

COUNTRY ANALYSIS BRIEFS

North-Central Europe

Last Updated: February 2006

General Background

On May 1, 2004, the Visegrad countries became members of the European Union.

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 joined NATO in 2004. 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; absorbing the costs from cleaning up heavily-polluting industries; and adapting industries and services to EU standards.

Regional Energy Issues

The Visegrad countries are important transit centers for energy exports from Russia to Western Europe.

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 2003, coal accounted for 45.3 percent 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 the Visegrad countries privatize their energy markets in line with EU directives, some government officials have argued against giving up control in state energy companies, claiming that 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 Europe. The strategic importance of the Visegrad countries, however, lies largely in the crude oil and natural gas pipelines which traverse the region ([see EU oil pipeline map](#)) 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-bbl/d capacity northern branch brings oil to Poland and Germany. The 1.2-million-bbl/d 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. However, the 110-mile segment of the Adria mainline between Omisalj and Sisak, Croatia, can only accommodate imports. This section would need to be reconstructed in order to allow both the importing and exporting of crude oil.

The Odessa-Brody pipeline was constructed by the Ukrainian government several years ago. It runs through Ukraine, from the Odessa Black Sea maritime terminal in the south to the Brody connection with the Druzhba pipeline in the north. The original idea in building the pipeline was to allow oil from the [Caspian](#) Sea region to be transported to Brody, for Druzhba pipeline shipment to Slovakia, Hungary, and onward. There had also been discussion of extending the Odessa-Brody pipeline to Gdansk, Poland, allowing Caspian crude oil to reach Poland, Germany, and the Baltic states. However, Ukraine had not signed up any shippers before building the pipeline and it wound up sitting idle for three years. At this point, the Ukrainian government arranged for Russian oil companies to run the pipeline in the opposite direction, taking their oil south from the Druzhba connection at Brody and transporting it to Odessa for loading onto tanker ships in the Black Sea. The Ukrainian oil company Naftogaz Ukrainy announced in March 2005 that the Russian shippers were not supplying as much oil to the pipeline as they had agreed to. The pipeline reversing agreement had been arranged for up to 0.2 million bbl/d. In February 2005, Ukraine set up a working group with Poland to plan for running the pipeline in the original direction (running north from Odessa to Brody) and extending the northern end into Poland. It has been estimated that it would cost \$400-\$600 million to build the pipeline extension, and Ukraine would have to pay \$100 million to TNK-BP to reverse the line. Polish pipeline operator PERN has estimated that once the project is funded it could come on stream within three years. It is not clear whether the project will move forward in the near future.

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 importance of gas pipelines was highlighted on January 1, 2006, when Gazprom briefly reduced gas supplies to Ukraine as part of a pricing dispute. Gas resumed its flow as soon as a new price was agreed, but the downstream supply disruption in Western Europe underscored the need for pipeline supply alternatives. The Yamal-Europe 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, had been 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 percent of the natural gas consumed in Western Europe and about 70 percent 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

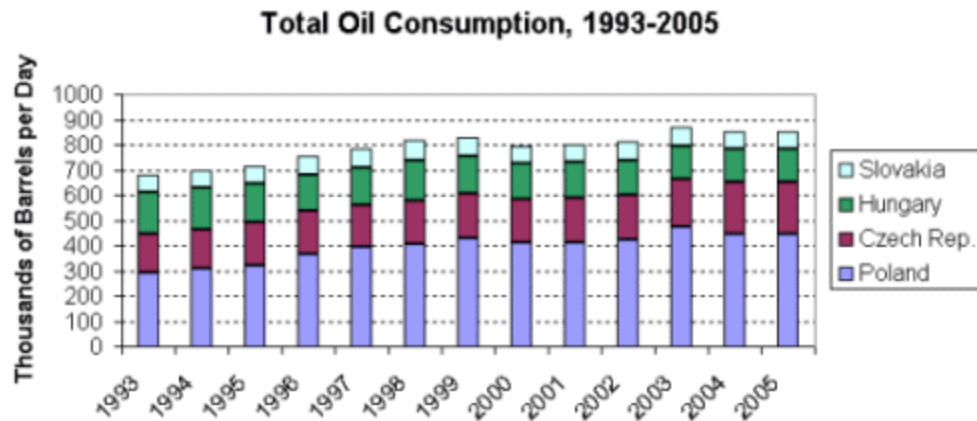
The Visegrad region shares the [CENTREL](#) electricity system, which links the Czech Republic, Slovakia and Hungary. In 1995, the CENTREL system was connected with Western Europe's grid. Poland also has electricity connections with Ukraine and Belarus. Currently, both north-south and east-west connections 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 region is heavily dependent on oil imports, mostly from Russia.

The Visegrad countries have total proven oil reserves of approximately 222 million barrels, with 102 million barrels of that located in Hungary, as of January 2006, according to the Oil and Gas Journal. Poland has proven reserves of 96 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 105,460 bbl/d in 2005. Hungary is the largest producer of oil in the Group, with approximately 45,190 bbl/d, followed by Poland with 33,550 bbl/d, the Czech Republic with 15,240 bbl/d, and Slovakia with 11,480 bbl/d.



Source: EIA, International Energy Annual 2003

In 2005, the Visegrad countries met only 12.4 percent of their total oil demand of 853,540 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.

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. 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 Korôa, 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 percent year-on-year. Internationally, MOL had been involved in a joint-venture with Russia's Yukos to explore and develop the 145-million-barrel Zapadno-Malobaik oil field in Western Siberia, with each owning 50 percent. However, in September 2005, MOL took OAO Russneft as their new partner, replacing Yukos. This replacement was approved by the Federal Antimonopoly Service of the Russian Federation, with all the contractual provisions of the joint venture remaining unchanged. At the end of 2004, it was estimated that MOL's share of the net proven reserves is 28.1 million barrels. MOL believes that full exploration of the site could bring their share up to as much as 70 million barrels.

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&O 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 percent ownership in PERN, the country's oil transportation company, and a 35 percent stake in petroleum logistic company Naftobazy. Nafta Polska reportedly transferred 10 percent stakes in three southern refineries (Czechowice, Jaso, and Nafta Glimar) and a 75 percent stake in Petrobaltic to GL in March 2004. The Polish government currently controls directly and indirectly 85 percent 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 percent remains controlled by the Polish government, signed a declaration of intent on strategic cooperation with Hungary's MOL in November 2003. There were merger discussions between the two companies, but in March 2005, PKN Orlen announced that no merger would take place.

Meanwhile both companies have been increasing their strategic presence regionally. In July 2003, Mol acquired a 25 percent 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 percent stake. In June 2004, PKN Orlen purchased a 63 percent 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. Ceska rafinárska 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. With this unit, along with a diesel desulfurization unit that is under construction, Mol's refinery is able to produce low-sulfur gasoline and diesel required by the EU since 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, had been owned 51 percent by the Slovak Ministry of Economy and 49 percent by Yukos. However, in December 2005, the Slovakian government and Yukos agreed that Yukos's portion would be sold to a new owner. The Slovakian government will be selecting that new owner. Previously Transpetrol had negotiated 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 would 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 would enable OMV to import directly Russian oil, which the company previously imported solely from the Trieste oil terminal in Italy. It is not clear whether this pipeline project will proceed.

Strategic Oil Reserves

As a prerequisite for admission to the EU, each of the Visegrad countries had to provide for 90 days of oil storage capacity. In November 2002, Hungary and Slovakia signed an agreement on an oil storage partnership, which allows 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, which is part of bringing the country in line with EU regulations.

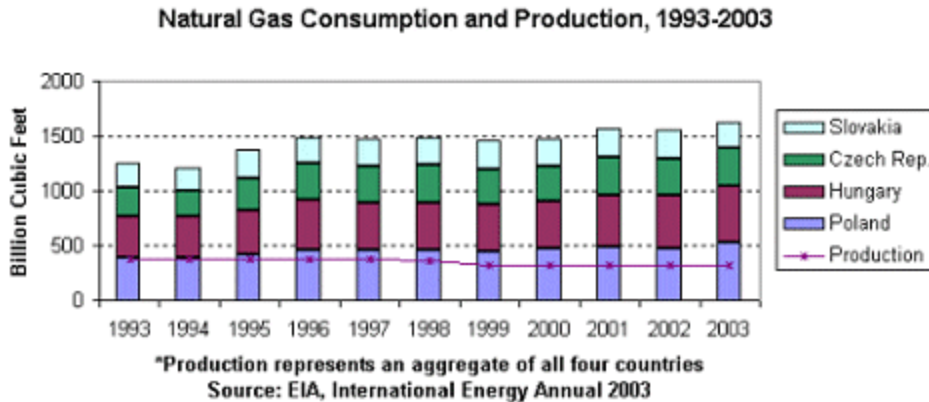
Natural Gas

Proven reserves of natural gas are also minimal in the Visegrad countries, with a combined total of 7.7 Tcf, as of January 2006. Poland, with roughly 75 percent 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 2003, Poland produced 200 Bcf, which met 38 percent of its domestic natural gas demand. Hungary produced 100 Bcf, accounting

Increased consumption of natural gas is key to meeting EU environmental standards.

for almost a fifth of its demand. Slovakia produced only 10 Bcf and the Czech Republic just 5 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 environmental regulations. In 2003, natural gas represented approximately 22.3 percent of the Group's total primary energy consumption, up from 16.1 percent 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 percent 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 country's 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 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. Bartimpex announced its continued interest in the project in December 2005, although potential funding is still unclear.

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, for the years 2003-2022. The Polish government reportedly is looking to amend the current contract in order to allow Poland to re-export natural gas to other surrounding countries. This would likely be similar to an 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 percent share. A consortium of Polish firms called Gas Trading owns the remaining 4 percent. Getting the pipeline up to capacity required the construction of three additional compressor plants – Szamotuly, Ciechanów and Zambrów. The first two compressor plants are currently in operation and the third (Zambrów) is expected to be in operation in 2006. Plans to build a second pipeline (Yamal II) have 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 was to 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. Both parties reportedly have been considering revising down natural gas deliveries, as well as ways to re-export natural 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 2011. In January 2006, OMV announced that the joint venture was in the process of signing up potential buyers for the gas. It is planned that the pipeline would run 2,000 miles across Turkey to Austria via Bulgaria, Romania, and Hungary. The line would cost an estimated \$5.35 billion to build.

Sector Liberalization

Natural gas liberalization along EU requirements is proceeding at different rates in the Visegrad countries. In 2002, an EU Directive on natural gas ([2003/55/EC](#)) was adopted under which industrial and commercial users were enabled to choose their suppliers by July 1, 2004. Under the Directive, all customers should be able to choose their suppliers by July 2007. The Directive required 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 was opened to competition among gas suppliers in July 2004. This deregulation included industrial and commercial sales of gas, but excluded household consumers. This means that each customer (except from in the residential sector) has the right to choose its supplier, as opposed to being assigned a utility by the government. The opening of the natural gas market for all customers will follow in July 2007. Slovenský plynárenský priemysel (SPP) (EdF 24.5 percent, Ruhrgas 24.5 percent and Slovak National Property Fund 51 percent) 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 called for partial liberalization of the country's gas market, allowing all non-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 percent 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 has continued 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 was opened to competition starting January 1, 2005, for all customers with metering systems to continuously record their gas usage. This deregulation was extended to all customers except households on January 1, 2006. The market is scheduled to open to all customers, including households, starting on January 1, 2007. Natural gas transmission has been unbundled and gas distribution is scheduled to be unbundled by December 31, 2006. Much of the country's natural gas sector has already been privatized, with Germany's RWE holding a 100 percent 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 to competition, according to the schedule outlined by the EU Directive on natural gas.

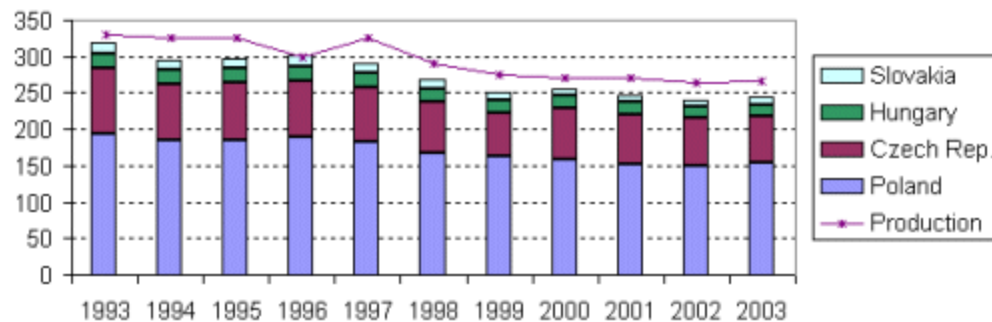
Coal

Coal is the dominant fuel in the region, but is declining in market share.

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 percent of the Group's combined total primary energy consumption and in 2003, for 45.3 percent. Poland is the exception, where coal accounted for 93 percent of the country's primary energy production in 2003, and remains one of the country's most important employers. Coal also remains significant in the Czech Republic, where it constituted 44.2 percent of the primary energy consumption in 2003.

The region holds 25,442 million short tons (Mmst) of proven recoverable coal reserves, of which Poland has 15,432 Mmst. The Czech Republic contains 6,120 Mmst; Hungary 3,700 Mmst; and Slovakia 190 Mmst. In 2003, the region produced 266.2 Mmst, of which Poland was responsible for 67 percent with 177.8 Mmst. The Czech Republic had 70.4 Mmst, Hungary had 14.2 Mmst, and Slovakia had 3.4 Mmst.

Coal Consumption, 1993-2003



*Production represents an aggregate of all four countries.

Source: EIA, International Energy Annual 2003

Coal consumption has generally decreased in the region over the past ten years. Between 1993 and 2003, coal consumption fell by 21 percent in Poland, 26 percent in the Czech Republic, 18 percent in Hungary, and 37 percent in Slovakia. In 2003, total coal consumption for the region was approximately 244 Mmst, an increase of 2.1 percent 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 is closing inefficient mines and reducing employment on a voluntary basis. For those who voluntarily leave, the government is providing various benefits, such as retraining, assistance in finding employment, social hardship allowances, and early retirement pensions. The program also aims 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 percent 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 HUT, 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).

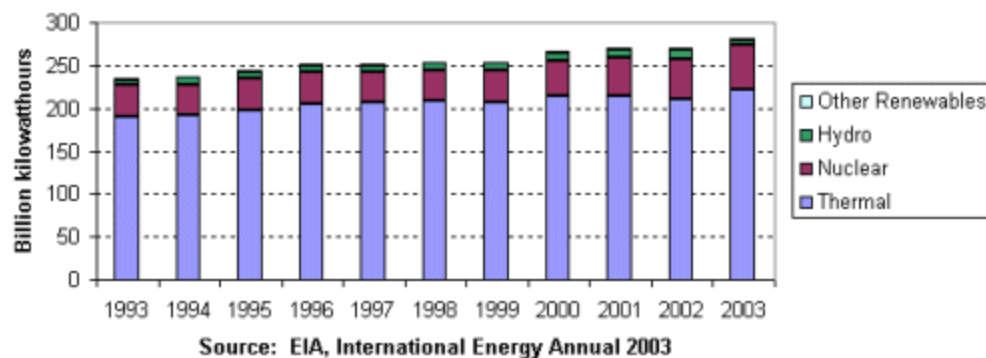
Electricity

Governments in the region have been liberalizing their electric utility sectors.

In 2003, the Visegrad Group generated 281.4 billion kilowatthours (Bkwh) of electricity. Of this total, thermal sources (oil, natural gas and coal) accounted for 78.5 percent of total power production, followed by nuclear with 18.5 percent, hydro 2.4 percent and renewables 0.6 percent. The Group's total consumption increased slightly year-on-year, to 243.0 Bkwh. Overall the Group was a net exporter of power, with the Czech Republic and Poland having the largest net exports of 16.2 Bkwh and 10.1 Bkwh, respectively, in 2003. Hungary, however, was a net importer, mostly from Slovakia.

In line with EU Directives, the Visegrad countries have been liberalizing their 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 electricity markets and the privatization of the large state-owned electricity power companies.

Regional Electricity Generation by Source, 1993-2003



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 percent and electricity produced from renewables to 22.1 percent 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 consumed from renewables to 8 percent, 3.6 percent, 7.5 percent and 31 percent of total gross consumption, respectively (these numbers are preliminary), in order for an enlarged EU to meet its 22.1 percent target by 2010.

Sector Organization

Poland

The Polish power generation sector is the largest in the Visegrad Group. In 2003, Poland's installed electric capacity was 29.5 gigawatts (GW), generating 141.3 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 sector, consolidation has focused on creating two large companies, Poludniowy 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 sector, 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 coming years, the government plans to begin floating shares in the newly consolidated distributors and power companies, with a 35 percent share in ENEA and a 35 percent-40 percent share in PKE likely to be offered. Stakes in BOT and three distributors –W5, L6 and K7 – are also likely to be offered. The government has privatized only two of distributors: STOEN to RWE; and Górnoślaskiego Zakładu Elektroenergetycznego (GZE) to Sweden's Vattenfall.

Poland began liberalizing its electricity sector in 1998. As of now, the market is completely open to competition for choosing an electricity provider. 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 2003, Hungary generated approximately 32.2 Bkwh while consuming 40.0 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 percent of the country's power in 2003. 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 percent, MVM 25.5 percent, and EnBW 21.6 percent); the 2,000-MW oil/natural gas-fired Dunamenti plant, operated by Belgium-based Tractebel; 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 5MW 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 2003, electricity production in the country rose 41 percent, to 78.2 Bkwh from 55.6 Bkwh, while electricity consumption increased 13.9 percent, to 56.5 Bkwh from 49.6 Bkwh. In 2003, the country's net power exports were an estimated 16.2 Bkwh, primarily to Germany, Austria and Slovakia. Electricity exports have become increasingly important for the Czech Republic, particularly since 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 to 6 percent as of the year 2010 and about 4 to 8 percent as of the year 2020.

State majority-owned České energetické závody (CEZ) is the dominant power company in the Czech Republic, supplying 74 percent 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. CEZ also holds majority stakes in 5 of country's 8 regional electricity distributors. Germany's E.ON owns and operates two regional distributors – JME and JCE. In May 2004, in accordance with country's anti-monopoly regulations, CEZ announced a tender for the company's 34 percent stake in Pražská energetika (PR) (regional distributor for Prague). In 2004, J & T Group was selected, buying the CEZ share for \$171 million. Other stakeholders in PR include a 50.8 percent stake owned jointly by Energie-Baden Württemberg (EnBW) and RWE and minority stake by the city of Prague. The anti-monopoly authorities also require CEZ to dispose of its majority stake (97.72 percent) in Stredoceska energetická (STE) and 34 percent minority stake in CEPS, the country's

transmission grid operator. In June 2003, the government's attempt to tender its 67 percent stake in CEZ was temporarily suspended, mainly due to liabilities surrounding the Temelín plant (more detail below). Other major power producers in the Czech Republic include U.S.-based Appian Energy, ECK Generating and Elektrárny Opatovice (International Power).

Slovakia

In 2003, Slovakia's installed electric generating capacity was about 7.2 GW. During the same year, the country consumed 25.2 Bkwh while producing 29.7 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 2003, nuclear power plants produced 57 percent the country's electricity while thermal plants provided 31 percent and hydro 12 percent. The addition of the nuclear power plants has allowed Slovakia to become a net exporter of electricity, beginning in 1999.

The dominant power producer in Slovakia is Slovenské elektrárne (SE), accounting for an estimated 91 percent 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. SE also operates 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. In 2004, the government tendered its 66 percent stake in SE. Enel of Italy was selected as the buyer. However, completing the sale has proved to be a very lengthy process which is expected to be concluded in 2006. The transaction has been complicated by SE's 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 conditions for the sale were structured during a long negotiating period. It is expected that Enel will be investing 1.9 billion euros in SE.

In March 2004, the Slovak government tendered its 90 percent stake in the country's only other significant power producer, Paroplynový 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 percent stake in PE. On June 2, 2004, the Slovak government agreed to privatize its 51 percent stake in the country's largest distributor Západoslovenská energetika (ZSE), with the stake split between a direct sale of 41 percent to E.ON and the remaining 10 percent 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 percent stake in ZSE in September 2002, but sold a 9 percent 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 percent 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, located only 37 miles from the Austrian border, for nuclear operation. 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, Dukovany and Temelín, the two nuclear plants, comprised 30 percent of CEZ's installed generation capacity and generated 42 percent 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 electricity can be conserved 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 57 percent of Slovakia's electricity in 2003. The Jaslovské 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 percent 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.

Tables

Table 1. Economic and Demographic Indicators for North Central Europe

Country	Nominal Gross Domestic Product (GDP), 2005E (Billions of U.S. \$)	Real GDP Growth Rate, 2005E	Nominal GDP per capita, 2005E (U.S. \$)	Population, 2005E (Millions)
Poland	301.7	3.3 percent	7,815	38.6
Czech	123	5.0 percent	12,055	10.2
Slovak	46.3	5.4 percent	8,571	5.4
Hungary	109.3	3.9 percent	10,925	10
Total	580.3	*3.9 percent	*7,799	64.2

* Weighted Average
Source: Global Insight

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

Country	Total Energy Consumption, 2003E (Quadrillion Btu)	Oil Consumption, 2005E (Thousand Barrels per day)	Natural Gas Consumption, 2003E (Billion Cubic Feet)	Coal Consumption, 2003E (Million Short Tons)	Electricity Consumption, 2003E (Billion kilowatt-hours)	Energy-Related CO ₂ Emissions, 2003E (Million Metric Tons of Carbon Dioxide)
Poland	3.65	447	528	153	121	286
Czech	1.74	206	340	65	57	112
Slovak	0.8	71	246	10	25	38
Hungary	1.07	129	515	16	40	58
Total	7.26	853	1,629	244	243	494

Source: Energy Information Administration

Country	Crude Oil Reserves, Million Barrels, 1/1/06E	Natural Gas Reserves, Trillion Cubic Feet, 1/1/06E	Coal Reserves, Million Short Tons, 2003E	Total Oil Production, Thousand Barrels per day, 2005E	Natural Gas Production, Billion Cubic Feet, 2003E	Coal Production, All Types, Million Short Tons, 2003E	Electricity Generation, Billion Kilowatt-hours, 2003E	Crude Oil Refining Capacity, Thousand Barrels per day, 1/1/06
Poland	96	5.82	15,432	37.2	200	177.8	141.3	467
Czech	15	0.14	6,120	15	5	70.4	78.2	198
Slovak	9	0.53	190	12.6	10	3.4	32.2	115
Hungary	102	1.21	3,700	45	100	14.5	29.7	161
Total	222	7.7	25,442	109.8	315	266.2	281.4	941

Sources: Energy Information Administration and the Oil and Gas Journal

Links

EIA Links

- [EIA - Country Information on Poland](#)
- [EIA - Country Information on the Czech Republic](#)
- [EIA - Country Information on the Slovak Republic](#)
- [EIA - Country Information on Hungary](#)

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- [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](#)

Czech Republic

- [Mostecká uhelná společnost](#)
- [OKD](#)
- [Sokolovské uhelné](#)

- [Appian Group](#)
- [ECKGenerating](#)
- [Operátor trhu s elektřinou \(Electricity Market Operator\)](#)
- [Plzeňská teplárenská](#)
- [CEPS \(Czech transmission system operator\)](#)

- [Jihomoravská energetika \(JME\)](#)
- [Jihočeská energetika \(JCE\)](#)
- [Pražská energetika \(PR\)](#)
- [Severočeská energetika](#)
- [Severomoravská energetika](#)
- [Středočeská energetická \(STE\)](#)
- [Východočeská energetika \(V\)](#)
- [Západočeská energetika](#)

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[Transgas \(Natural gas supplier and transporter\)](#)

Hungary

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[Hungarian Power System Operator \(Mavir\)](#)
[Magyar Villamos Muvek Rt. \(MVM Rt., Hungarian Power Companies Ltd.\)](#)
[Országos Villamostávvezeték Rt. \(OVIT Rt., National Power Line Company Ltd.\)](#)

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[Bakonyi Fromu Rt. \(Bakony P.P.\)](#)
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[Pannonpower Rt.](#)
[Paksi Atomeromu Rt. \(Paks Nuclear P.P.\)](#)
[Vértesi Fromu Rt. \(Vértes P.P.\)](#)

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[Észak-magyarországi Áramszolgáltató Rt. ÉMÁSZ \(North-Hungarian Electricity Supply Co. Ltd.\)](#)
[Dél-dunántúli Áramszolgáltató Rt. DÉDÁSZ \(South-West Hungarian Electricity Supply Co. Ltd.\)](#)
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[Hungary's Competition Office \(Gazdasági Versenyhivatal\)](#)
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Poland

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

[GZE](#)
[STOEN](#)

[Polish Geological Institute](#)

[CalEnergy](#)

[EuroPol Gaz \(Yamal natural gas pipeline operator - Polish section\)](#)

[FX Energy](#)

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[Slovenské elektrárne](#)

[Slovenska elektrizacna prenosova sustava \(Slovak Power Grid Operator\)](#)

[Stredoslovenská energetika \(Central Slovakia Region\)](#)

[Východoslovenská energetika \(Eastern Slovakia Region\)](#)

[Západoslovenská energetika \(Western Slovakia Region\)](#)

[Nafta Gbely \(natural gas storage\)](#)

[Slovenský plynárenský priemysel](#)

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