

# 2010

# OIL & GAS SECURITY

Emergency Response of IEA Countries

## Czech Republic

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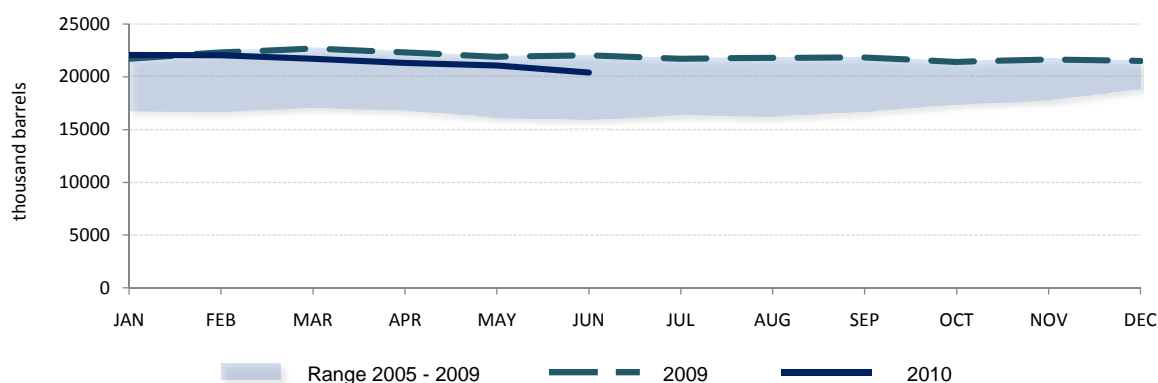
International  
Energy Agency

# Czech Republic

## Key Oil Data

	1985	1990	1995	2000	2005	2007	2008	2009
<b>Production (kb/d)</b>	-	-	6.0	7.5	11.6	7.3	7.4	6.8
<b>Demand (kb/d)</b>	208.6	184.1	168.3	169.8	212.9	211.2	211.4	206.0
<i>Motor gasoline</i>	24.7	26.9	37.9	42.9	47.6	48.6	46.6	47.3
<i>Gas/diesel oil</i>	77.1	68.9	54.4	57.6	78.7	84.8	84.0	85.6
<i>Residual fuel oil</i>	66.4	41.8	22.9	16.2	9.5	7.2	6.1	5.6
<i>Others</i>	40.4	46.5	53.1	53.1	77.1	70.7	74.6	67.5
<b>Net imports (kb/d)</b>	208.6	184.1	162.3	162.3	201.3	203.9	204.0	199.2
<b>Import dependency</b>	100.0%	100.0%	96.4%	95.6%	94.6%	96.5%	96.5%	96.7%
<b>Refining capacity (kb/d)</b>	-	-	307	186	198	198	198	198
<b>Oil in TPES</b>	20.6%	17.9%	19.1%	18.7%	20.9%	20.3%	20.8%	-

## End-Month Total Oil Stock Levels<sup>1</sup> - Five Year Range

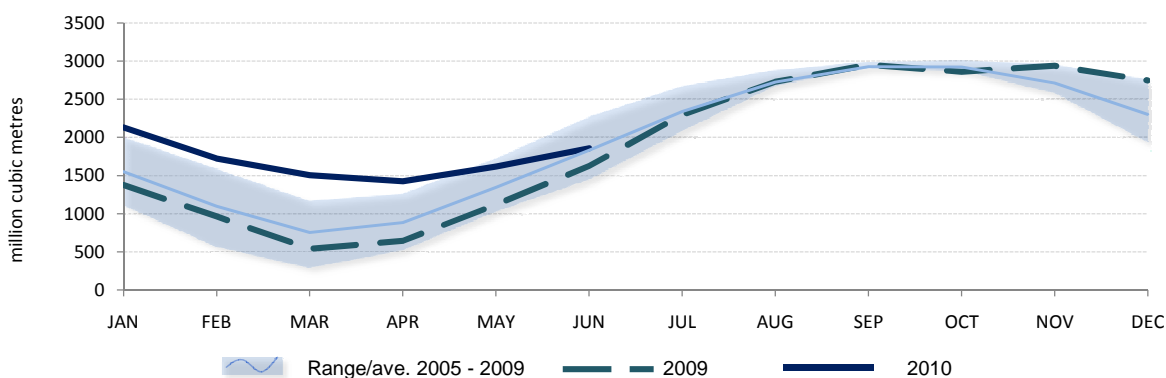


## Key Natural Gas Data

	1985	1990	1995	2000	2005	2007	2008	2009 *
<b>Production (mcm/y)</b>	315	262	254	219	201	201	199	176
<b>Demand (mcm/y)</b>	5 284	6 574	8 070	9 236	9 493	8 651	8 687	8 182
<i>Transformation</i>	2 204	1 259	1 197	1 533	1 603	1 145	1 006	-
<i>Industry</i>	1 333	3 027	3 218	3 206	2 984	3 089	3 033	-
<i>Residential</i>	743	1 150	1 931	2 524	2 839	2 494	2 511	-
<i>Others</i>	1 004	1 138	1 724	1 973	2 067	1 923	2 137	-
<b>Net imports (mcm/y)</b>	4 969	6 312	7 816	9 017	9 292	8 450	8 488	8 006
<b>Import dependency</b>	94.0%	96.0%	96.9%	97.6%	97.9%	97.7%	97.7%	97.8%
<b>Natural Gas in TPES</b>	8.6%	10.8%	16.0%	18.2%	16.7%	15.2%	15.6%	-

\* based on monthly data submissions to the IEA.

## End-Month Natural Gas Stock Levels<sup>2</sup> - Five Year Range



1 - Primary oil stocks on national territory; these exclude utility stocks and including pipeline and entrepot stocks where known.

2 - Stocks held on national territory, as reported to the IEA in monthly data submissions.

## OVERVIEW

Oil and natural gas represented respectively 21% and 16% of the Czech Republic's total primary energy supply in 2008. Over the next two decades, the country aims to reduce reliance on coal, while at the same time maintain its status of electricity net exporter through increased use of nuclear and renewable energy. Nevertheless, natural gas will have a growing role in the country's future supply mix, and unlike oil, demand for gas will continue to rise in the coming years.

Over 97% of oil demand is met by imports, largely in the form of crude oil from countries of the Former Soviet Union. Roughly two-thirds of this is delivered through the Druzhba pipeline, a supply line that has experienced interruptions and reduced flows in recent years. Natural gas supplies are equally dependant on imports, and over three-quarters of the 8.7 bcm in gas demand is met by imports from Russia. The Czech Republic also transits some 30 bcm/yr of Russian gas to other markets further west and expansion of storage and pipeline capacities will play an important role in transiting supplies from the Nord Stream pipeline project.

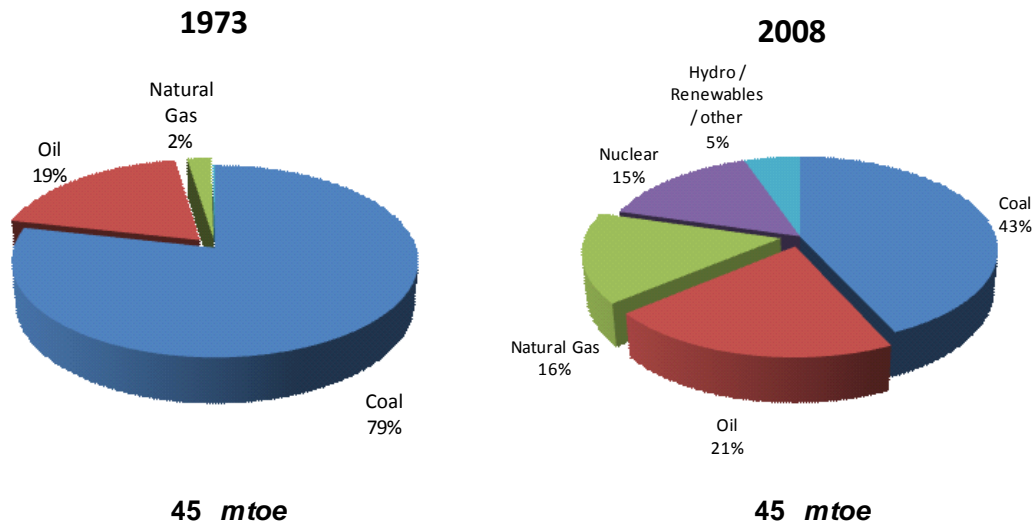
The Czech Republic's primary response measure in an oil supply disruption is the use of public oil stocks. The office which oversees the state's emergency reserves, the Administration of State Material Reserves (ASMR), is mandated to cover the entire Czech oil stockholding obligation to the European Union. The Chairman of the ASMR has the ability to draw down public stocks held in excess of this minimum level, without needing to seek government approval. This allows the Czech Republic to respond quickly to an IEA action or provide loans to relieve shortages in domestic supplies.

Concerning natural gas security, the country benefits from having a relatively high capacity of underground commercial gas storage. However, it does not have strategic reserves or fuel switching potential for responding to a gas crisis. Following the January 2009 gas crisis in Europe, the Czech government put in place over a short period of time and ahead of the 2009/2010 winter season a response plan for dealing with a reduction in gas supplies. This plan relies on coordination with industry in order to optimize gas storage use and regulate demand side measures in a crisis.

# 1. Energy Outlook

Oil and natural gas represented respectively 21% and 15% of the Czech Republic's total primary energy supply (TPES) in 2008. Oil's share in the supply mix has remained relatively stable over the past three decades, while the dominance of coal has been steadily reduced through increased energy supplies provided from natural gas and nuclear.

**Total Primary Energy Supply**



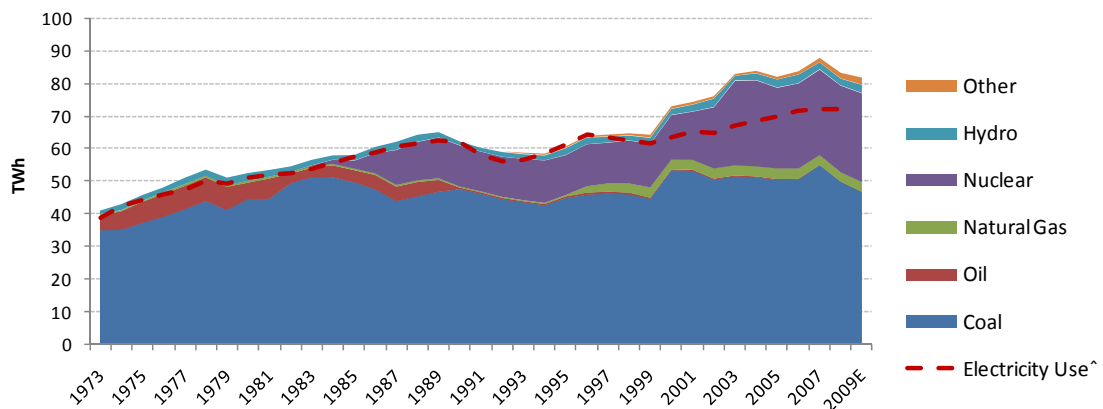
\*Data excludes electricity trade.

Source: Energy Balances of OECD Countries, IEA

Total energy use is expected to rise only gradually in the coming decades, yet the fuel mix of the Czech TPES will change as a result of a policy to move away from coal as the dominant fuel source. While maintaining the country's status as a net exporter of electricity, the Czech government seeks to diversify its energy supply by reducing the share of coal to less than a quarter by 2030, primarily to be replaced by nuclear and renewable energy sources.

Coal is used to generate 60% of the country's electricity production, while nuclear accounts for nearly one-third. Natural gas is the source of less than 4% of total electricity generation.

**Electricity Generation, by Fuel Source**



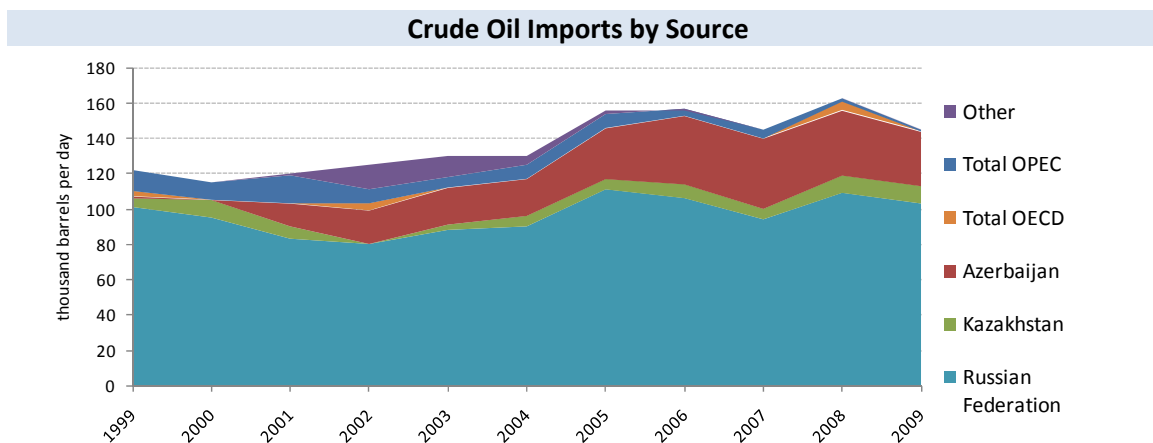
^ Total electricity consumption, including own use, distribution losses, pumped storage, etc.

Source: Energy Balances of OECD Countries, IEA

## 2. Oil

### 2.1 Market Features and Key Issues

The Czech Republic does not have significant oil reserves; indigenous production of both crude and NGLs, averaging around 7 thousand barrels per day (kb/d), equates to roughly 3% of the country's total oil demand. Producing fields are located in the south east of the country, in the South Moravian Region, and connected by pipeline to the Kralupy refinery.



Source: Monthly Oil Statistics, IEA

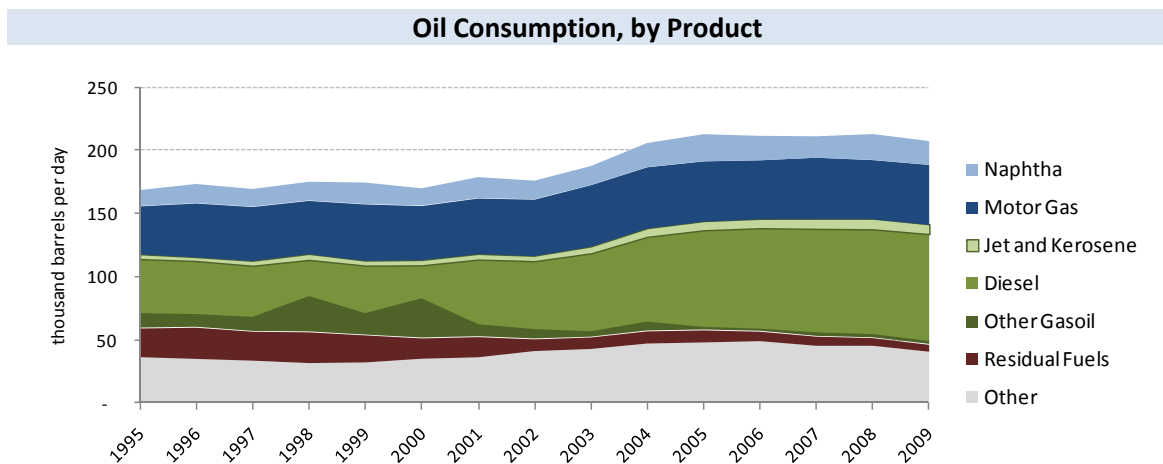
Czech refineries processed some 7.4 million tonnes (Mt) of crude oil, or roughly 148 kb/d, in 2009. Crude oil imports in the same year averaged just over 145 kb/d, supplied almost entirely by countries of the former Soviet Union. Russia is the single largest source of crude oil imports, providing nearly two-thirds of the total, while imports from Azerbaijan have steadily grown over the past decade and accounted for over 20% of total imports in 2009.

The transport sector accounts for two-thirds of all oil used in the Czech Republic. Diesel is the single largest component in the mix of oil products, representing 40% of total oil demand. Automotive diesel has a price advantage for consumers compared to gasoline due to a lower tax rate. Excise duties on diesel (EUR 0.399/litre in 2009) are lower than motor gasoline (EUR 0.475/litre). The accession to the European Union in 2004 is also seen as a significant contributing factor to the increase in diesel demand, as this has led to a greater number of heavy goods vehicles transiting the country.

Oil demand has remained flat since 2005, a year when demand peaked following a period of steady economic growth. Demand for diesel was the driving factor for increased oil demand in the period from 2000 to 2005, when total demand increased at an annual average rate of 4.6%. While total oil demand since 2005 has slightly decreased, demand for diesel has continued to grow and averaged +2.6% in the period of 2005 to 2009. Oil demand in the Czech Republic is not expected to grow significantly in the coming years.

Oil Demand (kb/d)			
	2005	2009	% change p.a.
LPG and Ethane	8	6	0.0%
Naphtha	22	19	-3.2%
Gasoline	48	47	-0.2%
Kerosene	7	8	1.4%
Diesel	76	84	2.6%
Heating/other Gasoil	3	2	-13.4%
Residual Fuels	10	6	-12.6%
Other Products	40	35	-3.5%
<b>Total Products</b>	<b>213</b>	<b>206</b>	<b>-0.8%</b>

Source: IEA Monthly Oil Statistics



Source: Monthly Oil Statistics, IEA

### Imports/exports and import dependency

Roughly 97% of the Czech Republic's oil needs are met by imports. Trade in refined products has been almost entirely conducted with neighbouring IEA member countries, principally the Slovak Republic. The Czech Republic imported 65 kb/d of refined products and domestically refined 167 kb/d in 2009.

### Oil Company Operations

The company MND (Moravské naftové doly) operates domestic crude oil production. MND is also involved in natural gas production and the building and operating of underground gas storage facilities.

The state-owned companies MERO and ČEPRO respectively operate the country's crude oil and refined product pipelines and storage terminals. While financially autonomous, both companies are fully owned by the state.

There are two companies operating in the Czech refining industry: Česká rafinérská, which operates the Litvínov and Kralupy refineries, and Paramo, operator of the refinery in Pardubice. Unipetrol, part of the PKN Orlen group since 2004, has full ownership of Paramo and a majority share in Česká rafinérská. The remaining shares in Česká rafinérská are held by Eni (32%) and Shell (16%).

Benzina, also fully owned by Unipetrol, is the largest operator of petrol stations in the country. The other main oil companies operating on the Czech retail and wholesale oil market include Eni/AGIP, OMV, Lukoil, Slovnaft, Shell, Total and Tesco stores. ČEPRO also owns and operates a network of 192 petrol stations. ExxonMobil no longer operates on the Czech market since selling its retail outlets to Eni in 2007. ConocoPhillips also no longer operates in the country, having sold its retail outlets to Lukoil in 2006 and its shares of Česká rafinérská to ENI and Unipetrol in 2007. Members of the Czech Association of Petroleum Industry and Trade (ČAPPO) represent roughly 90% of all oil products sold on the Czech market.



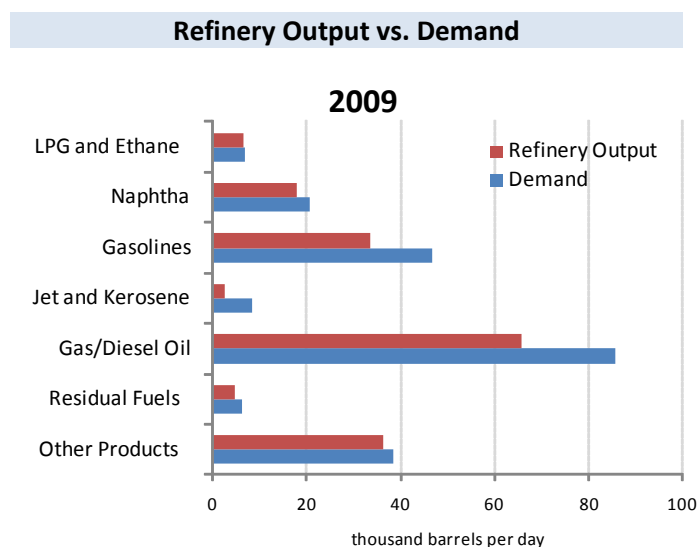
## 2.2 Oil Supply Infrastructure

### Refining

There are three refineries in the Czech Republic that contribute to a total crude atmospheric distillation capacity of 198 kb/d, or 9.7 million tonnes per year (Mt/year). The two main refineries, Litvínov and Kralupy, account for over 90% of this capacity. There is a fourth facility located in Kolín, near the Pardubice refinery, which manufactures lubes but has no atmospheric distillation capacity.

The Kralupy refinery processes sweet crudes (originating from Azerbaijan, Turkmenistan, and North Africa, as well as from domestic fields). The Litvínov and Pardubice refineries process Russian Export Blend.

Domestic refinery capacity is not sufficient for meeting oil demand in the country. Refined product output from the three domestic refineries totalled 167 kb/d in 2009. With the exception of jet kerosene, domestic refinery production was able to meet 80% or more of demand for each individual product. For example, domestic production of diesel was able to meet some 85% of domestic demand, while jet kerosene amounted to some 40%, requiring imports to meet the remaining share.



*Source: Monthly Oil Statistics, IEA*

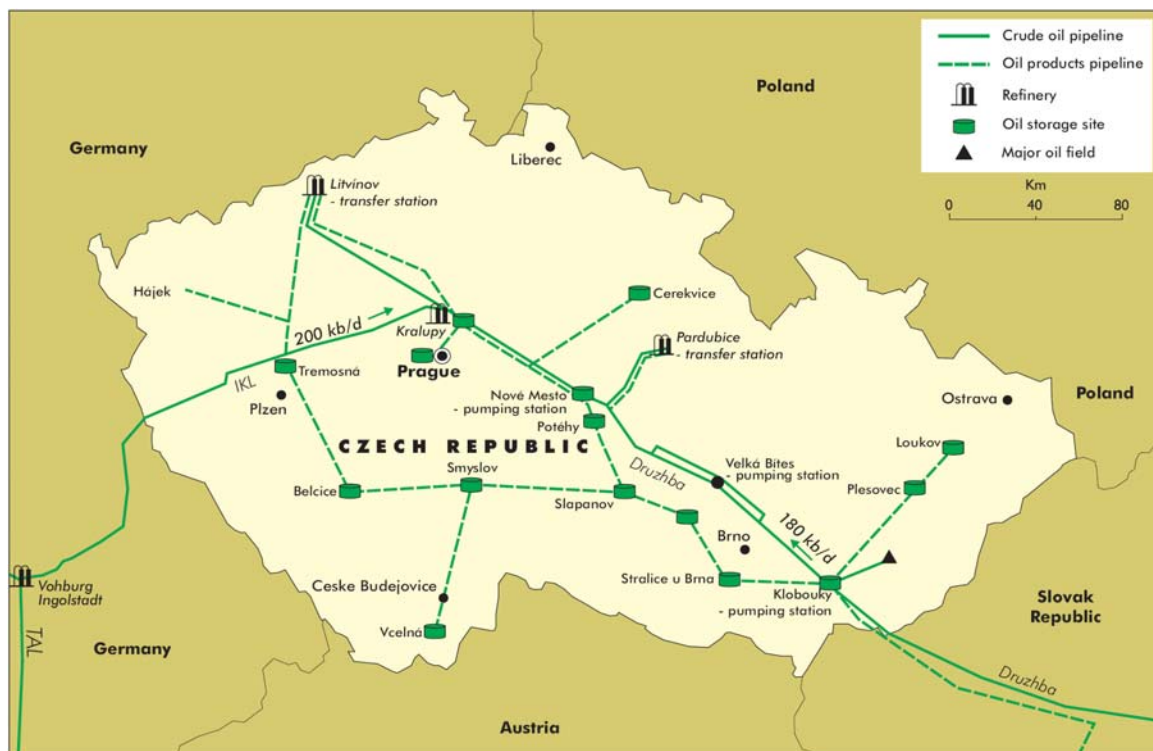
### Ports and Pipelines

An oil products pipeline network operated by the state-owned company ČEPRO connects the main consumer regions of the country to the domestic refineries. The pipeline system is also connected to the Slovnaft refinery in the Slovak Republic, which enables the import and export of oil products by pipeline. The flow direction of the product pipeline network within the Czech Republic is fully reversible.

The main crude oil supply channel is the Druzhba pipeline. Originating in Russia and transiting Belarus, Ukraine and Slovakia before terminating in the Czech Republic at Litvínov, this pipeline is able to deliver Russian and domestic crude oil to all three of the country's refineries. The Czech section of the Druzhba has a flow capacity of 9 Mt/year (~180 kb/d). The flow is fully reversible on the section between Kralupy and the Slovak border.

The Ingolstadt-Kralupy-Litvínov pipeline (IKL) has a capacity to bring 10 Mt/year (~200 kb/d) of crude oil via Germany. A new pump station was commissioned in 2009 which, when operational, will raise the line's capacity to 11.5 Mt/year (~230 kb/d). The IKL line connects in Germany to the international Trans-Alpine Pipeline (TAL), which originates in Trieste and offers the potential for diversification of imports. Approximately one-third of the Czech Republic's annual crude oil imports are typically sourced through the IKL.

## Oil Infrastructure Map



The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

The IKL/TAL route is an important alternative for the Czech Republic's crude oil supply flows, particularly in light of past incidence of reduced flows on the Družba pipeline. However, Czech users of the line have no shareholding in the joint venture of companies operating the TAL and therefore must compete for available spare capacity on the pipeline. The TAL has a capacity of 850 kb/d. However, it is the supply line of four refineries (one in Austria and three in Germany) that have a total refining capacity of 650 kb/d, as well as a possible backup supplier to the 300 kb/d Karlsruhe refinery in Germany. Thus, getting available capacity on the TAL in order to source crude oil through the IKL could prove a limiting factor for the IKL as an alternative import route for the Czech Republic.

### Storage capacity

Total storage capacity in the Czech Republic is some 4 mcm, or 25.4 mb. This is roughly split evenly between crude oil and refined products. Additional product storage for motor fuels will be added in 2011, raising the country's total storage capacity to 4.2 mcm (26.3 mb).

MERO and ČEPRO provide storage facilities of crude and products, respectively, for the public stocks of the Administration of the State Material Reserves (ASMR), as well as for industry's commercial storage needs. In addition to these storage facilities, storage capacity among industry participants totals some 3.8 mb.

MERO's crude storage capacity at the end of 2008 was 11 mb (~ 1.73 Mt), including 1.3 mb of storage at its facilities in Vohburg, Germany. Its central tank farm near Kralupy (Nelahozeves), which was fully modernised in 2003, offers considerable scope for more capacity expansion. In 2008 two new tanks added over 1.5 mb in capacity to the site.



## Oil Storage Capacity, by Main Storage Operator

	Crude Oil		Total Refined Product		Total Oil (crude & product)	
	'000 cm	mb	'000 cm	mb	'000 cm	mb
<b>ASMR owned (Heimanuv Mestec)</b>			90	1	90	1
<b>MERO crude tanks in Czech Rep.</b>	1 550	9.75			1 550	9.75
<b>MERO site in Vohburg, Germany</b>	200	1.26			200	1.26
<b>CEPRO - 17 sites</b>			1 600	10.06	1 600	10.06
<b>Industry</b>	250	1.57	350	2.20	600	3.77
					-	
<b>Total Capacity for Czech Republic</b>	2 000	12.58	2 040	12.83	4 040	25.41
<b>Expansion underway in 2009/10</b>					-	
<b>CEPRO - Loukov site, 4 new tanks</b>			140	0.88	140	0.88
<b>Future total Capacity (2011)</b>	2 000	12.58	2 180	13.71	4 180	26.29

Source: Czech Administration

ČEPRO has 17 storage sites along its product pipeline network, with a total product storage capacity of approximately 10 mb. Additional tanks will be operational in 2011, raising ČEPRO's total capacity to nearly 11 mb. Three-quarters of ČEPRO's storage capacity is reserved for the use of public stocks, with the remainder of the capacity available for use by all fuel trading companies in the Czech Republic. As well as stockholding, ČEPRO is a refined product trading company, which facilitates its ability to assure necessary product stock turnover.

## 2.3 Decision-making Structure for Oil Emergencies

The Chair of the Administration of the State Material Reserves (ASMR) serves as the Head of the NESO and is responsible for initiating and co-ordinating a response to an oil supply disruption. The ASMR is responsible for stockpiling and supply security of the main resources considered essential for the protection of public interests during crises. While ASMR reserves include agricultural goods, metals and industrial materials, oil stocks account for a majority of the overall reserves held.

Act 189 of 1999 on Emergency Oil Stocks and Managing States of Oil Emergency is the legal basis for emergency policy in the Czech Republic, providing the principle statutory authority for the ASMR's role in an oil emergency.

The Chairman of the ASMR has scope for responding to an oil crisis with the use of emergency reserves, without needing the government declaring a state of emergency. Act 189 specifies that ASMR oil stocks must be no less than 90 days of consumption, as required by the EU, while also requiring that levels be no less than the amount necessary for the Czech Republic to meet its IEA stockholding requirement. The Chairman of the ASMR is able to draw upon stocks held in excess of the legal minimum level required by law, providing the Chairman with the ability to respond to domestic supply issues with loans to industry or to rapidly participate in an IEA collective action without seeking the approval of the Czech Government. In a situation which would require the public stocks to be drawn below this level, the Chairman would submit proposals to the Government specifying the use of emergency oil reserves and possible demand restraint measures.

Within the ASMR, the Oil Security Division has the leading role in co-ordinating the NESO and liaising with industry and the IEA. The Ministry of Industry and Trade and the Czech Statistical Office also play central roles in the NESO body. The wider NESO structure includes other ministries as well as industry representatives, and meets at least twice a year.

## 2.4 Stocks

### Stockholding Structure

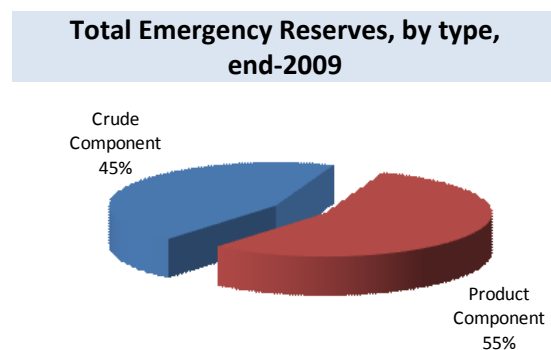
The Czech Republic uses the public stocks of the ASMR to fully meet its minimum stockholding obligation as a member of the IEA and the European Union. The ASMR typically holds stocks in excess of the minimum 90 days of consumption required by Act 189. This allows flexibility in order to facilitate stock turnover while maintaining consistently more than the minimum level.

There is no stockholding obligation on industry, but in a declared state of emergency, the government has statutory powers over industry's commercially-held stocks.

The Czech government is in the process of establishing a stockholding obligation on industry, equivalent to 30 days of net imports. This would be phased in over the period of 2012 to 2021. The timetable for building these industry-based emergency reserves starts with three days in 2012 and is to be expanded by three days each year. The 3-day obligation would amount to 72 thousand tonnes, or 90 thousand cubic metres (0.57 mb). Thus, by 2021, the total 30-day stockholding obligation on industry would equate to 5.7 mb.

### Crude or Products

Roughly 55% of the Czech Republic's emergency reserves (the oil stocks counting towards meeting its stockholding obligation according to IEA methodology) are held in the form of refined product. The composition of ASMR stocks is legally limited to a maximum of 60% crude or semi-finished products, and at least 40% refined petroleum products.



*Source: Monthly Oil Statistics, IEA*

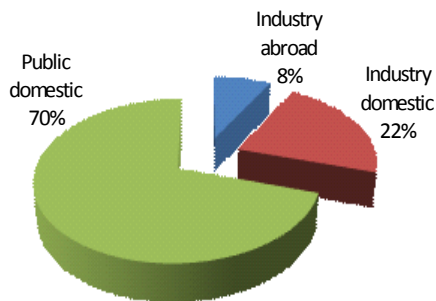
The ASMR total public stocks at the end of 2009 amounted to 15 mb, roughly half of which comprised of crude oil. Of the remaining 50% comprised of refined products, more than half were in the form of diesel oil. At the same time, stocks held by industry were roughly one-quarter crude oil and over one-third of the total product stocks were in the form of middle distillates.

### Location and Availability

The ASMR does not hold storage capacity itself: volumes of public stocks are stored on behalf of the ASMR by designated storage operators and refiners. For the most part, the state-owned companies MERO and CEPRO hold the ASMR stocks of crude and refined product, respectively. Storage capacity used for ASMR stocks must meet certain requirements regarding minimum size and drawdown rates. All volumes of the ASMR crude oil are held in separate tanks; approximately 5% of product stocks are commingled with commercial stocks.

There are no legal restrictions or requirements for specific locations of ASMR stocks within the Czech Republic. ASMR stocks may be held outside the Czech Republic under bilateral agreement, with a limit of no more than 18 days of internal consumption. While MERO does have storage facilities in Germany, all of ASMR's crude stocks are either held in MERO's main storage facilities near Kralupy or at the domestic refineries.

**Total Emergency Reserves, by location**  
end-2009



Source: Monthly Oil Statistics, IEA

While the Czech Republic does have bilateral stockholding agreements with Germany and the Slovak Republic, no stocks are being held under these bilateral arrangements. However, the Czech industry does hold stocks in the Slovak Republic for logistical purposes. These fluctuate each month, representing between 3 and 11 days of net imports.

Stockholding ticket arrangements are not used in the Czech Republic.

## Monitoring and Non-compliance

The ASMR is responsible for monitoring quantities and qualities of stocks held by storage operators on its behalf. It must also report total stock levels and composition to both the Czech government and the European Commission.

Crude oil stocks held by MERO are monitored electronically on a daily basis. Petroleum products stocks held by ČEPRO are monitored via an on-line system. The small volume of stocks held elsewhere than the MERO and ČEPRO storage facilities is verified monthly on an accounting basis. Each year, one-third of the stocks are physically checked by the auditing unit and the section of the ASMR.

## Stock Drawdown and Timeframe

Because the ASMR typically holds stocks above the minimum level required by law, the Czech Republic is able to respond rapidly in a disruption – without having to wait for government approval or an emergency declaration. Should the volume of excess stocks prove insufficient for the immediate situation (e.g. be insufficient to meet the Czech Republic's share in an IEA action) the chair of the ASMR would need to seek government endorsement in order to draw emergency stocks below the minimum required level.

In a drawdown of public stocks, whether directed by the ASMR chair or through government approval, volumes may be either sold in a tender process or offered on loan. The ASMR posts such offers on its website and market participants are expected to address the ASMR directly. Loans are the preferred method of release, and are subject to a fee ranging from 0.9% to 1.2% of the market value of the oil. Establishing a date for the replenishment of oil stocks borrowed is an integral part of the contractual conditions, as are penalties for breach of contract. CEPRO and MERO act on the orders of the ASMR to draw down the appropriate stocks. All fees and penalties are paid directly to the ASMR.

The maximum drawdown rates of public stocks is estimated to range from 125 to 185 kb/d for crude oil (depending on the pipeline used) and some 630 kb/d for finished products, well above the country's total daily oil consumption.

## Financing and Fees

Public stocks are financed by the state budget. Time-swaps are sometimes used to refresh oil stocks. The annual financial costs of purchasing, storing and logistics, and management of public emergency stocks amount to around EUR 7-8/tonne.

## 3. Other Measures

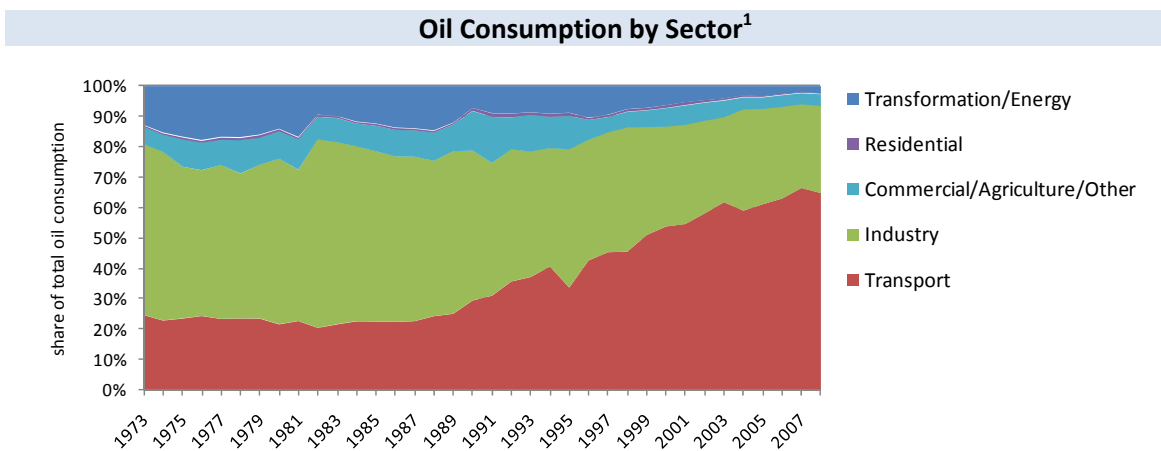
### 3.1 Demand Restraint

The Czech Republic would likely use demand restraint measures in conjunction with the drawdown of public stocks. In the case of a public stock release not requiring government approval, appeals for voluntary measures would be made to the public (e.g. educating the public about fuel-efficient driving techniques or calling for increased use of public transportation and car-pooling).

In the case of seeking a declared emergency, demand restraint measures would be specified in the proposal presented by the ASMR chair to the government. Once the proposal was approved – a process that could take two to six days – the ASMR would hold a press conference and initiate a mass media campaign. Measures could then be implemented within two to five days following the public announcement.

Demand restraint measures available to the ASMR include limiting motor vehicle speed and imposing driving restrictions (only on certain days or for specific kinds of transportation, or based on odd/even car plates). In more extended disruptions, fuel rationing is also available as a policy measure; it would consist of a card system for priority users and coupon distribution to private vehicles. In a declared emergency, the government also has the power to order private companies to draw down their stocks.

Legislation assigns responsibility for ensuring compliance with these different measures to various components of the Czech government, such as the police and transportation boards, which have the authority to impose fines for violations. The ASMR, in conjunction with the Czech Statistical Office, is responsible for monitoring the effectiveness of the measures.



Source: Oil Information, IEA

<sup>1</sup> Total Consumption (including refinery consumption), does not include international marine bunkers.

## 3.2 Fuel Switching

The potential to switch in the short term away from the use of oil to another fuel source is inconsequential in the Czech Republic. The bulk of oil consumption (63%) is in the transport sector, where there is no capacity for short-term switching. It is estimated that less than 6% of the oil consumed in the industry and transformation sectors could potentially be switched to another fuel, equating to less than 4 kb/d.

## 3.3 Others

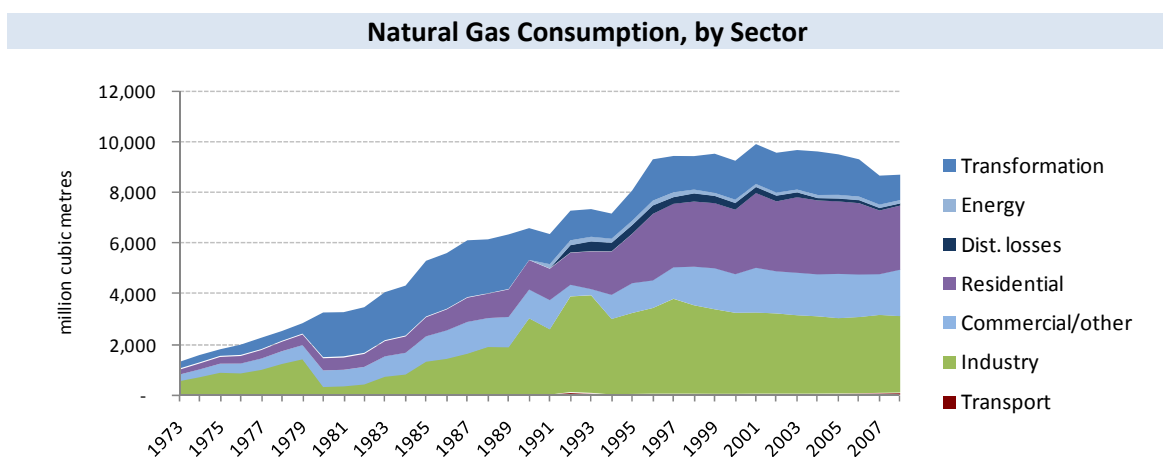
Short-term surge production capacity in the Czech Republic is considered inconsequential and not a potential emergency response measure.

# 4. Natural Gas

## 4.1 Market Features and Key Issues

### Gas production and reserves

Only a small fraction of the Czech Republic's natural gas demand is met from domestic production. In 2008, some 116 million cubic metres of gas was produced, meeting roughly 1.3% of demand. This is mainly produced in the South Moravian Region and to a lesser extent, from gas taken from hard coal mines in Northern Moravia.



Source: Natural Gas Information, IEA

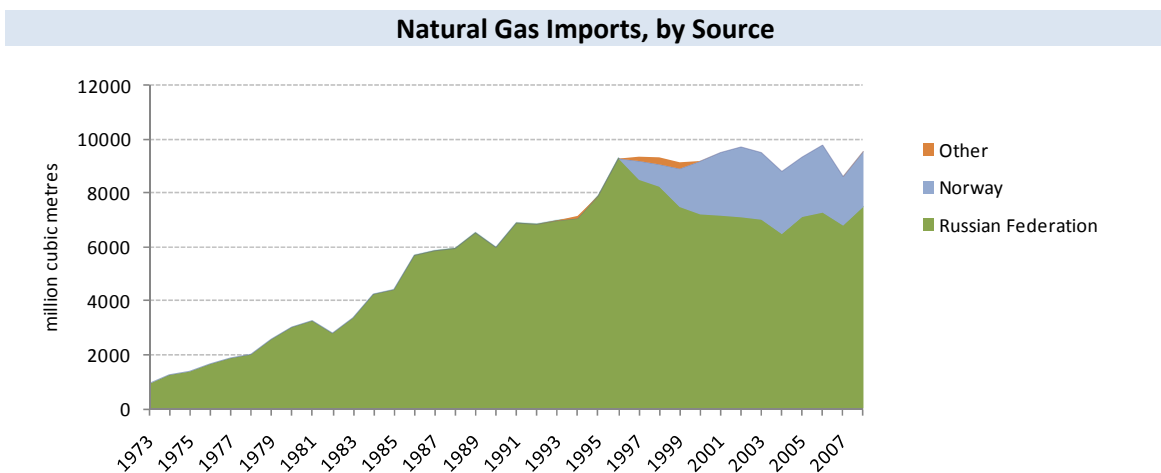
### Gas demand

In 2008, demand for natural gas was nearly 8.7 billion cubic metres (bcm). Industry is the primary user of gas in the country, representing 36% of total consumption. Residential users make up the second largest group, representing 29% of gas use, primarily for heating. The transformation sector accounted for 13% of gas use, where gas-fired generation is mainly used for meeting peak electricity demand.

Daily gas consumption in 2008 ranged from a minimum level of 7.7 million cubic metres per day (mcm/d) in the summer to a 50.8 mcm/d peak in the winter. Winter consumption typically varies within a range of 30 to 65 mcm/d, inferring a relatively high seasonality of gas demand. The highest daily peak was reached in January 2006, when temperatures dropped to -16.9 °C and gas consumption reached 67.6 mcm/d.

### Import dependency

Historically, all gas imports came from Russia. Following efforts in the late 1990s to diversify supply, the Czech Republic began importing from Norway. Norwegian gas reached a quarter of total imports in the early 2000s, but its share in total imports has since declined. In 2008, 22% of gas imports came from Norway.



Source: Natural Gas Information, IEA

### Gas Company Operations

In line with the liberalisation of the natural gas market under the European Directive 2003/55/EC, each of the vertically integrated companies has been unbundled. RWE Transgas, the dominant importer of natural gas into the Czech Republic, has been split into a transmission system operator (TSO), RWE Transgas Net, a gas storage operator, RWE Gas Storage, and the remaining part carrying on the business of natural gas wholesales. In 2008, the share held by RWE Transgas in gas imports dropped to about 85% of the Czech Republic's imports and 69% of sales to final customers. Regional gas suppliers have also been split into trading parts and eight individual distribution system operators.

## 4.2 Natural gas supply infrastructure

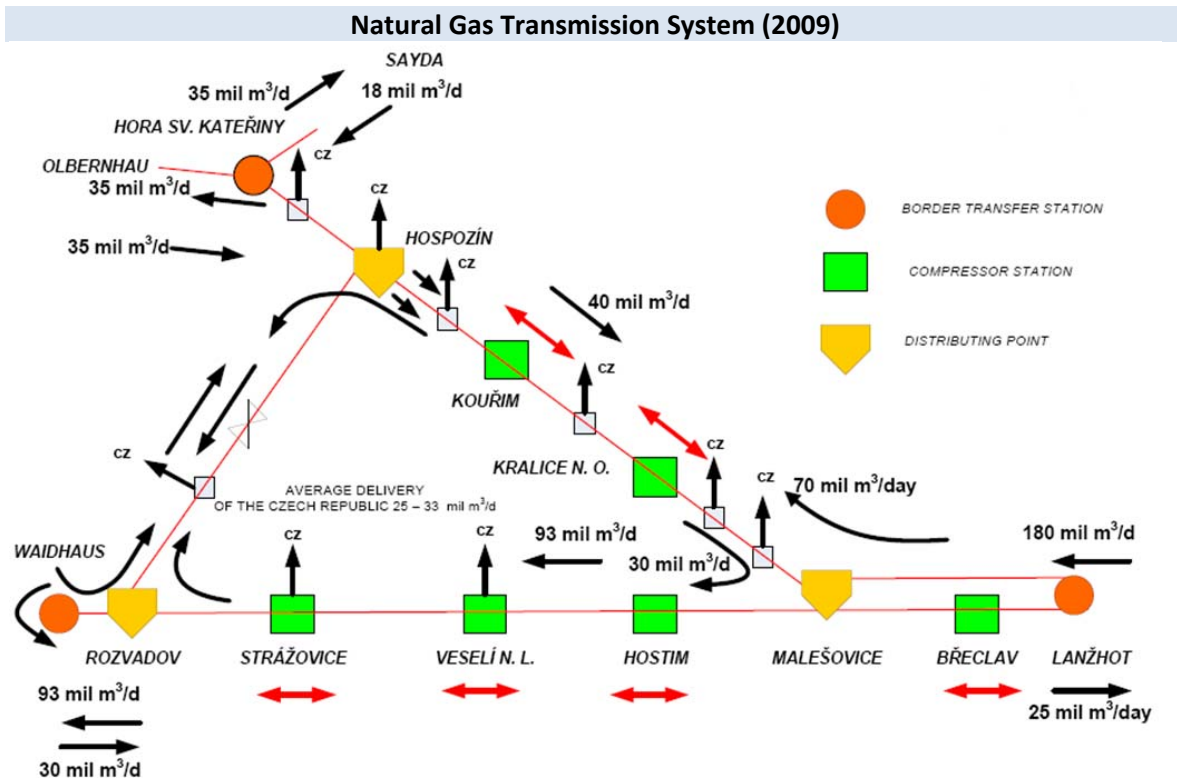
### Ports and Pipelines

RWE Transgas Net, the Czech Republic's TSO, manages a domestic and transit pipeline network with three interconnection points. This is used both to transport natural gas for consumption in the Czech Republic (8.7 bcm/year) and for transit of some 30 bcm/year of Russian gas to other end-user markets further west. Transit gas arrives at the incoming transfer stations of Lanžhot and Olbernhau and departs from the outgoing transfer stations in Waidhaus and Hora Svaté Kateřiny.



Linked to the pipeline construction of Nord Stream (through the Baltic Sea from Russia to Greifswald, Germany) and OPAL (connecting Nord Stream, through Germany, to Hora Svaté Kateřiny), the Gazelle pipeline project, with a capacity of 30 bcm/year, will connect Hora Svaté Kateřiny to Waidhaus. The project is expected to be operational in 2011-12. This could potentially lead to a shift of transit flows through the Czech Republic, moving amounts of Russian gas that currently enter the country at Lanžhot (after transiting through Ukraine) to the Olbernhau entry point.

Other areas of upgrade being considered by the TSO to improve the transmission system include possible interconnection with Poland and enhancing reversibility of gas flows from west to east.



Source: Czech Administration, RWE Transgas Net

## Storage

There are three storage system operators (SSO) in the Czech Republic: RWE Gas Storage, MND (Moravské naftové doly) and SPP Bohemia. Between them, the three companies own and operate eight underground storage facilities in the country. The Dolní Bojanovice site is used exclusively for supplying the Slovak market. At the same time, a storage facility in Slovakia, at Láb, is used for supplying the Czech market. Total working storage capacity available to the Czech Republic is just over 2.9 bcm. The combined peak withdrawal rate from these storage facilities is 56.2 mcm/d.

## Natural Gas Storage Capacity

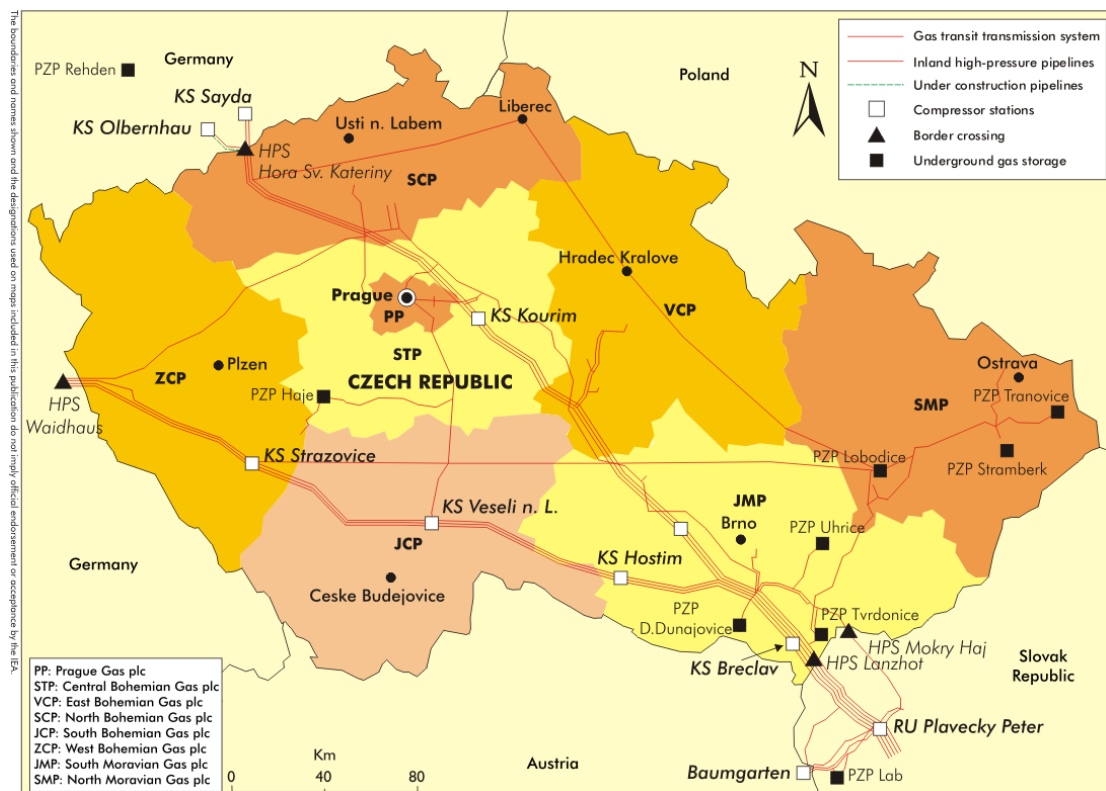
Storage site	Working Capacity <sup>1</sup> (mcm)	Peak Output (mcm/day) <sup>2</sup>
Lobodice (RWE Gas Storage)	155	3.6
Tvrdonice (RWE Gas Storage)	523	7.0
Stramberk (RWE Gas Storage)	480	7.0
Dunajovice (RWE Gas Storage)	780	16.5
Háje (RWE Gas Storage)	59	6.0
Tranovice (RWE Gas Storage)	240	4.1
Uhřetice (MND)	180	6.0
Láb – Slovakia (located in Slovakia, used for Czech Rep.)	500	6.0
Dolní Bojanovice – used for Slovakia only (SPP Bohemia)	( 576)	
<b>Total UGS sites for use by Czech Republic</b>	<b>2 917</b>	<b>56.2</b>

<sup>1</sup> Working gas capacity = total gas storage minus cushion gas

<sup>2</sup> Peak output = the maximum rate at which gas can be withdrawn from storage

Source: Czech Administration

There are projects to extend capacity at the storage sites of Tránovice (+290 mcm), Tvrdonice (+255 mcm), and Uhřetice (+80 mcm).



### 4.3 Emergency Policy for Natural Gas

The Czech Republic maintains a high degree of natural gas supply security through a combination of several measures, including using long-term supply contracts, having a relatively high capacity of underground commercial gas storage, and requiring safety standards of the supply infrastructure by the transmission and distribution system operators. It seeks to improve security of supply through capacity extensions at a number of storage facilities and increased flexibility in its gas network, including reversibility of gas flows throughout the transmission system and expanding interconnectors to neighbouring countries.

Following the January 2009 gas crisis in Europe, the Czech government put in place over a short period of time and ahead of the 2009/2010 winter season a response plan for dealing with a reduction in gas supplies. This relies on coordination with industry in order to optimize gas storage use and regulate demand side measures in a crisis. This plan sets measures and actions to be taken during the periods of early warning and emergency crisis levels.

### **Strategic Gas Stocks and Drawdown**

There are no emergency reserves of natural gas in the Czech Republic, as all storage is used for commercial purposes.

The gas industry is seeking to expand gas storage, with projects to extend capacity at three of the country's eight underground storage facilities (see above). When fully realized, these expansions would raise total capacity from the current 2.9 bcm to 3.5 bcm and increase the total withdrawal capacity from 56.2 mcm/d to 65.6 mcm/d. This compares to the country's winter consumption range of 30 to 65 mcm/d and a single day record high of 67.6 mcm/d. If completely full, storage would be able to supply peak demand for approximately 50 days.

### **Demand Restraint**

The early warning system established in 2009 requires transmission and distribution system operators and all gas traders to report any indications of potential disruption to supplies. In the event of a disruption to gas supplies, crisis severity levels would be used to determine the level of restrictions or cut-offs to end-users. Customers are divided into groups according to the volume and type of consumption (*e.g.* gas used for heating or production; the importance of use for ensuring state functions). Disruptions would be rated on severity levels, determining the degree to which specific consumer groups would have supplies restricted or stopped. There are five levels in which supplies would be reduced and another five levels in which supply cut-offs would be imposed. The last consumer group consists of small business and households and would be supplied in all but the most severe of disruptions.

### **Fuel Switching**

There is no program in place in the Czech Republic in order to encourage or otherwise require users of gas to switch to other fuel sources in the event of a gas supply disruption. The potential for short-term switching out of gas into other fuel is limited. In the transformation sector, most gas-fired power stations are used for meeting peak electricity demand and do not have the capacity to switch fuel sources.

## INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its mandate is two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply and to advise member countries on sound energy policy.

The IEA carries out a comprehensive programme of energy co-operation among 28 advanced economies, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency aims to:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

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Energy Agency

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