natural gas transmission, storage and wholesale trade, while six separate regional companies would be responsible for distribution. The new EU Directive, however, will require POGC to unbundle its natural gas operations. In May 2004, the Polish government agreed to open the country's natural market according to the schedule outlined by the EU Directive on natural gas.

Coal

Coal is the most prevalent energy resource in the Visegrad countries, although its role as a fuel and as an industry has declined over the past decade. In 1993, for example, coal accounted for 58.4% of the Group's combined total primary energy consumption and in 2002, for 45.6%. Poland is the exception, where coal accounted for 93% of the country's primary energy production in 2002, and remains one of the country's most important employers. Coal also remains significant in the Czech Republic, where it constituted 43.0% of the primary energy consumption in 2002.



The region holds 32,090 million short tons (Mmst) of proven recoverable coal reserves, of which

Poland has 24,400 Mmst. The Czech Republic contains 6,300 Mmst; Hungary 1,200 Mmst; and Slovakia 190 Mmst. In 2002, the region produced 266.2 Mmst, of which Poland was responsible for 67%. Slovakia was the smallest producer (3.8 Mmst), preceded by the Czech Republic (70.4 Mmst) and Hungary (14.2 Mmst).

Coal consumption has decreased sharply in the region in recent years. Between 1993 and 2002, coal consumption fell by 40% in Slovakia, 27% in the Czech Republic, 23% in Poland and 21% in Hungary. In 2002, total coal consumption for the region was approximately 239 Mmst, a decrease of 2.7% year-on-year.

Restructuring

Over the past decade, the Visegrad countries have continually restructured and downsized their coal industries by reducing the number of inefficient mines in operation, cutting the labor force associated with coal mining, and increasing awareness of environmental issues related to the industry in line with EU standards.

In Poland, the coal industry is one of the country's largest industries and employers, but inefficiencies have resulted in large annual losses, spurring the government to reform the sector. In 1998, the government introduced a five-year (1998-2002) Hard Coal Sector Reform Program which reduced employment from 248,000 to 140,000 at the end of 2002. In November 2003, the government introduced a second program to further consolidate and reform Poland's coal sector – Program of Restructuring of the Hard Coal Mining Sector for 2003-2006. The program plans to close inefficient mines and reduce employment on a voluntary basis. For those who voluntary leave, the government is providing other private sector employment for workers, such as retraining, social hardship allowances, and early retirement pensions. The program also plans to privatize the country's coal industry by 2006. In April 2004, the World Bank provided Poland with a loan of $160 million to support the country's restructuring program.

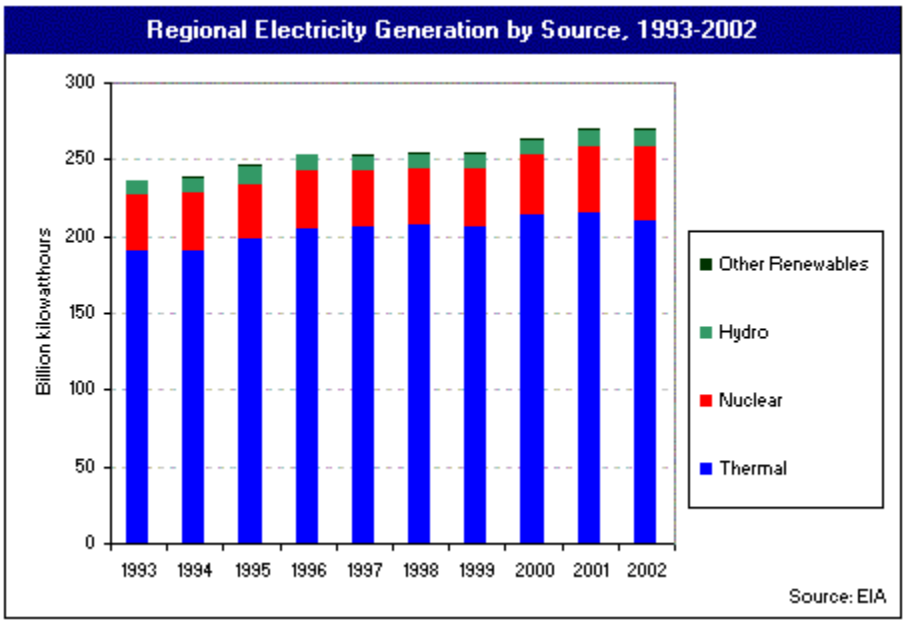
According to the Czech Republic's State Energy Policy (Government Decision No. 211 – March 10, 2004), coal, particularly lignite, will remain the country's primary energy source in coming decades, despite increased use of natural gas and nuclear energy. The government expects coal, including black (hard) and brown (lignite), to account for 30.5% of total consumption in 2030. In line with EU regulations, the government lifted quotas on coal imported from Poland and Ukraine, as of January 2004. The decision was welcomed by Czech steel makers, which now have access to cheaper coal, namely Polish. Prior to this decision, steel makers, such as ISPAT NOVÁ HUŤ, were required to buy a large portion of its black coal requirements locally.

The Czech Republic's coal industry consists of six companies: three hard coal (black) mining companies (Ostrasko-Karvinske Doly; Ceskomoravske Doly; and Zapadoceske Uhelne Doly); and three lignite (brown) mining companies (Mostecká uhelná společnost, Severoceske Doly, and Sokolovska uhelna).

Electricity

In 2002, the Visegrad Group generated 270.3 billion kilowatthours (Bkwh) of electricity, of which thermal sources (oil, natural gas and coal) accounted for 77.8% of total power production, followed by nuclear with 17.8%, hydro 3.7% and renewables 0.7%. The Group's total consumption declined slightly year-on-year, to 232.7 Bkwh. Overall the Group was a net exporter of power, with the Czech Republic and Poland having the largest net exports of 16.4 Bkwh and 16.4 Bkwh, respectively, in 2002. Hungary, however, was a net-importer, mostly from Slovakia.

In line with EU Directives, the Visegrad countries have been liberalizing their prospective electricity sectors. All of the countries have introduced legislation to fulfill this requirement. Most of the policies include establishment of a legal framework to define the rights and duties of producers, distributors, and users of energy; foundation of an independent regulatory entity to ensure competition within the energy sector; and guarantee of Third Party Access (TPA) of enterprises to energy distribution grids. The policies also include scheduled opening of the electricity markets and the privatization of the large state-owned electricity power companies.



As new EU members, the Visegrad countries are subject to the requirements of Directive 2001/77/EC on electricity from renewable energy sources, which requires the EU to increase renewable energy's share of total energy consumption to 12% and electricity produced from renewables to 22.1% by 2010 (Article 3, paragraph 4). According to a recent status report on renewables in the EU, the Czech Republic, Hungary, Poland and Slovakia are expected to increase their share of electricity generated from renewables 8%, 3.6%, 7.5% and 31%, respectively (these numbers are preliminary), in order for an enlarged EU to meet its 22.1% target by 2010.

Sector Organization

Poland

The Polish power generation sector is the largest in the Visegrad Group. In 2002, Poland's installed electric capacity was 29.3 gigawatts (GW), generating 133.9 Bkwh of power. Coal-fired power plants meet most of Poland's annual electricity demand. The Polish electricity sector continues to go through consolidation, in line with the government's plan to restructure the industry. In the power generation segment, consolidation has focused on creating two large companies, Południowy Koncern Energetyczny (PKE) and BOT, with installed capacities of 5,000 megawatts (MW) and 8,000 MW, respectively. BOT is a holding company for Belchatow, Opole and Turow power plants. In the distribution segment, two group consolidations have already taken place, creating the Group G-8 (eight distributors in central and northern Poland) and the ENEA Energy Group which comprises five merged companies. There are plans to create three additional consolidated power distributors: L-6 Group (six distribution companies from eastern and southeastern Poland); the K-7 Group (seven companies in central and southern Poland); and W-5 Group (five companies in southwestern Poland). In the coming years, the government plans to begin floating stakes in the newly consolidated distributors and power companies, with a 35% stake in ENEA and a 35%-40% stake in PKE likely to be offered by the end of 2004. Stakes in BOT and three distributors –W5, L6 and K7 – are likely to be offered in 2005 or 2006. The government has privatized only two of distributors: STOEN to RWE; and Górnośląskiego Zakładu Elektroenergetycznego (GZE) to Sweden's Vattenfall.

Poland began liberalizing its electricity sector in 1998. As of now, companies consuming over 10

gigawatt-hours (Gwh) annually can choose their suppliers. Next year the threshold will fall to 1 Gwh and by 2006, the market will be completely open. In April 1997, the Polish government passed a new Energy Act, which required the Government Economic Committee to pass "Guidelines on Poland's Energy Policy Through 2020." The document spells out long-term energy forecasts and action plans for the Polish government. The key objectives include: increased security of energy supplies, (including diversification of sources); increased competitiveness for Polish energy sources in domestic and international markets; environmental protection; improving energy efficiency; and reducing energy-related carbon emissions. The Polish government currently is working on annulling long-term supply contracts between power plants and the national grid operator Polskie Sieci Elektroenergetyczne (PSE). The contracts have been seen as a hindrance to liberalization of the country's electricity market. Under the contracts, PSE committed to purchasing energy at fixed prices and fixed volumes. The new law would cancel these contracts and the power plants would receive compensation. Government officials have pointed out that these contracts have been a disincentive for restructuring and modernization of country's power sector as producers have fixed revenues.

Hungary

In 2002, Hungary generated approximately 34.1 Bkwh while consuming 36.0 Bkwh of electricity, making the country a net importer of power. The Paks nuclear power plant is the largest single power producer in Hungary, generating nearly 40% of the country's power in 2002. The Paks and the Vértesi coal-fired power plant are operated by state-owned MVM, which also operates Hungary's national high voltage grid. Besides Paks, the other significant power producers in Hungary are the 836-MW coal-fired Matra power plant (RWE 50.96%, MVM 25.5%, and EnBW 21.6%); the 2,000-MW oil/natural gas-fired Dunamenti plant, operated by Belgium-based Tractabel; and the 860-MW oil/natural gas fired Tiszall II power plant, operated by U.S.-based AES. E.ON also operates Hungary's first wind power plant, the 600-kilowatt Emszet. Hungary's power generation capacity could be further diversified after Mol received a grant from U.S. Trade and Development Agency to conduct a feasibility study to determine the best location for the country's first geothermal power plant. If sufficient geothermal sources are found, Mol plans to construct a 5-MW geothermal plant. There are 6 regional distribution companies in Hungary: Dedasz; Demasz; Elmu; Edasz; Emasz; and Titasz. The majority are held completely or partly by foreign companies, mainly E.on and RWE.

As in Poland, Hungary's electricity sector restructuring and modernization efforts are being hampered by long-term power purchasing contracts. According to reports, most of country's domestic electricity generation is locked up in long-term contracts that prevent further market opening as there is no spare capacity to offer to potential buyers. Hungary, already a net importer of electricity, will likely face further supply problems as the country is expected to close down 1,070 MW of installed capacity by 2006.

Czech Republic

Both electricity generation and consumption have been rising in the Czech Republic in recent years. Between 1993 and 2002, electricity production in the country rose 29%, to 71.8 Bkwh from 55.6 Bkwh, while electricity consumption increased 10.3%, to 55.33 Bkwh from 49.61 Bkwh. In 2002, the country's net power exports were an estimated 16.42 Bkwh, primarily to Germany, Austria and Slovakia. Electricity exports are becoming increasingly important for the Czech Republic, particularly with the commissioning of the Temelín nuclear power plant in 2001. The Czech government also aims to increase the contribution of renewable sources to the total consumption of primary energy sources to about 3%-6% as of the year 2010 and about 4%-8% as of the year 2020.

State majority-owned Ceské energetické závody (ČEZ) is the dominant power company in the

Czech Republic, supplying 74% of the country's power in 2003. The company operates the country's two nuclear power plants (Dukovany and Temelín), along with 10 coal-fired plants, 11 hydropower plants, two wind plants and a solar plant. ČEZ also holds majority stakes 5 of country's 8 regional electricity distributors. Germany's E.ON owns and operates two regional distributors – JME and JČE. In May 2004, in accordance with country's anti-monopoly regulations, ČEZ announced a tender for the company's 34% stake in Pražská energetika (PR) (regional distributor for Prague), with a buyer expected to be selected in September 2004. Other stakeholders in PR include a 50.8% stake owned jointly by Energie-Baden Württemberg (EnBW) and RWE and minority stake by the city of Prague. The anti-monopoly authorities also require ČEZ to dispose of its majority stake (97.72%) in Středočeská energetická (STE) and 34% minority stake in ČEPS, the country's transmission grid operator. In June 2003, the government's attempt to tender its 67% stake in ČEZ was temporarily suspended, mainly to liabilities surrounding the Temelín plant (more detail below). A new effort to privatize the company is not expected until 2005. Other major power producers in the Czech Republic include U.S.-based Appian Energy, ECK Generating and Elektrárny Opatovice (International Power).

Slovakia

In 2002, Slovakia's installed electric generating capacity was about 7.8 GW. During the same year, the country consumed 24.0 Bkwh while producing 30.5 Bkwh. Since two nuclear reactors came on line in 1998 and 2000, Slovakia has become more reliant on nuclear generation and less reliant on fossil fuels. In 2002, nuclear power plants produced 56% the country's electricity while thermal plants provided 27% and hydro 17%. The addition of the nuclear power plants has allowed Slovakia to become a net exporter of electricity, beginning in 1999.

The dominant power produce in Slovakia is Slovenské elektrárne (SE), accounting for an estimated 91% of the country's installed capacity. SE operates two nuclear power plants (Jaslovské Bohunice and Mochovce), with an installed capacity of 1,760 MW and 880 MW respectively, two thermal power plants (Nováky and Vojany), with an installed capacity of 1,843 MW, and numerous hydropower plants, with a combined installed capacity of 2,399 MW. The government currently is the process of tendering its 66% stake in SE. Five bidders – ČEZ, Unified Energy Systems (Russia), Enel (Italy), E.ON, and Verbund (Austria) – are due to give final bids at the end of July 2004. Outside observers, however, believe that the Slovak government will have difficulty in selling its stake, mainly due to its financial liabilities. One of SE's main liabilities is the eventual shut-down of its two nuclear power plants, with the two Bohunice V1 reactors scheduled for decommissioning in 2006 and 2008, respectively, under an agreement with European Commission reached in September 1999. Other liabilities include stranded costs, such as investment in the third and fourth blocks at the Mochovce which were never completed, and a reported debt load of €1.3 billion ($1.8 billion). The government has indicated that it will only review bids which are for all of SE's installed generation capacity, including the two nuclear power plants.

In March 2004, the Slovak government tendered its 90% stake in the country's only other significant power producer, Paroplynovy Cyklus (PPC). Atel, a Swiss energy group, and the Penta Group, a Slovak financial group, acquired the 220-MW steam-gas cycle power plant. SE owns the remaining 10% stake in PE. On June 2, 2004, the Slovak government agreed to privatize its 51% stake in the country's largest distributor Západoslovenská energetika (ZSE), with the stake split between a direct sale of 41% to E.ON and the remaining 10% floated on the Bratislava stock exchange. E.ON has declined to comment on whether it would take up the offer. E.ON originally bought a 49% stake in ZSE in September 2002, but sold a 9% stake of the distributor to the European Bank for Reconstruction and Development (EBRD) in November 2003. RWE and Electricité de France (EDF), owners of 49% in the country's other two regional distributors Stredoslovenská energetika (SSE) and Východoslovenská energetika (VSE), respectively, will

eventually be given the opportunity to increase their stakes. EBRD has also expressed interest in acquiring stakes in VSE and SSE.

Nuclear

The Czech Republic has two nuclear power plants, Dukovany and Temelín. After years of delay, on October 9, 2000, the Czech Nuclear Safety Authority cleared Temelín nuclear for operation, located only 37 miles from the Austrian border. The first reactor was connected to the national grid in December 2000. The second reactor of the Temelín nuclear power plant was put into trial operation on April 18, 2003, with both reactors beginning full operational in May 2003. In 2003, the two nuclear plants comprised 30% of ČEZ's installed generation capacity and generated 42% of the company's power.

Temelín has been controversial since construction first began in 1986. Opponents have argued that the plant is unnecessary, noting that the Czech Republic already produces more electricity than it consumes, and that additional electricity can be generated by improving the existing distribution network rather than installing new generating capacity. Although Temelín meets and even exceeds EU safety standards for nuclear power plants, Czech and Austrian environmentalists claim that it is not safe because it combines Soviet design and western fuel and safety technology. In June 2004, Temelín experienced one minor incident when radioactive water leaked out the plant's second reactor. The Czech State Authority for Nuclear Safety concluded that the incident was insignificant.

Slovakia has two nuclear power plants, which generated an estimated 54% of Slovakia's electricity in 2001. The Jaslovske Bohunice plant at Trnava has four, 408-MW reactors that are functioning, and one decommissioned reactor. The plant's two older reactors are due to be decommissioned in 2006 and 2008 as part of the energy chapter of Slovakia's accession agreement with the EU. The Mochovce plant has two 412-MW reactors in operation and two uncompleted reactors. Construction of these reactors has been halted, as government financial support for them has ended.

The Paks nuclear power plant in Hungary consists of four Soviet-design, second generation VVER-440/213 reactor units. There are plans not only to expand generation capacity of the reactors by 8% but also to extend the life-cycle of the reactor units by 20 years. The normal life span of the four units ends between 2012 and 2017. In order to ensure continuous operation of the plant, the necessary modernization improvements would have to begin in 2007.

Table 1. Economic and Demographic Indicators for North Central Europe

Country	Nominal Gross Domestic Product (GDP), 2003E (Billions of U.S. $)	Real GDP Growth Rate, 2003E	Nominal GDP per capita, 2002E (U.S. $)	Population, 2003E (Millions)
Poland	207.6	3.7%	5,390	38.5
Czech	85	2.9%	8,362	10.2
Slovak	33	4.2%	6,039	5.4
Hungary	82.8	2.9%	8,195	10.1
Total	**408.4**	***3.5%**	***6,358**	**64.2**

* Weighted Average

Source: Global Insight

Table 2. Energy Consumption and Carbon Dioxide Emissions in North Central Europe

Country	Total Energy Consumption, Quadrillion Btu,	Oil Consumption, Thousand Barrels per day, 2003*	Natural Gas Consumption, Billion Cubic	Coal Consumption, Million Short	Electricity Consumption, Billion kilowatthours,	Energy-Related CO_2 Emissions, Million Metric Tons of Carbon

	2002E		Feet, 2002E	Tons, 2002E	2002E	Dioxide, 2001E
Poland	3.35	424	479	149	117	268
Czech	1.58	186	337	65	55	104
Slovak	0.84	81	270	10	24	38
Hungary	1.05	137	473	15	36	56
Total	**6.82**	**828**	**1,559**	**239**	**232**	**466**

**Consumption numbers are preliminary*

Source: Energy Information Administration

Table 3. Energy Supply Indicators in North Central Europe

Country	Crude Oil Reserves, Million Barrels, 1/1/04E	Natural Gas Reserves, Trillion Cubic Feet, 1/1/04E	Coal Reserves, Million Short Tons, 2001E	Total Oil Production, Thousand Barrels per day, 2003E	Natural Gas Production, Billion Cubic Feet, 2002E	Coal Production, All Types, Million Short Tons, 2002E	Electricity Generation, Billion Kilowatthours, 2002E	Crude Oil Refining Capacity, Thousand Barrels per Day, 1/1/04
Poland	96.4	5.83	24,427	23.5	196	177.8	133.9	350
Czech	15	0.14	6,259	13.2	5.4	70.4	71.8	198
Slovak	9	0.53	190	3.5	7.5	3.75	30.5	115
Hungary	102.5	1.2	1,209	45.7	110	14.2	34.1	161
Total	**222.9**	**7.7**	**32,085**	**85.9**	**318.9**	**266.2**	**270.3**	**824**

Sources: Energy Information Administration and the Oil and Gas Journal

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Sources for this report include: AES; BBC; Carpathian Resources; Ceské energetické závody (ČEZ); CIA World Factbook; Czech News Agency; Dow Jones; EBRD; European Commission; Global Insight; E.ON Energie; Economist Intelligence Unit; EdF; EnBW; Financial Times; Gaz de France; Global Power Report; Hungarian News Agency; International Energy Agency; MERO CR Pipeline; Mol; Pern; Petrobaltic; Petroleum Economist; PKN-Orlen; Platts EU Energy; Platts Oilgram; Polish Ministry of Treasury; Polish News Bulletin; Polish Oil and Gas Company; Prague Business Journal; Reuters; Ruhrgas; RWE; Slovak Spectator; Slovenské elektrárne (SE); Slovenský plynárenský priemysel (SPP); The Oil and Gas Journal; Transgas; Transpetrol; U.S. Department of Commerce; U.S. Energy Information Administration; Warsaw Voice; Weekly Petroleum Argus; World Markets Analysis; Yukos.

LINKS

For more information from EIA, please see:
EIA - Country Information on Poland
EIA - Country Information on the Czech Republic
EIA - Country Information on the Slovak Republic
EIA - Country Information on Hungary

Links to other U.S. government sites:
CIA World Factbook - Poland
U.S. Department of Energy's Office of Fossil Energy, Energy Overview of Poland
U.S. Department of Energy's Office of Fossil Energy, Poland Energy Law
U.S. State Department's Consular Information Sheet - Poland
U.S. State Department's Background Notes on Poland

U.S. Department of State Background note on Slovakia
U.S. Department of State background note on Hungary
U.S. Department of State background note on the Czech Republic

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CZECH REPUBLIC

Coal

Mostecká uhelná společnost
OKD
Sokolovské uhelné

Electricity

Appian Group
ECKGenerating
Operátor trhu s elektřinou (Electricity Market Operator)
Plzeňská teplárenská
ČEPS (Czech transmission system operator)

Distributors (electricity)

Jihomoravská energetika (JME)
Jihočeská energetika (JČE)
Pražská energetika (PR)
Severočeská energetika
Severomoravská energetika
Středočeská energetická (STE)
Východočeská energetika (VČE)
Západočeská energetika (ZČE)

Government

Czech Statistical Office
Czech Environment Ministry
Czech Energy Agency
Energy Regulatory Office
Ministry of Industry and Commerce
State Material Reserves Administration
State Energy Authority
State Office for Nuclear Safety

Oil and Natural Gas

Ceská rafinérská
Central Gas Dispatching
MERO CR Pipeline

Distributors (natural gas)

Jihočeská plynárenská
Jihomoravská plynárenská
Pražská plynárenská

Severočeská plynárenská
Severomoravská plynárenská
Středočeská plynárenská
Východočeská plynárenská
Západočeská plynárenská
Transgas (Natural gas supplier and transporter)

HUNGARY
Electricity
E.ON Hungária
Hungarian Power System Operator (Mavir)
Magyar Villamos Művek Rt. (MVM Rt., Hungarian Power Companies Ltd.)
Országos Villamostávvezeték Rt. (OVIT Rt., National Power Line Company Ltd.)

Power plants
AES Tisza II Hőerőmű (AES Tisza II P.P.)
Bakonyi Erőmű Rt. (Bakony P.P.)
Mátrai Erőmű Rt. (Mátra P.P.)
Pannonpower Rt.
Paksi Atomerőmű Rt. (Paks Nuclear P.P.)
Vértesi Erőmű Rt. (Vértes P.P.

Distributors (electricity)
Budapesti Elektromos Művek Rt. ELMÜ (Budapest Electric Supply Co. Ltd.)
Észak-dunántúli Áramszolgáltató Rt. ÉDÁSZ (North-West Hungarian Electricity Supply Co. Ltd.)
Észak-magyarországi Áramszolgáltató Rt. ÉMÁSZ (North-Hungarian Electricity Supply Co. Ltd.)
Dél-dunántúli Áramszolgáltató Rt. DÉDÁSZ (South-West Hungarian Electricity Supply Co. Ltd.)
Dél-magyarországi Áramszolgáltató Rt. DÉMÁSZ (South-Hungarian Electricity Supply Co. Ltd.)
Tiszántúli Áramszolgáltató Rt. TITÁSZ (East-Hungarian Electricity Supply Co. Ltd.)

Government
Hungarian Energy Office (Magyar Energia Hivatal)
Hungary's Competition Office (Gazdasági Versenyhivatal)
Ministry of Economy and Transport (Gazdasági és Közlekedési Minisztérium)
Hungarian Privatization and State Holding Company

Oil and Natural Gas
MOL
Pogo Producing Company

Distributors (natural gas)
Ddgáz
Dégáz
Egáz
Fogáz
Kögáz
Tigáz

POLAND
Coal

Katowicki Holding Węglowy
Kompania Węglowa
Kopalnia Węgla Kamiennego Budryk
Weglokoks (coal exporter)

Electricity
Elektrociepłownie Warszawskie (CHP producer)
Grupa Energetyczna ENEA
Południowy Koncern Energetyczny
Polish Power Grid Company (Polskie Sieci Elektroenergetyczne SA)

Distributors (electricity)
GZE
STOEN

Government
Polish Geological Institute

Oil and Natural Gas
CalEnergy
EuroPol Gaz (Yamal natural gas pipeline operator - Polish section)
FX Energy
Grupa Lotos
Naftobazy (petroleum logistic company)
Naftoport (Gdańsk oil terminal operator)
Pern (inland oil pipeline and storage operator)
Petrobaltic
PKN Orlen
Polish Oil and Gas Company

Distributors (natural gas)
Gdańsk
Poznán
Swierklany
Tarnów
Warsaw
Wrocław

Refineries
Czechowice
Trzebinia

SLOVAKIA
Electricity
Slovenské elektrárne
Slovenska elektrizacna prenosova sustava (Slovak Power Grid Operator)

Distributors (electricity)
Stredoslovenská energetika (Central Slovakia Region)
Východoslovenská energetika (Eastern Slovakia Region)

Západoslovenská energetika (Western Slovakia Region)

Oil and Natural Gas

Nafta Gbely (natural gas storage)
Slovenský plynárenský priemysel (SPP) (Natural gas distributor, supplier, and transporter)
Slovnaft
Transpetrol

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Contact: Charles Esser
charles.esser@eia.doe.gov
Phone: (202) 586-6120
Fax: (202) 586-9753

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