

MINERAL COMMODITY SUMMARIES OF THE CZECH REPUBLIC

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Czech Geological Survey – Geofond



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Compiled by:
Jaromír Starý
Ivo Sitenský
Tereza Hodková

Graphic design:
Ludmila Richterová
Renata Kachlíková
Budoš Volák

geofond@geofond.cz
www.geofond.cz

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EXPLANATORY NOTES

List of abbreviations, symbols and technical units

AOPK ČR	Agency for Nature Conservation and Landscape Protection (Nature Conservation Authority) of the Czech Republic (Agentura ochrany přírody a krajiny České republiky)
a. s.	initials after a Czech company name indicate that it is a joint stock company (akciová společnost)
BP	British Petroleum, British multinational oil and petrochemical company
Coll.	Collection of laws (Sbírka zákonů České republiky) of the Czech Republic
CHKO	protected landscape area (Chráněná krajinná oblast)
CHLÚ	protected deposit area (Chráněné ložiskové území)
ČBÚ	Czech Mining Office (Český báňský úřad)
ČNB	Czech National Bank (Česká národní banka)
ČNR	Czech National Council (Česká národní rada) – former parliament of the Czech (Socialistic) Republic
ČR	Czech Republic (Česká republika)
ČSÚ	Czech Statistical Office (Český statistický úřad)
CZK	Czech Koruna (česká koruna)
EIA	1) Environmental Impact Assessment 2) Energy Information Administration, section of the Department of Energy of the USA providing energy statistics, data, analysis
IEA	International Energy Agency
k. s.	initials after a Czech company name indicate that it is a limited partnership company (komanditní společnost)
kt	kilotonne, 1,000 t
MCS	Mineral Commodity Summaries, mineral yearbook of the US Geological Survey
mill	million, 10 ⁶
MŽP ČR	Ministry of the Environment of the Czech Republic (Ministerstvo životního prostředí České republiky)
N	not available or not reliable data
OBÚ	obvodní báňský úřad ((Regional Mining Authority)
NP	natural park (Národní park)
PÚ	exploration area (průzkumné území)

Sb.	Collection of Laws (abbreviated as Coll.) of the Czech Republic
s. p.	initials after a Czech company name indicate that it is a state public enterprise (státní podnik)
spol. s r. o.	initials after a Czech company name indicate that it is a limited liability company (společnost s ručením omezeným), ditto initials s. r. o.
s. r. o.	initials after a Czech company name indicate that it is a limited liability company (společnost s ručením omezeným), ditto initials spol. s r.o.
t	metric tonne, 1,000 kg, 1,000,000 g
v. o. s.	initials after a Czech company name indicate that it is an unlimited company (general partnership) (veřejná obchodní společnost)
WBD	Welt Bergbau Daten (World Mining Data), mineral yearbook of Austrian Federal Ministry for Economy, Family and Youth
WNA	World Nuclear Association
ZCHÚ	pecially protected area (zvláště chráněné území)

Exchange and inflation rates of currencies in which minerals are priced

Annual inflation rates in the USA (US), United Kingdom (UK), Euro Area (EUR) and Czech Republic (CZ)

	US	UK	EUR	CZ
1991	4.2	7.4	–	56.6
1992	3.0	4.3	–	11.1
1993	3.0	2.5	–	20.8
1994	2.6	2.1	–	10.0
1995	2.8	2.6	–	9.2
1996	2.9	2.4	–	8.8
1997	2.3	1.8	–	8.4
1998	1.5	1.6	–	10.6
1999	2.2	1.3	1.1	2.3
2000	3.4	0.9	2.1	3.8
2001	2.8	1.2	2.4	4.7
2002	1.6	1.3	2.3	1.8
2003	2.3	1.4	2.1	0.1
2004	2.7	1.3	2.1	2.8
2005	3.4	2.0	2.2	1.8
2006	3.2	2.3	2.2	2.5
2007	2.9	2.3	2.1	2.8
2008	3.8	3.6	3.3	6.3
2009	-0.3	2.1	0.3	1.0
2010	1.6	3.3	1.6	1.5

Notes:

- source – IMF, World Economic Outlook Database, September 2011
- inflation rates based on average annual changes of consumer price indices (index, 2000 = 100)

Average yearly exchange rates of CZK against EUR, USD and GBP

	EUR	USD	GBP
1991	–	29.5	52.0
1992	–	28.3	49.9
1993	–	29.2	43.8
1994	–	28.8	44.0
1995	–	26.5	41.9
1996	–	27.1	42.3
1997	–	31.7	51.9
1998	–	32.3	53.4
1999	36.9	34.6	56.0
2000	35.6	38.6	58.4
2001	34.1	38.0	54.8
2002	30.8	32.7	49.0
2003	31.8	28.2	46.0
2004	31.9	25.7	47.1
2005	29.8	23.9	43.6
2006	28.3	22.6	41.6
2007	27.8	20.3	40.6
2008	24.9	17.0	31.4
2009	26.4	19.1	29.7
2010	25.3	19.1	29.5

Source: Czech National Bank

Mineral reserve and resource classification in the Czech Republic and its evolutional comparison with international classifications

The Czech classification

After 1948 the reserve classification of the USSR was progressively adopted in Czechoslovakia, of which the Czech Republic formed part. A Commission for Classification of Mineral Reserves (*Komise pro klasifikaci zásob – KKZ*) was established in 1952, as a state agency to review the categorisation and estimation of reserves of all types of minerals, except radioactive ores.

Initially geological reserves (all reserves in their original state in the deposit without subtracting losses from mining, beneficiation and processing) were classified into subdivisions of groups and categories (slightly simplified).

Groups of geologic reserves according to industrial utilisation:

nebilanční potentially economic – currently unminable due to a low grade, small deposit thickness, particularly complicated mining conditions, or due to the unfamiliarity with economic processing methods for the given mineral type, yet which may be considered as exploitable in the future

bilanční economic – minable, suitable for industrial utilisation and for the technical mining conditions for extraction

Categories of geological reserves according to the degree of deposit exploration:

A – explored in detail and delimited by mining works or boreholes, or by a combination of these. Geological setting, distribution of quality mineral types in the deposit and the technological properties of the mineral are known to such a degree that allow for the development of a method for beneficiation and processing of the mineral. Natural and industrial types of minerals are given. Reserves A include those parts of the deposit, where the geological setting, hydrogeological conditions and mining conditions are known to such a degree that a deposit development method can be developed.

B – explored and delimited by mining works or boreholes, or by a combination of these in a sparser network than in category A. It further includes reserves of deposits adjoining blocks of category A, verified by exploration works. The manner of geological setting, natural and industrial types of minerals are determined without knowing their detailed distribution in the deposit. The quality and technological characteristics of the minerals are given within a range allowing for a basic choice of a processing method. Hydrogeological conditions and general principles of deposit development are sufficiently clarified.

C₁ – determined by a sparse network of boreholes or mining works, or by a combination of these, as well as reserves which adjoin the reserves of categories A and B, if they are justified from a geological perspective. They also include the reserves of relatively complex deposits with a very irregular distribution of the mineral, even though these deposits were explored in detail. Included here are the deposit reserves partially mined-out with low recovery methods. The setting conditions, quality, industrial types and processing technology of the mineral are defined based on analyses or laboratory tests of samples, or based on analogy with explored deposits of a similar type. The hydrogeological conditions and the principles of deposit

development are defined quite in general.

C₂ – are assumed based on geological and geophysical data, confirmed by sampling of the mineral deposit from outcrops, isolated boreholes or mining works. Also, reserves adjoining the reserves of categories A, B, C₁, where geological conditions for this exist.

It is further defined that project development and investment amounts for the construction of mining facilities are permitted on the basis of the economic mineral reserves in categories A+B+C₁, which are therefore reserves eligible for industrial utilisation. That is why, in practice, the economic reserves of categories A, B, C₁, or their total A+B+C₁ were designated by the term industrial reserves.

In 1963, KKZ established the prognostic reserves (*prognózní zásoby*) category in an amendment of its Principles for the Classification of Solid Minerals (hereinafter Principles) (*Zásad pro klasifikaci zásob pevných nerostných surovin*). They were defined as unexplored mineral reserves, assumed on the basis of the formation patterns and the distribution of mineral deposits, and investigations, dealing with the geological structure and the history of geological evolution of the evaluated locality. The parameters for the evaluation of prognostic reserves (strike length, thickness, average grade and the like) are determined according to geological assumptions or they are derived. According to the Principles, prognostic reserves are not listed in the national Register of Reserves (*bilance zásob*). They serve only as a basis for future planning of geological exploration.

In 1968, KKZ innovated the definition of prognostic reserves. In the amended Principles for reserve classification, it established the division of reserves into proved (by exploration or mining) and assumed, or prognostic. Prognostic geological reserves are unverified reserves, however they are assumed based on geological, geophysical and other scientific knowledge and material. They are predominantly the reserves of larger localities and formations, and, in isolated cases, the reserves of unexplored parts of large structures or deposits.

Due to the establishment of the prognostic reserve category, geological reserves (*geologické zásoby*) can, with regard to contents, be translated into English as total resources. However up to 1989, the term resources did not appear in Czech or Czechoslovak classifications. But up to now, reserves also represent mineral accumulations, which meet the reserves criteria due to being explored, but which do not meet them due to technical and economic reasons (potentially economic reserves *nebilanční zásoby*). They are therefore mineral resources.

In 1981, the Czech Geological Office issued Directive no. 3 [3], where the present prognostic reserves (*prognózní zásoby*) were divided into categories D₁, D₂, D₃. They are defined as follows:

D₁ – relate to verified mineral deposit reserves, with which they form one whole deposit. Determined in delimited areas and quantifiable based on positive detection of an existing mineral and its basic quality characteristics.

D₂ – territorially independent. They are determined in a delimited area based on positive detection of an existing mineral and its basic quality characteristic. Analogies are also used for their determination.

D₃ – determined on the basis of regional investigation. So far, mineral existence has not been proven in such a way, in order to be able to delimit the area of their occurrence and to quantify the prognosis.

In October 1989, the Czech Geological Office issued Decree no. 121/1989 Coll., which redefined the prognostic reserve categories, changed their designation, and for the first time in the Czech Republic established the term resources. The term prognostic resources has been used instead of the term prognostic reserves ever since. The categories P₁, P₂, P₃ were as follows:

P₁ – assumed due to the continuation of an already investigated deposit beyond the reserve outline of category C₂ or due to the discovery of new deposit parts (bodies). The basis for this category are the results of geological mapping, geophysical, geochemical and other work in the area of possibly occurring prognostic resources: geological extrapolation of data results from the investigation, or the verification of part of the deposit. In justified cases this category also includes areas with isolated technical works which do not fulfill the requirements in order to be included in the reserves category C₂. The quantity and quality of the prognostic resources of this category is estimated according to the given deposit type and its part with detected reserves.

P₂ – assumed in basins districts and geological regions, where deposits of the same formation and generation type were detected. It is based on a positive evaluation of deposit indications and anomalies observed during geological mapping and geophysical, geochemical and other work, whose prospect is, if necessary, confirmed by a borehole or surface excavation work. The prognostic resource estimate of assumed deposits and the concept of the shape and dimensions of the bodies, their composition and quality, are derived by analogy with known deposits of the same type.

P₃ – assumed solely on the basis of conclusions concerning the formation possibilities of the deposit types under consideration with regard to favourable stratigraphic, lithological, tectonic and paleogeographic conditions detected while evaluating the locality during geological mapping, and during analysis of geophysical and geochemical data. The quantity and quality of prognostic resources is estimated according to assumed parameters of the deposit development by analogy with more closely explored localities, where deposits of the same genetical type were detected or verified. The prognostic resources of minerals in category P₃ can only be displayed by a surface projection.

The amendment of Mining Act no. 541/1991 Coll. divided the classification of reserves (reserved deposits) according to exploration into the categories of prospected reserves (*vyhledané zásoby*) and explored reserves (*prozkoumané zásoby*), and, according to exploitability conditions, into economic reserves (*zásoby bilanční*) and potentially economic reserves (*zásoby nebilanční*).

Economic – reserves suitable for existing technical and economic conditions in exploiting a reserved deposit.

Potentially economic reserves – currently unexploitable due to being unsuitable for existing technical and economic conditions of exploitation, yet assumed to be exploitable in the future in consideration of expected technical and economic development.

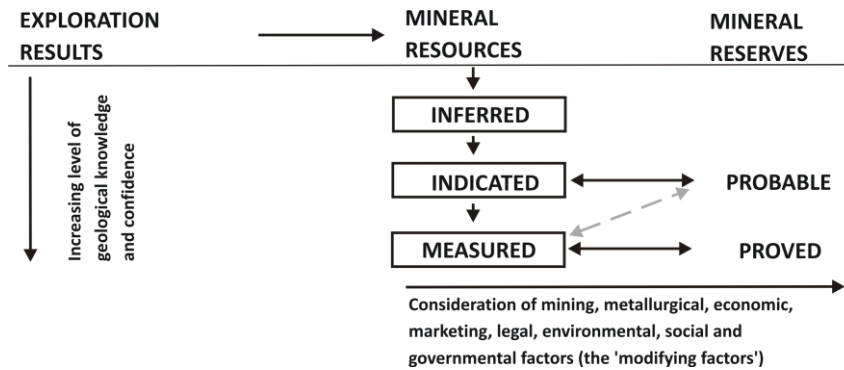
Neither this amendment nor any other regulation defined the content of the terms **prospected** and **explored** reserves. In practice, these categories are identified with the categories of reserve exploration, as they were in effect before the amendment of Mining Act no. 541/1991 Coll., in the following manner: explored reserves = sum of reserve categories A + B + C₁ (also called industrial), prospected reserves = reserves of category C₂.

International classifications

International systems of classifying reserves and resources developed most rapidly in the last quarter of the twentieth century. In 2001, the European Code for Reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves was published [1]). This corresponds to the reporting standards of the Australian, Canadian, South African and other organisations grouped in the Combined Reserves International Reporting Standards Committee (now called Committee for Mineral Reserves International Reporting Standards) – CRIRSCO which is a subcommittee of CMMI (Council of Mining and Metallurgical Industries). It is summarized as follows:

Relations between mineral reserves and resources, their definitions

Chart of the relations [1]



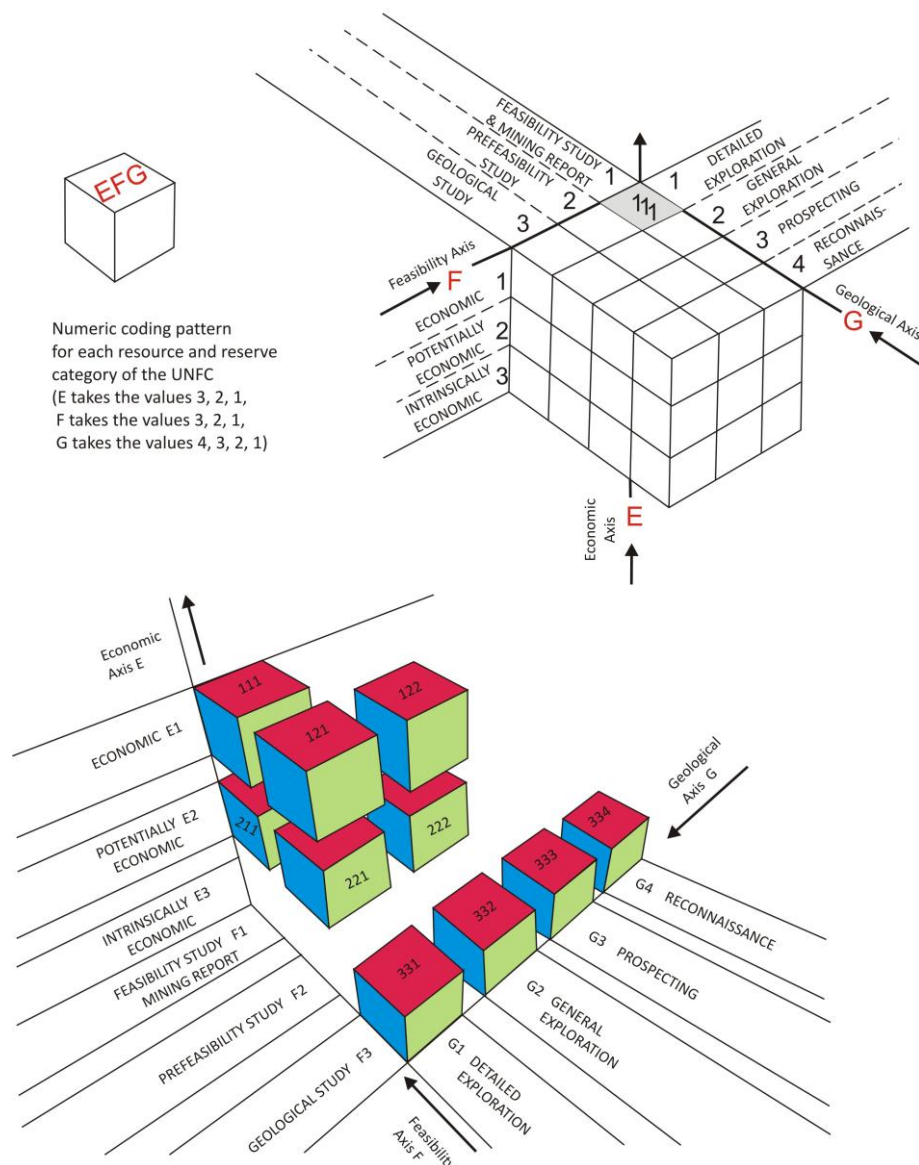
The given definitions are in accordance with the definitions of the UNFC (United Nations Framework Classification) classification of the UN, published by UN-ECE in 1997 [4]. This classification divides (just as, for example, the classification of the USA [5]) its categories according to economic feasibility (quantity and quality of the mineral in situ) in one direction into 3 groups. For the division according to the level of geological knowledge it does not use one direction, one criterion (verification according to technical work carried out), as is common, but two directions, two criteria: 1) According to which of the 4 phases of exploration (from geological to mining) and 2) according to which study (from geological to mining) the given mineral accumulation was prospected or verified. Thus in the area between the axes E (economic), F (feasibility) and G (geological), a total of 36 categories can be established mechanically, out of which about 10 actually exist. The categories are marked with a three-digit code and a priori do not have designations (although recommended designations exist).

(Notice: In the course of discovery and verification of mineral deposits and their estimations of mineral resources and reserves two fundamental stages connect at each other: prospecting and exploration.

Prospecting is a set of geological activities aiming at discovery of a mineral accumulation (mineral accumulations) which could be a mineral deposit (mineral deposits) and to express in numbers its (their) mineral resources.

Exploration is to decide if a mineral accumulation (prospective mineral deposit) is a mineral deposit or not and if it is, to estimate its mineral reserves.)

Two ways of presenting UNO spatial mineral resource - reserve classification system
(United Nations Framework Classification)[4]



An important aspect of the European and similar reporting codes is the concept of the “competent person”. He/she is responsible for the calculation of reserves and its categories, is a member of an acknowledged professional society (which sees to the expertise and ethics of its members via sanctions), and has expert and moral qualities. His estimates are accepted as reliable by banks and securities exchanges. Competent persons are members of Recognized Overseas Professional Organizations (ROPO). A list of organisations is compiled by the Australasian Joint Ore Reserves Committee (JORC).

Although some national and international classifications are relatively complicated, the mining industry frequently still makes do with only the categories of proved and probable reserves. If it is seeking funds from banks or share flotations on securities exchanges, it must respect the regulations for reporting its mineral reserves. The securities exchanges have reporting requirements which are particularly strict or even provided by law. In general they require adherence to the reporting codes of the international organizations such as those that

cooperate in framing the European Code [1].

Comparison of Czech and international systems of classification

The following scheme and table compare the reserve and resource classifications of the Czech Republic with the international classifications discussed above.

Is to be noted that reserves in the Czech classification still include potentially economic reserves, i.e. reserves which are currently not recoverable and which are, therefore, potentially economic resources. The term reserves as used, by contrast, in standard international classifications represents only the parts of explored resources which are available for immediate or developed extraction. All other registered parts are resources, not reserves, of a given mineral.

Comparison of the mineral resource classification valid in the USA from 1980 [5] with the reserve and resource classifications valid in the territory of the Czech Republic from 1956

	IDENTIFIED			UNDISCOVERED	
	DEMONSTRATED		INFERRED	HYPOTHETICAL	SPECULATIVE
	MEASURED	INDICATED			
ECONOMIC					
MARGINALLY ECONOMIC					
SUBECONOMIC					

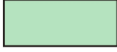
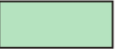
Reserve Base		Inferred Reserve Base	
	A+B economic reserves, part of economic explored reserves		C ₂ potentially economic reserves, potentially economic prospected reserves
	A+B potentially economic reserves, part of potentially economic explored reserves		D ₁ , P ₁
	C ₁ economic reserves, part of economic explored reserves		D ₂ , P ₂
	C ₁ potentially economic reserves, part of potentially economic explored reserves		D ₃ , P ₃
	C ₂ economic reserves, economic prospected reserves		

Comparison of UNFC with the reserve and resource classifications of the Council of Mining and Metallurgical Industries (CMMI) [4] and of the Czech Republic

Code of the UNFC category	Proposed designation of the UNFC category	CMMI category	Czech categories up to 1981	Czech categories in 1981 – 1989	Czech categories in 1989 – 1991	Czech categories after 1991
111	Proved Mineral Reserve	Proved Mineral Reserve	economic reserves – part of exploitable part* A+B	economic reserves – part of exploitable part* A+B	economic reserves – part of exploitable part* A+B	part of exploitable part* of explored economic reserves
121 + 122	Probable Mineral Reserve	Probable Mineral Reserve	economic reserves – part of exploitable part* of A + B + C ₁	economic reserves – part of exploitable part* of A + B + C ₁	economic reserves – part of exploitable part* of A + B + C ₁	part of exploitable part* of explored economic reserves
123		Inferred Mineral Resource	economic reserves – C ₂	economic reserves – C ₂	economic reserves – C ₂	prospected economic reserves
211	Feasibility Mineral Resource	Measured Mineral Resource	potentially economic reserves – A+B	potentially economic reserves – A+B	potentially economic reserves – A+B	part of explored potentially economic reserves
221 + 222	Prefeasibility Mineral Resource	Indicated Mineral Resource	potentially economic reserves - C ₁	potentially economic reserves - C ₁	potentially economic reserves - C ₁	part of explored potentially economic reserves
223		Inferred Mineral Resource	potentially economic reserves – C ₂	potentially economic reserves – C ₂	potentially economic reserves – C ₂	prospected potentially economic reserves
331	Measured Mineral Resource	Measured Mineral Resource	potentially economic reserves – A + B	potentially economic reserves – A + B	potentially economic reserves – A + B	part of explored potentially economic reserves
332	Indicated Mineral Resource	Indicated Mineral Resource	potentially economic reserves – C ₁	potentially economic reserves – C ₁	potentially economic reserves – C ₁	part of explored potentially economic reserves
333	Inferred Mineral Resource	Inferred Mineral Resource	potentially economic reserves - C ₂ + part of prognostic reserves	potentially economic reserves + part of D ₁	potentially economic reserves + part of P ₁	prospected potentially economic reserves + part of P ₁
334	Reconnaissance Mineral Resource	not available	part of prognostic reserves	D ₂ + D ₃ + part of D ₁	P ₂ + P ₃ + part of P ₁	P ₂ + P ₃ + part of P ₁

* geological reserves reduced by amount of prospective mining losses

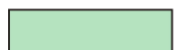
HISTORY OF RESERVE AND RESOURCE CLASSIFICATION ON THE TERRITORY OF THE CZECH REPUBLIC

	RESERVES				PROGNOSTIC RESOURCES		
	EXPLORED		PROSPECTED		P ₁ *	P ₂ *	P ₃ *
	disposable	bound	disposable	bound			
ECONOMIC							
POTENTIALLY ECONOMIC							

* effective from 1989



Geological reserves = all reserves in their original state without considering mining losses and dilution



Exploitable reserves = economic reserves reduced by estimated mining losses

reserves of categories A + B + C (before 1991) = explored reserves (since 1991)
reserves of category C₂ (before 1991) = prospected reserves (since 1991)
disposable reserves = reserves mining of which is not made impossible by protection of surface objects and mining workings
bound reserves = reserves in protection pillars of surface objects and mining workings
exploitable reserves = economic geological reserves reduced by amount of prospective mining losses connecting with selected mining technology or with natural conditions
categories A, B, C₁ = so-called industrial categories of reserves (before 1991)
reserve of categories A + B + C₁ = so-called industrial reserves (before 1991), also - in the limited interpretation - economic explored disposable reserves

Conclusions

If they are to be of practical use national and international classifications have to respect the information base given by the reserve estimations of mining enterprises. It may be unsuitable to overly expand the classification requirements or expectations beyond the realistic means of this base. Combining a classification with a study (project), which classifies given resources or reserves, or with a prospecting and exploration phase, in which mineral resources and reserves were estimated, causes problems. For economic (acquiring financial means, taxes, market position) or political reasons, a prospector or a mining company developer may be led, for example, to move their exploration phase higher or lower in comparison with its actual position. In socialist (communist) Czechoslovakia with its completely nationalised industry, commerce and services, results of geological prospecting and exploration were judged, not according to the mineral reserves prospected or verified by exploration, but according to the fulfillment of exploration work plans, whether planned investments in exploration were completely spent on “drilling and digging“, or not. The wage of the employees of exploration and mining organisations depended on the fulfilment of plans. That is why at all levels, there was also an interest, that prospecting and exploration constantly continue. Consequently, prospecting strictly speaking and general exploration were the most frequent type of prospecting, and verified reserves were possibly never categorised under A. They were commonly only inserted into categories C₁ and C₂. That enabled their permanent verification. On the other hand, many mining organisations mined the reserves of category C₂ which however could have been ranked factually higher; they were over-explored.

Literature

[1] Code for reporting of mineral exploration results, mineral resources and mineral reserves

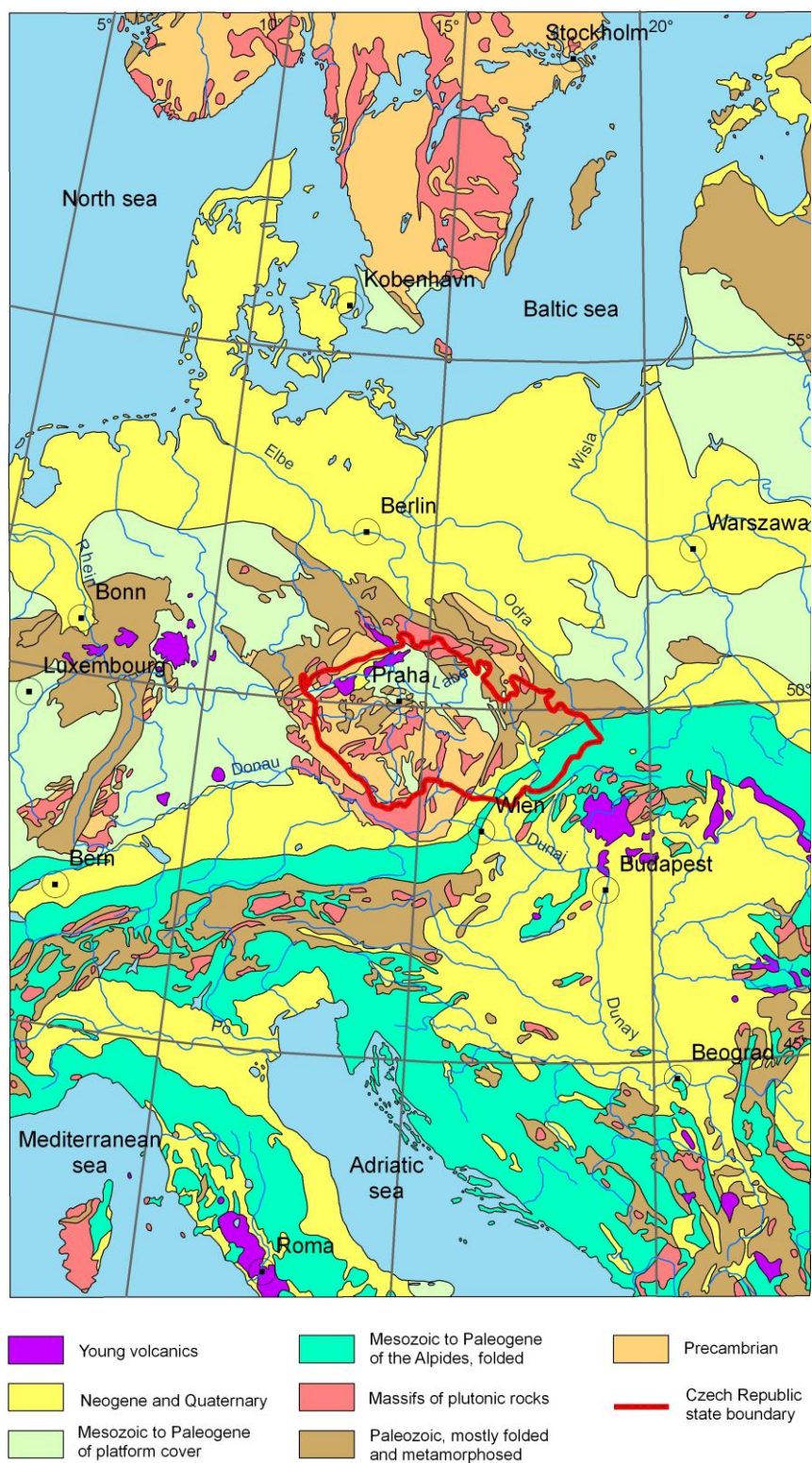
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http://geolsoc.org.uk/webdav/site/GSL/shared/pdfs/Fellowship/UK_Euro%20Reporting%20Code.pdf
- [2]* Schejbal, C. (2003): Problematika výpočtu a klasifikace zásob a zdrojů pevných nerostných surovin. – Sborník vědeckých prací Vysoké školy báňské – Technické univerzity Ostrava, ročník XLIX, řada hornicko-geologická, monografie 9, s. 139–161 (Transactions of the VŠB – Technical University Ostrava, vol. XLIX, Mining and Geological Series, Monograph 9, pp. 139–161).
- [3]** Směrnice č. 3/1981 Českého geologického úřadu pro hodnocení a evidenci geologických prognóz a prognózních zásob nerostných surovin. – Geologický průzkum, 23, 10:Zpravodaj ČGÚ, 5:1–2.
- [4] United Nations international framework classification for reserves/resources – solid fuels and mineral commodities. – United Nations Economic and Social Council, Economic Commission for Europe, Committee on Sustainable Energy, 1997. Geneva.
- [5] U. S. Bureau of Mines and U. S. Geological Survey. Principles of a resource/reserve classification for minerals. – U. S. Geological Survey Circular 831, 1980.
- [6]*** Lhotský, P. – Morávek, P. (2002): Ložiskový průzkum a hospodaření se zásobami výhradních ložisek (návrh k analýze třetí části horního zákona). – Uhlí, rudy, geologický průzkum, 5: 8–15.

Translations of Czech article titles:

- * Problems of evaluation and classification of reserves/resources of solid mineral raw materials
- ** Directive no. 3/1981 of the Czech Geological Office for evaluation and registration of geological prognoses and prognostic reserves of minerals
- *** Mineral exploration and management of reserved deposit mineral reserves (proposal for analysis of the third part of the Mining Act)

Geological position of the Czech Republic in Europe

Arnošt Dudek



INTRODUCTION

This year, the *Mineral Commodity Summaries of the Czech Republic* is being published for the nineteenth time in its history. The yearbook was published and distributed on behalf of the Ministry of Economy until 1966, and on behalf of the Ministry of the Environment from 1997 to 2010. This year marks the first time that the Ministry of the Environment has not commissioned the Czech Geological Survey – Geofond to compile and distribute the yearbook, and the necessary financial resources for this work are therefore unavailable.

In order to meet the present as well as future needs of the domestic and foreign professional and business community, the Czech Geological Survey – Geofond has nonetheless decided to publish the yearbook albeit with a minimum content and extent in both of its language versions (Czech and English), however only in electronic format on the Internet on its website. The Czech version is available at <http://www.geofond.cz/cz/onas/dokumenty/rocenka-surovinove-zdroje-cr-nerostne-suroviny>, and the English version at <http://www.geofond.cz/en/about-us/mineral-yearbooks>.

The large team of external authors and reviewers, composed of respected domestic and foreign experts, has dissolved as a result of the lacking funds. The yearbook however continues to cover the basic information in terms of statistics on the mineral resources of the Czech Republic and their exploitation, on foreign trade in minerals, and on domestic prices of exploited minerals. Information has also been kept for those interested in the prospecting for and exploration and mining of mineral deposits in the Czech Republic, and in the connection of mining activities with environmental protection in the Czech Republic. However, the unique research (and its publication) on the economic situation of domestic mining companies, on the costs of eliminating negative consequences of mining in the Czech Republic, and on (Central) European prices of aggregates has been discontinued.

The yearbook also had to abandon another part of its mission that was greatly appreciated by many of its users. Specifically, it provided domestic and foreign professionals and students with information on selected minerals and on the trends of their use, information that is globally significant and dispersed in a number of other sometimes hard to find information sources. The ***Mineral Facts*** chapter of this year's publication still includes an exclusive contribution on coal by the World Coal Association in London, which was arranged with the representatives of this organization last year.

The publication not only continues to cover the most important minerals of the Czech Republic that are or have recently been of industrial importance, but also those minerals,

whose reserves or (approved and unapproved) resources have not been mined in the Czech Republic in the past. The listed minerals also include minerals unmined in the present and past, without existing resources and reserves, which are items of Czech foreign trade that can be monitored via tariff items. The publication includes basic data on the status and changes in the mineral reserves of the Czech Republic taken from the Register of Mineral Deposit Reserves of the Czech Republic (*Bilance zásob výhradních ložisek nerostů České republiky*) (hereinafter “the Register”), which is published for a limited number of state administration agencies.

Additional information on domestic prices of minerals, imports and exports, major mining companies, and the location of mineral deposits is intended to assist in understanding the mineral potential of the Czech Republic and to stimulate investment in the minerals industry. This is also aided by the listed prognostic resources, both officially approved by the Commission for Projects and Final Reports of the Ministry of the Environment (*Komise pro projekty a závěrečné zprávy – KPZ*) in categories P₁, P₂, P₃ and unapproved by KPZ (mentioned only in expert reports).

The mineral reserves presented are geological reserves, also called *total reserves*, i.e. original reserves (in situ) within individual deposits, estimated according to the given classification and technical-economic conditions of their exploitability. The initial data come from mineral reserve estimates, which were approved or verified in the past by the Commission for Classification of Mineral Reserves and/or by the Commission for Exploration and Mining of Reserved Minerals of the former MHPR ČR and MH ČR, or by former commissions for management of mineral reserves of individual mining and processing industries. Uranium reserves and reserve estimates were approved by the Commission for Classification of Radioactive Mineral Reserves of the former Federal Ministry of Fuels and Energy. Currently, an approval of a reserve estimation lies within authority of the subject financing the estimation. If the subject is a private company, the company itself approves its reserve estimation. If the subject is the state, the KPZ approves the estimation. In accordance with section 14, article 3) of the Mining Act no. 44/1988 Coll. as amended also the private company submits its reserved mineral reserve estimation to the KPZ via the Ministry of the Environment of the Czech Republic, so that the KPZ may review if the estimation report contents comply with the provisions of the Mining Act.

There are reserved and non-reserved minerals and deposits as defined by the Mining Act no. 44/1988 Coll., as amended. Reserved minerals always form reserved deposits which are owned by the Czech Republic. Non-reserved deposits are owned by landowners. Non-reserved minerals (construction minerals) can form both reserved and non-reserved deposits. Until 1991, reserved deposits of sufficient mineral quantity and quality were proclaimed „suitable for the needs and development of the national economy” as defined by the Mining

Act at that time. Since 1991, the newly recognised and explored deposits of non-reserved minerals form non-reserved deposits.

In 1993–2001, the Ministry of the Environment along with the Ministry of Industry and Trade undertook a fundamental economic revaluation of the mineral wealth of the Czech Republic. In 2003–2006, the task has continued to a smaller extent. Therefore compared to past years, many considerable changes have occurred in the number of deposits and registered reserves of many minerals (especially metallic ores).

The *Mineral Commodity Summaries of the Czech Republic* includes selected minerals according to whether they are or were mined in the territory of the Czech Republic. Currently mined minerals also include approved prognostic resources, if existing. Currently unmined minerals are divided into those that were mined in the past and those that have never been mined. In both cases, it is distinguished whether their resources and reserves are known or not and, generally, also whether they are metallic ores or industrial minerals. Separate chapters are dedicated to each mineral, or mineral grouping common in its deposit. Each chapter is structured identically. The separate chapters of *currently mined minerals* listed - mineral fuels, industrial and construction minerals, and metallic ores, which are of economic importance and of substantial reserves in the territory of the Czech Republic - consist of five parts.

Part 1. Registered deposits and other resources of the Czech Republic – is based on the inventory of mineral deposits of the Czech Republic and, for the majority of minerals, includes a list of deposits and their location. The names of exploited deposits are given in bold. As for energy minerals and some industrial minerals, only regions and basins rather than single deposits are given. As for dimension stone and construction minerals, which are scattered in hundreds of deposits over the whole territory of the Czech Republic, their groupings are located in the subdivisions of reserved, non-reserved, exploited and unexploited deposits.

Part 2. Basic statistical data of the Czech Republic as of December 31 – are extracted especially from the Register. There are 3 groups of minerals (ores, energy minerals, and reserved industrial and construction minerals) registered in the Czech Republic. Mine production of non-reserved deposits has been monitored since 1999. Approved prognostic resources are stated, too, if proved they exist.

NOTE: The *Register* presents the *reserves* data in the categories on exploration (prospected, explored) and economic use (economic, potentially economic), as stipulated by relevant statutes starting with the Mining Act. *Reserves* include *potentially economic reserves*, i.e. reserves which are currently not recoverable and which are, therefore,

potentially economic resources. Consequently, total mineral reserves are in reality total mineral resources. The term reserves as used, by contrast, in standard international classifications represents only the parts of explored resources which are available for immediate extraction. All other registered parts are resources, not reserves, of a given mineral. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter of this yearbook *“Mineral reserve and resource classification in the Czech Republic and its evolutionary comparison with international classifications”*.

Part 3. Foreign trade – provides information on import and export, and on average import and export prices of important tariff items of the given raw material (and cites international numeric codes of the tariff items). The foreign trade data are the latest (continuously reviewed) data of the Czech Statistical Office (ČSÚ) – without analyses of their reliability.

Part 4. Prices of domestic market – provides indicative prices on domestic production, import and export prices. Domestic prices do not include VAT.

Part 5. Mining companies in the Czech Republic as of December 31, 2010 – provides a list of companies mining the given mineral in the territory of the Czech Republic. The companies are listed according to production level. Their addresses are available from the Czech Geological Survey – Geofond.

Numerous domestic and foreign data, used in compiling the present yearbook, came from journals, expert literature and the latest editions of various international statistical yearbooks.

MINERAL BASE OF THE CZECH REPUBLIC AND ITS DEVELOPMENT IN 2010

*Tomáš Sobota and Josef Janda,
Ministry of the Environment of the Czech Republic*

1. Legal framework for mineral resource use

1.1. Reserved and non-reserved minerals and their deposits

The minerals defined in Act No. 44/1988 Coll., on the Protection and Use of Mineral Resources (the Mining Act) as amended, are classified as being reserved and non-reserved. Natural accumulations of reserved minerals form reserved mineral deposits which constitute the mineral wealth of the country and are owned by the Czech Republic. Deposits of non-reserved minerals (especially sand and gravel, crushed stone and brick clay) are a constituent part of the land as stipulated in section 7 of the Mining Act. The possibility to declare significant non-reserved mineral deposits as reserved deposits, was cancelled by the amendment of the Mining Act in 1991. Decisions of administrative agencies in this matter, which had been issued before the amendment went into effect, remain valid based on transitional provisions (section 43 and 43a of the Mining Act). The deposits specified by these decisions are still reserved deposits, i.e. owned by the state, separated from the land itself.

1.2. Planning, approval and carrying out of mineral prospecting and exploration

1.2.1. Reserved minerals

Prospecting and exploration for reserved mineral deposits, by virtue of the ČNR Act No. 62/1988 Coll., on Geological Work (the Geological Act) as amended, may be conducted by an individual or organisation, providing that the work is managed and guaranteed by a qualified and certified person (certified responsible manager for the geological work). An organisation seeking to prospect for and explore these mineral deposits, to verify their reserves, and to process geological documents for their exploitation and protection, must make a request to the Ministry of the Environment to establish an exploration area. The proceedings, subject to administrative rules, are concluded by the establishment or non-establishment of an

‘exploration area’ (exploration permit). In the former case, the following must be determined: the survey area, the mineral to be prospected and explored for which the exploration area is being established, the conditions for the execution of the work, and the period of validity of the exploration area. The exploration area is not a territorial decision, but provides the entrepreneur or organisation (hereinafter “entrepreneur”) with the exclusive privilege to prospect for the mineral in a given exploration area. In the first year, the entrepreneur is obliged by law to pay a tax of CZK 2,000 per km² or km² piece of exploration area, which increases annually by CZK 1,000 per km² and its piece (to CZK 3,000 in the second year, to CZK 4,000 in the third year, etc.). These taxes represent an income for the municipalities, in whose cadastral areas the exploration area is established.

Within the scope of planning and conducting the prospecting for and exploration of reserved mineral deposits, the organisation must consider the conditions and interests protected by special regulations (section 22 of the Act on Geological Work). These primarily refer to laws for the protection of landscape and nature, agricultural and forest land; to the Water and Mining Acts etc. The Ministry of the Environment can cancel the established exploration area, if the organisation repeatedly or severely violates the obligations set by the Geological Act.

1.2.2. Non-reserved minerals (and their mining)

The above-mentioned enactments apply to prospecting and exploration for non-reserved mineral deposits, only, if they were previously declared as reserved deposits according to the transitional provisions of the Mining Act. In other cases, an organisation can prospect and explore for non-reserved minerals only upon agreement with the landowner. The provision under section 22 of the Act on Geological Work is also valid in these cases. The mining of reserved deposits is considered a mining operation under section 2 of the Mining Act and the mining of non-reserved deposits, which constitutes a part of the land, an operation conducted according to the mining methods set by Act No. 61/1988 Coll., on Mining Operations, Explosives and the State Mining Administration, as amended.

1.3. Permit to mine a prospected and explored deposit

If, during prospecting and exploration, a reserved mineral is found to be of quality and quantity indicative of its accumulation (supported by a partial deposit reserve estimate given in the category of prospected reserves), the organisation must report it to the Ministry of the Environment, which issues a certificate for the reserved deposit owned by the state. At the same time, this certificate ensures the deposit against actions rendering its mining difficult or impossible by the establishment of a protected deposit area (CHLÚ) according to section 17

of the Mining Act.

The entrepreneur's right to mine the reserved deposit is provided by the grant of a mining lease. The submittal of a proposal for the grant of a mining lease must be preceded by an approval from the Ministry of the Environment, which may depend on the fulfilment of limiting conditions accounting for the interests of the state mineral policy, and on covering expenses of geological work already funded by the state. The organisation, on whose behalf the exploration was carried out, has priority in receiving the approval for the grant of the mining lease. If it fails to assert its mining lease, precedence is then given to the organisation which participated financially in the exploration. Somewhat different rules apply to cases concerning crude oil and natural gas based on a transposed EU directive.

The mining lease is only granted to an entrepreneur possessing a Certificate of Mining Operations issued by an authorised Regional Mining Office. This grant procedure takes place in cooperation with relevant administrative agencies, mainly in agreement with environmental, land use planning and building authorities. The entrepreneur's proposal for the grant of a mining lease must be furnished with documentation as stipulated by law. The procedure deals with landowner relations and settlement of conflicts of interests, which are protected by special regulations. The environmental impact assessment (EIA) represents a part of the documentation, too. The grant of a mining lease represents a mining as well as land use authorisation.

The entrepreneur, who has been granted a mining lease, may start mining operations only after obtaining a mining permit from the authorised Regional Mining Office. Issue of this permit is subject to an administrative procedure assessing the plans of opening, the preparation and the mining of the deposit, and the plans for rehabilitation and reclamation after termination of mining. In justified cases, the Regional Mining Office may combine the grant of a mining lease and of a mining permit into one administrative procedure.

1.4. Royalties on reserved minerals mined

The entrepreneur is obliged to pay royalties on the mining lease and the extracted reserved minerals. An annual lease payment of CZK 100–1,000 is assessed on every hectare opened within the mining lease area, which is marked off on the surface. The payment is graded with respect to the degree of environmental protection of the affected area, the type of activity conducted in the mining lease, and its environmental impact. The Regional Mining Office fully transfers this payment to the municipalities, in whose territories the mining lease is located, according to the lease proportions in each municipal territory.

An annual royalties on minerals extracted in mining leases is given by the MPO Decrees No. 426/2001 Coll., and 63/2005 Coll., which amend the Decree No. 617/1992 Coll., detailing the payment of royalties on mining leases and extracted minerals.

The royalties on extracted minerals are calculated as

$$U = \frac{N_d}{N_c} \cdot T \cdot \frac{S}{100},$$

whereby

N_d = costs of mineral extraction (ths CZK)

N_c = total costs of the enterprise for manufacture of products (ths CZK)

T = sales (ths CZK)

S = royalty rate (%)

U = royalties total (ths CZK)

The Regional Mining Office transfers 25 % of the yielded royalties to the state budget of the Czech Republic to be purposefully used in remediation of environmental damage caused by the mining of reserved and non-reserved deposits, and the remaining 75 % to the budget of the relevant municipalities.

1.5. Reserves for mining damages and remediation during the mining of reserved minerals

During the course of mining, the entrepreneur is required to generate sufficient financial reserves for mining damages and for reclamation of areas affected by the deposit exploitation. Generating of the financial reserves is approved by the Regional Mining Office during the mining permit procedure regarding the opening and extraction of the deposit. Drawing on the reserves is permitted by the Regional Mining Office upon agreement with the Ministry of the Environment and upon notification by the relevant municipality. In the case of (partially) state-owned enterprises, the Regional Mining Office decides in agreement with the Ministry of Industry and Trade.

2. Selected statistical data on exploration and mining on the territory of the Czech Republic

Statistical data/Year	2006	2007	2008	2009	2010
registered geological works – number	2 563	2 941	3 450	3248	2 902
protected deposit areas – number	1 060	1 048	1 057	1069	1 077
mining leases – total number	986	988	979	971	967
number of exploited reserved deposits	508	512	508	507	505

number of exploited non-reserved deposits	219	220	222	227	211
mine production of reserved deposits, mill t ^{a)}	138	151	138	125	118
mine production of non-reserved deposits, mill t ^{a)}	15	16	17	15	12
organizations managing reserved deposits	328	338	315	319	315
organizations mining reserved deposits	204	205	200	200	188
organizations mining non-reserved deposits	165	188	160	172	153

3. Significance of mining in the Czech economy

Ratio/Year	2006	2007	2008	2009	2010
Real annual GDP growth, %	7.0	5.7	3.1	- 4.7	2.7
Share of mining and quarrying in GDP, %	1.3	1.3	1.4	1.3	1.3
Share of mining and quarrying in industrial production, %	2.4	2.5	2.8	2.9	2.6

Note:

* preliminary data

4. Trends of reserves of minerals (economic explored disposable reserves)

Totals in mill t (if not otherwise stated)

Statistical data/Year	2006	2007	2008	2009	2010
Metallic ores ^{a)}	26	26	26	26	26
Energy minerals ^{b)}	2 830	2 778	2 813	2 879	2 724
of which: uranium (U) (kt)	2	2	2	1	1
crude oil	12	15	16	15	15
natural gas ^{b)}	2	2	2	3	4
Industrial minerals	2 669	2 779	2 726	2 669	2 732
Construction minerals ^{c)}	5 220	5 200	5 170	5 200	5 200

Note:

^{a)} metals in ores total, since 2004 only Au ores (25 642 kt)

^{b)} natural gas – conversion into kt: 1 mill m³ = 1 kt

^{c)} at reserved mineral deposits including dimension stone, conversion into kt – dimension and crushed stones 1,000 m³ = 2.7 kt, sand and gravel and brick clays and related minerals 1,000 m³ = 1.8 kt

5. Summary of exploration licences valid in 2010 and newly issued in 2010 (listed according to minerals) - prospecting and exploration works financed by companies

Minerals and underground placement sites	Number of valid EA (min. 1)	Number of valid EA (min. 2)	Number of new issues in 2010	Start of validity in 2010
Bituminous coal	1	0	0	0
Crude oil and natural gas	34	0	1	1
Polymetallic (Pb-Zn-Ag) and Sn-W ores	3	0	2	2
Gemstones	0	0	0	0
Kaolin	6	2	1	1
Clays	4	0	1	1
Bentonite	11	2	3	3
Feldspar and feldspar substitutes	6	0	0	0
Silica raw materials	1	0	1	1
Dimension stone	0	0	0	0
Crushed stone	0	0	0	0
Sand and gravel	1	0	0	0
Underground placement site	10	0	2	2
Total	77	4	11	11

EA - exploration area

Mineral 1 (min. 1) – in case that the raw material is the major one

Mineral 2 (min. 2) – in case that the raw materials is a by-product

6. State-funded geological projects

6.1. Economic geology projects

The Central Geological Authority of the state administration fulfils the duty involving the state register of reserved deposits – state property (section 29 of the Mining Act). Accordingly, it issues the register as one of the main sources for

- land use planning
- the raw material policy
- the energy policy
- the environmental policy
- the structural policy
- the employment policy

The register lists the latest status of the deposits as documented in the reserves estimate. The reserves estimate is prepared with respect to the conditions of exploitability expressing

- the state of the market, prices, business economy,
- the mining and technical conditions of exploitation,
- the conflicts of interests arising from the deposit exploitation (primarily environmental protection and other conflicts)

It is altogether entirely unstable factors reflecting political, economic and social change (in the largest sense).

The state funds spent in this area were dedicated to the mapping of mining waste produced by past mining and processing of minerals, to the reevaluation of the reserves of silica minerals and lignite, and to the verification of feldspar prognostications.

Expenditures for state-funded exploration work related to economic geology
(rounded values)

1993	CZK	248.7 mill
1994	CZK	249.8 mill
1995	CZK	242.3 mill
1996	CZK	163.0 mill
1997	CZK	113.2 mill
1998	CZK	114.2 mill
1999	CZK	110.8 mill
2000	CZK	26.3 mill
2001	CZK	21.5 mill
2002	CZK	17.0 mill
2003	CZK	7.0 mill
2004	CZK	26.2 mill
2005	CZK	12.0 mill
2006	CZK	1.7 mill
2007	CZK	3.0 mill
2008	CZK	9.9 mill
2009	CZK	10.1 mill
2010	CZK	4.2 mill

6.2. Other geological projects

Mainly geological work of a non-economic geology character was funded by the state. Individual projects were publicly commissioned in order to implement the following partial programmes:

- rectify the consequences of past geological (non-economic geology) work financed by the state (mine workings not yet liquidated, boreholes)
- geological informatics
- geological mapping
- geohazards of the environment
- hydrogeology
- engineering geology
- comprehensive geological studies

The following expenditures were spent on these geological projects since 1998:

1998	CZK	29.6 mill
1999	CZK	39.2 mill
2000	CZK	48.5 mill
2001	CZK	72.8 mill
2002	CZK	61.0 mill
2003	CZK	67.0 mill
2004	CZK	52.1 mill
2005	CZK	60.3 mill
2006	CZK	55.4 mill
2007	CZK	58.1 mill
2008	CZK	41.0 mill
2009	CZK	42.2 mill
2010	CZK	35.0 mill

7. Summary of selected legal regulations on mineral prospecting and exploration in force as of June 30, 2010

7.1. Acts

Act No. 44/1988 Coll., on Mineral Protection and Use (the Mining Act) – as amended by the Acts No. 541/1991 Coll., No. 10/1993 Coll., No. 168/1993 Coll., No. 132/2000 Coll., No. 258/2000 Coll., No. 366/2000 Coll., No. 315/2001 Coll., No. 61/2002 Coll., No. 320/2002 Coll., No. 150/2003 Coll., 3/2005 Coll., No. 386/2005 Coll., No. 186/2006 Coll., No. 313/2006 Coll., No. 296/2007 Coll., No. 157/2009 Coll., No. 227/2009 Coll., No. 281/2009 Coll.

Act No. 61/1988 Coll., on Mining Operations, Explosives and the State Mining Administration as amended by the Acts No. 425/1990 Coll., No. 542/1991 Coll., No. 169/1993 Coll., No. 128/1999 Coll., No. 71/2000 Coll., No. 124/2000 Coll., No. 315/2001 Coll., No. 206/2002 Coll., No. 320/2002 Coll., No. 226/2004 Coll., No. 3/2005 Coll., No. 386/2005 Coll., No. 186/2006 Coll., No. 313/2006 Coll., No. 342/2006 Coll., No. 296/2007 Coll., No. 376/2007 Coll., No. 124/2008 Coll., No. 274/2008 Coll., 223/2009 Coll., No. 227/2009 Coll., No. 281/2009 Coll., No. 155/2010 Coll., No. 184/2011 Coll.

Act No. 62/1988 Coll., on Geological Work, as amended by the Acts No. 543/1991 Coll., No. 366/2000 Coll., No. 320/2002 Coll., No. 18/2004 Coll., No. 3/2005 Coll., No. 444/2005 Coll., No. 186/2006 Coll., No. 124/2008 Coll., No. 223/2009 Coll., No. 227/2009 Coll., No. 281/2009 Coll.

Act No. 157/2009 Coll., on Mining Waste Treatment and Amendment of Some Acts

7.2. Other legal regulations

7.2.1. Mineral deposits exploitation

Decree of the ČBÚ No. 104/1988 Coll., on efficient use of reserved deposits, on permits and notification of mining operations and other activities employing mining methods, as amended by the Decree No. 242/1993 Coll., No. 434/2000 Coll., and No. 299/2005 Coll.

Decree of the ČBÚ No. 415/1991 Coll., on construction, the elaboration of documentation and the determination of safety pillars, rods and zones for the protection of underground and surface sites in the wording of the Decree of the ČBÚ No. 340/1992 Coll., and No. 331/2002 Coll.

Decree of the ČBÚ No. 172/1992 Coll., on mining leases in the wording of the Decree No. 351/2000 Coll.

Decree of the ČBÚ No. 175/1992 Coll., on the conditions of non-reserved mineral deposit exploitation in the wording of the Decree No. 298/2005 Coll.

Decree of the MŽP ČR No. 363/1992 Coll., on the survey and registry of old mine workings in the wording of the Decree of the MŽP No. 368/2004 Coll.

Decree of the MŽP ČR No. 364/1992 Coll., on protected deposit areas

Decree of the ČBÚ No. 435/1992 Coll., on mine surveying documentation during mining and during some operations employing mining methods in the wording of the Decree of the ČBÚ No. 158/1997 Coll. and the Decree No. 298/2005 Coll.

Decree of the MH ČR No. 617/1992 Coll., detailing the payment of royalties on mining leases and extracted minerals, in the wording of the Decree of the MPO No. 426/2001 Coll. and No. 63/2005 Coll.

Decree of the MHPR ČR No. 497/1992 Coll., on the registration of reserves of reserved mineral deposits

7.2.2. Geological work

Decree of the MŽP No. 282/2001 Coll., on the registration of geological work, in the wording of the Decree of the MŽP No. 368/2004 Coll.

Decree of the MŽP No. 368/2004 Coll., on geological documentation

Decree of the MŽP No. 369/2004 Coll., on the planning, execution and evaluation of geological work, on announcing geohazards, and on the procedure for estimating reserves of reserved deposits as amended by the Decree of the MŽP No.18/2009 Coll.

7.2.3. Regulations on licensing of mining operations and verification of qualification

Decree of the ČBÚ No. 298/2005 Coll., on the requirements for professional qualification and competence in mining or operations employing mining methods, and on some legal regulation changes, in the wording of the Decree No. 240/2006 Coll.

Decree of the ČBÚ No. 15/1995 Coll., on the licensing of mining operations and operations employing mining methods as well as on the development of sites and installations, which constitute these operations, in the wording of the Decree No. 298/2005 Coll.

Decree of the MŽP ČR No. 206/2001 Coll., on the certificate of qualification for planning, executing and evaluating geological work

ECONOMY AND MINERALS

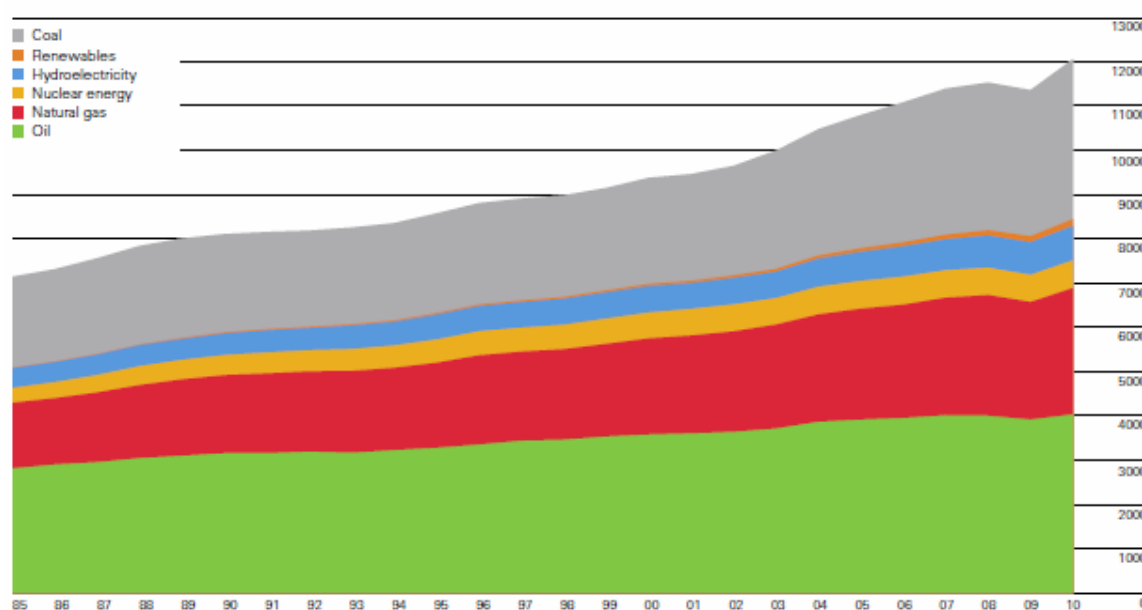
Mineral facts: International coal market - trends and perspectives

*Aleksandra Tomczak, reviewed by Milton Catelin and Benjamin Sporton
World Coal Association, London, United Kingdom*

Introduction

Coal consumption has been growing faster than that of any other fuel, including oil, over the past years. In 2010 coal consumption grew by 7.6 % and recorded the fastest global growth since 2003. Coal now accounts for 29.6 % of global energy consumption, up from 25.6 % 10 years ago (see more in Section 1).¹

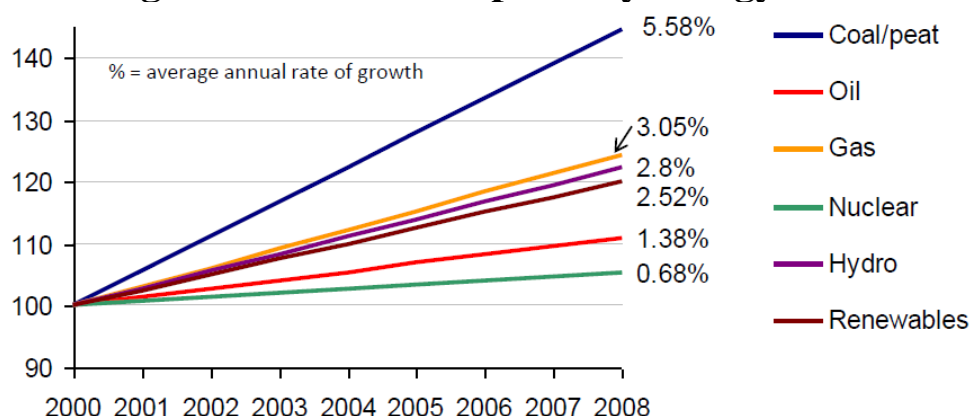
**Figure 1: World primary energy consumption
(million tonnes oil equivalent)**



Source: BP Statistical Review of World Energy 2011

¹ BP, BP Statistical Review of World Energy, London, 2011.

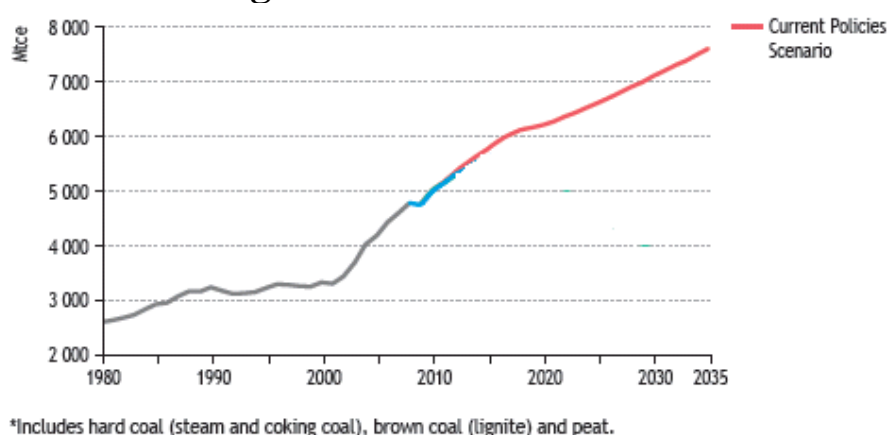
Figure 2: Increase in primary energy demand



Source: IEA, 2011

Around three quarters of coal produced globally is used in power generation and over 20 % by the iron and steel industry. Coal provides 41 % of the world's electricity and has remained the key natural resource for generating electricity over the past four decades.² Coal is also used as an energy resource for 64 % of the world's steel and 30 % of global aluminium production^{3,4} (see more in Section 2). According to International Energy Agency (IEA) calculations, consumption of coal is also set to grow in the future.

Figure 3: Global coal demand



Source: IEA 2010

Note: tce – see Table 4 (footnote)

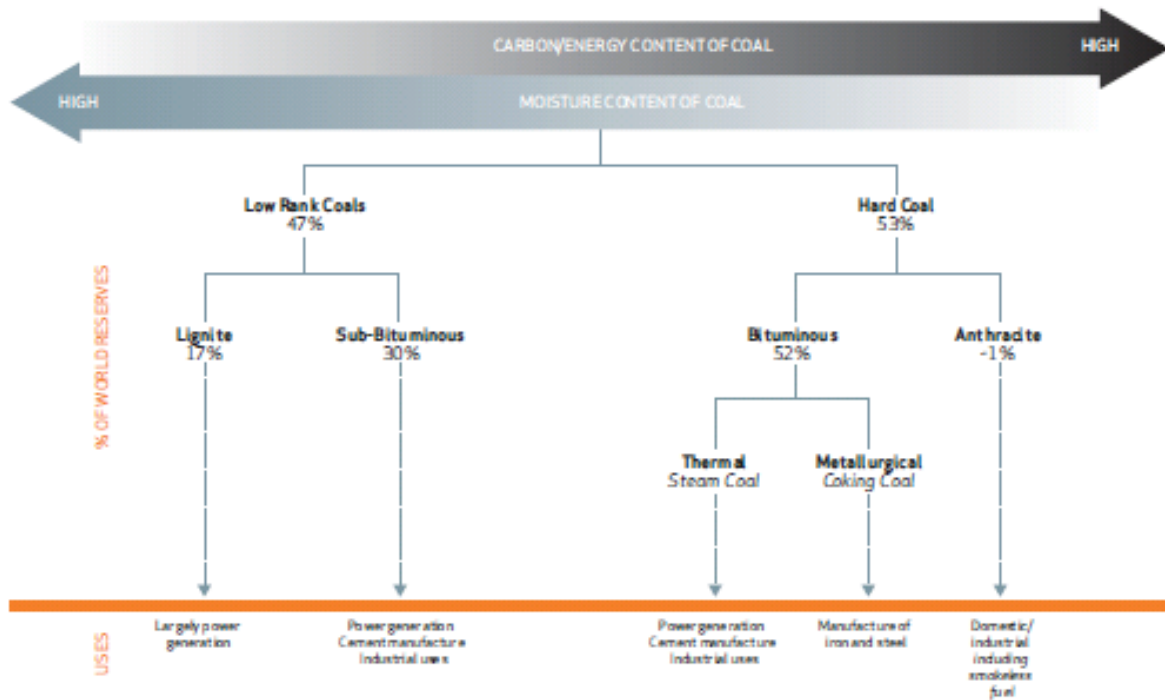
Different types of coal, depending on their physical and chemical properties, also have different uses. Higher rank coals, including metallurgical coal, also known as coking coal, are used for steel production. Lower rank coals and thermal coal, also known as steam coal, are used for power generation, cement manufacture and in other industrial processes.

² International Energy Agency (IEA), World Energy Outlook 2010, Electricity Information 2010, OECD, Paris, 2010.

³ World Coal Association (WCA), "Coal Resource", London, 2005.

⁴ International Aluminium Institute database, accessed on 18 April 2011, https://stats.world-aluminium.org/iai/stats_new/historical.asp?currentYear=2011&material=1&formType=4&dataTypes=&period=4&fromYear=2009&fromMonth=1&toYear=&toMonth=1&area=&submitSearch=Find+Stats

Figure 4: Types of coal



Source: World Coal Association

Use of coal raises a number of environmental challenges, including the emission of pollutants - such as oxides of sulphur (SO_x) and nitrogen (NO_x) - and trace elements, such as mercury. More recently, greenhouse gas (GHG) emissions, including carbon dioxide (CO₂) and methane (CH₄) have become a concern because of their link to climate change.

National environmental regulations, as well as international policies shape the economic context for the use of coal in energy generation and industrial processes. Many countries have already introduced mechanisms for pricing GHG emissions, such as the EU's flagship Emissions Trading Scheme (EU ETS). Other countries, such as Australia and South Africa, are currently debating the possibility of introducing carbon taxation. On a global level, GHG emissions are currently regulated through the United Nations Framework Convention on Climate Change and the Kyoto Protocol. However, the first commitment period under the Kyoto Protocol expires in 2012 without any decisions taken so far on how to continue regulating global GHG emissions (see more in Section 3)

Various technologies are now available to improve the environmental performance of coal-fired power stations. Although many technology solutions are already mature and widely deployed, some more innovative technologies, such as carbon capture and storage (CCS), are still in the demonstration phase. A key strategy in the mitigation of coal's environmental impacts is to improve the energy efficiency of power plants. Efficient plants use less coal per unit of energy produced and consequently have lower associated environmental impacts.

However, CCS technology is currently the only available technology that allows very deep cuts to be made in CO₂ emissions to the atmosphere from fossil fuels at the scale needed to

achieve global emissions reduction targets. According to the IEA's CCS roadmap, the total costs of mitigating climate change could go up by as much as 70 % if CCS technology is not available for deployment. All the elements of CCS have been separately proven and deployed, however a key step is the successful integration of large-scale CCS systems at power plants (see more in Section 4).

Section 1: International coal market

I. Key coal producers and consumers

China is the world's largest producer of coal, including both coking coal and steam coal, representing almost half of the world's hard coal and coking coal production. It is followed by the USA, India, Australia and Indonesia, jointly representing one third of the global hard coal output (Table 1). Coking coal currently accounts for about one eighth of the total hard coal output, with the key producers after China being Australia, Russia, the USA and India (Table 2). China, the USA and India are the world's largest steam coal producers. Jointly, these countries represent 75 % of the world's current steam coal output.

Table 1: Top ten hard coal producers

Country	Hard coal production in 2009 (million tonnes)	Share of global production in 2009
China	2971	49.6 %
USA	918	15.3 %
India	526	8.7 %
Australia	335	5.5 %
Indonesia	263	4.3 %
South Africa	247	4.1 %
Russia	228	3.8 %
Kazakhstan	96	1.6 %
Poland	78	1.3 %
Colombia	72	1.2 %

Source: IEA, Coal Information 2010

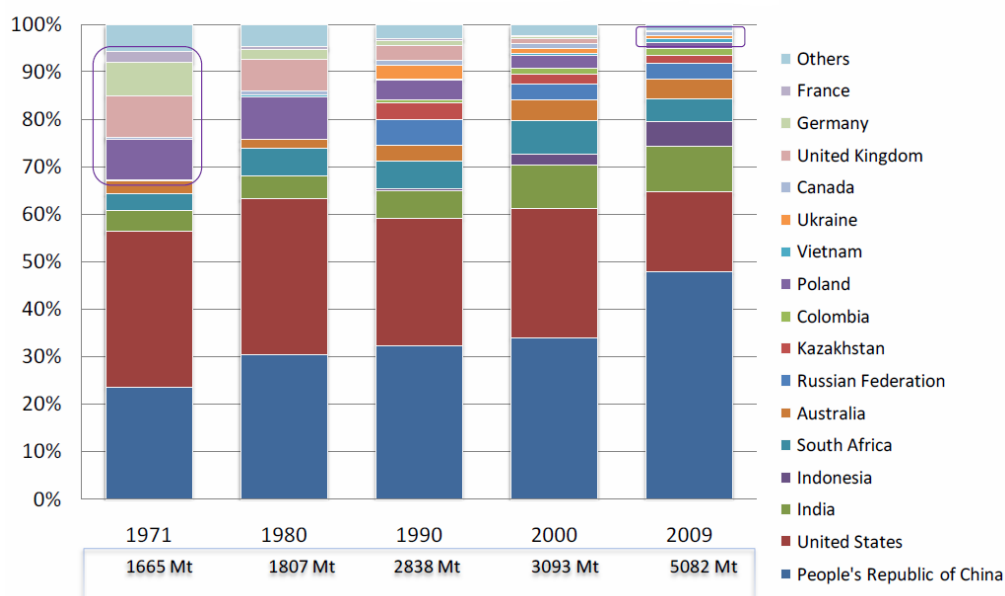
Table 2: Major coking coal producers

Country	Coking coal production in 2009 (million tonnes)	Share of global production in 2009
China	412	51.8 %
Australia	131	16.5 %
Russia	56	7 %
USA	46	5.8 %
India	32	4 %
Indonesia	29	3.6 %
Canada	23	2.9 %
Ukraine	18	2.2 %
Kazakhstan	13	1.6 %
Germany	9	1.1 %

Source: IEA, Coal Information 2010

Historically, the USA and China have been the world's largest coal producers and their cumulated production has continuously accounted for over 50 % of the world's coal production since the 1970s. In the 1990s and 2000s, US steam coal production was fairly comparable to that of China, however during the past ten years China has largely overtaken the USA as the world's largest producer, today producing three times as much steam coal as the USA. The share of European countries' coal production in the global coal output also shrank, going from 20 % of the world's coal output in the 1970s to less than 5 % today.

Figure 5: World steam coal production



Source: IEA Clean Coal Centre

Brown coal, which is a low energy content coal typically mined in the vicinity of power plants, is mainly produced in Europe. Almost half of the world's brown coal is produced in European countries. Germany is the world's largest brown coal producer, representing 18.5 % of the world's brown coal output.

Table 3: Major brown coal producers

Country	Brown coal production in 2009 (million tonnes)	Share of global production in 2009
Germany	169	18.5 %
Turkey	70	7.6 %
Russia	68	7.4 %
USA	65	7.1 %
Greece	64	7 %
Australia	64	7 %
Poland	57	6.2 %
Czech Republic	45	4.9 %
Serbia	38	4.1 %
Indonesia	38	4.1 %

Source: IEA, Coal Information 2010

The importance of China

Apart from being the world's largest producer of coal, China is also its largest consumer. In fact, China accounts for around a half of the world's coal consumption. It is followed by the USA, India and Russia, representing 14.1 %, 8.2 % and 3 % respectively (Table 4). Although, as recently as 10 years ago, coal was not expected to play such an important role in China and the part of coal in the country's electricity mix decreased from 76 % to 67.4 % between 1994 and 2001.⁵ This trend was short-lived and Chinese coal demand doubled between 2001 and 2006, driven by the country's economic growth. This upturn is projected to continue since the Chinese energy market will be responsible for most of the global increase in coal use by 2035. The Chinese rationale for using coal is based on economic and security of supply considerations. By 2009, China's coal imports had tripled and China became a net importer of coal of the first time. Although coal imports represent a small fraction of China's overall coal consumption, their absolute weight was significant enough to affect the international coal

⁵ S. Valenchon, O. Massol, 'Le charbon en Chine. Etat des lieux et perspectives', *Innovation, Energie, Environnement*, Paris, 2008, p. 1.

market as a whole.⁶

Table 4: Major coal consumers

Country	Coal consumption in 2009 (million tonnes of coal equivalent ⁷)	Share of global consumption in 2009
China	2340	47.7 %
USA	695	14.1 %
India	406	8.2 %
Russia	151	3 %
Japan	145	2.9 %
South Africa	135	2.7 %
Germany	101	2 %
Korea	91	1.8 %
Australia	79	1.6 %
Poland	77	1.5 %

Source: IEA, Coal Information 2010

II. International coal trade

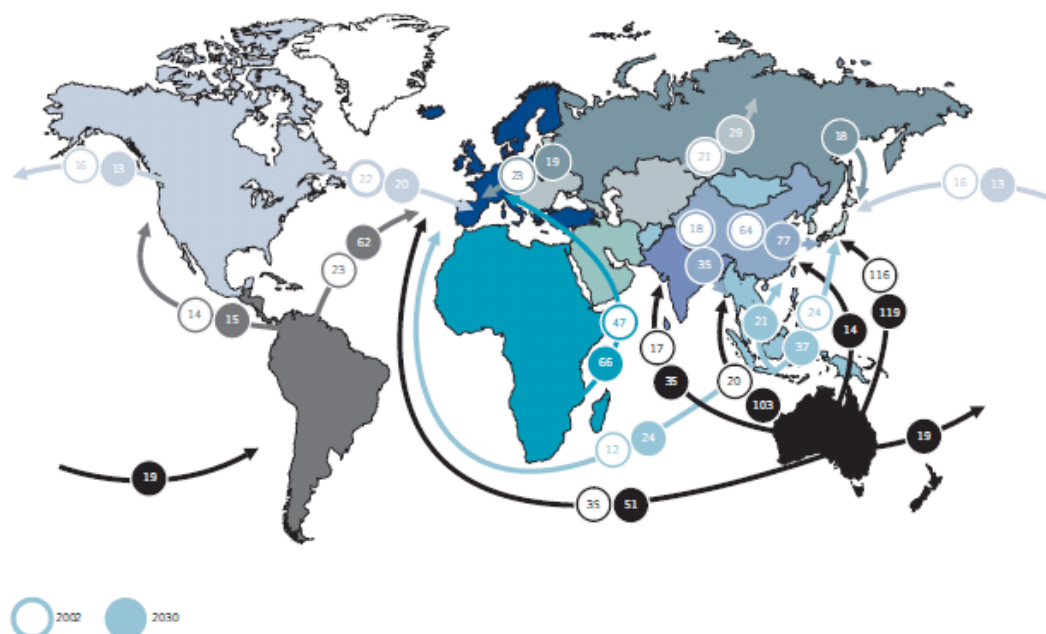
Although the international coal trade represents only a small fraction of the global output (15.7 %), the proportion of coal traded internationally has grown quicker than coal production over the past 25 years.⁸ In fact, the size of the international coal market has more than doubled in size since 1986, while global coal production increased by 87 % over the same period.⁸

⁶ International Energy Agency (IEA), World Energy Outlook 2010, Electricity Information 2010, OECD, Paris, 2010.

⁷ Tonne of coal equivalent (tce) –energy unit for coal enabling to express on comparable basis mass of various coals with various calorific values (1 tce = 7 Gcal = 29.308 GJ; e.g. 1 t of coal with calorific value 24 GJ/t = 0.82 tce) and also various energy minerals (1 tce = 0.7 tonnes of oil equivalent (toe)) and resources (e.g. hydropower station capacities)

⁸ International Energy Agency, Coal Information 2010, OECD, Paris, 2010.

Figure 6: Inter-regional coal trade



Source: IEA 2004

Around 15 % of steam coal supplies come from import. The proportion is higher for coking coal, where over 25 % of supplies come from international trade.⁹

Indonesia, Australia, Russia, Colombia and South Africa are the largest exporters of steam coal and represent 81 % of international steam coal trade. Australia is the biggest player on the international coking coal market and has 53 % market share. It is followed by the USA, Indonesia, Canada and Russia (Table 5).

Table 5: Major coking coal exporters

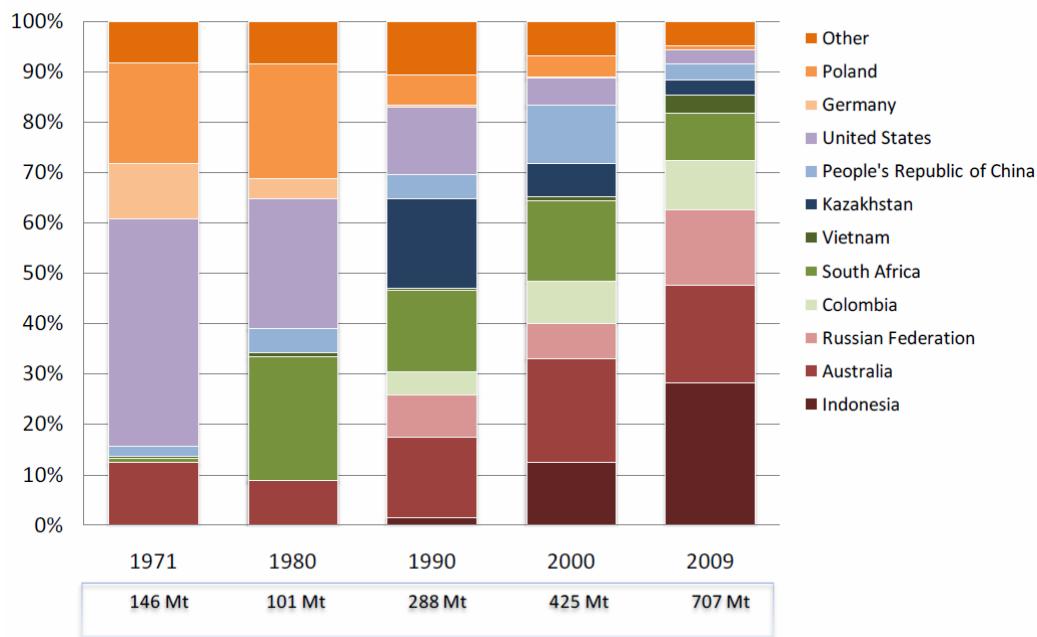
Country	Coal exports in 2009 (million tonnes)	Share of international trade
Australia	125	53.8 %
USA	34	14.6 %
Indonesia	29	12.5 %
Canada	21	9 %
Russia	11	4.7 %
Czech Republic	3	1.2 %
New Zealand	2	0.8 %
Poland	1.7	0.7 %
China	1.5	0.6 %
Belgium	0.9	0.3 %

Source: IEA, Coal Information 2010

⁹ IEA Clean Coal Centre, Presentation by Paul Baruya, IEA, Paris, 2011.

Historically, the United States and Poland have been the world's largest coal exporters. South Africa, Russia and Indonesia, currently among the key coal exporters, have only joined the export market in the 1980s, 1990s and 2000s respectively.

Figure 7: World steam coal exports



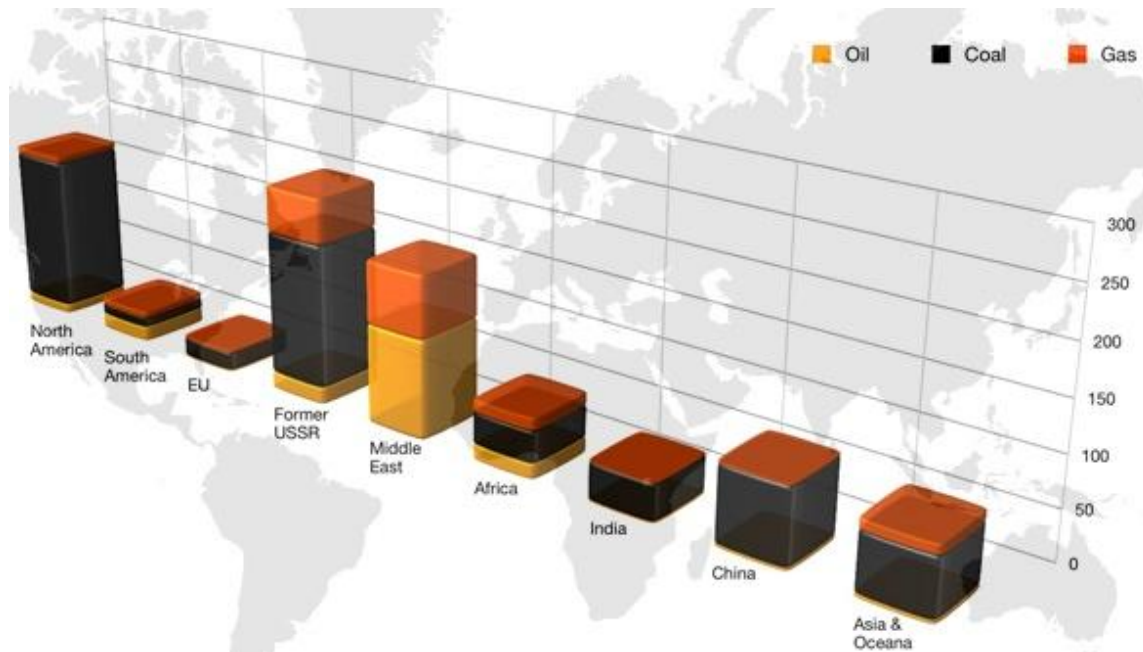
Source: IEA Clean Coal Centre, 2011

III. Reserves and Resources

It has been estimated that there are over 860 billion tonnes (10^9 t) of proven coal reserves worldwide.¹⁰ This means that there is enough coal to last around 118 years at current rates of production.¹⁰ In contrast, proven oil and gas reserves are equivalent to around 46.2 and 58.6 years at current production levels.¹⁰ Coal reserves are available in almost every country worldwide, with recoverable reserves in around 70 countries. The biggest reserves are in the USA, Russia, China and India.

¹⁰ BP, "BP Statistical Review 2011", London, 2011.

Figure 8: Coal resources and reserves



Source: World Coal Association

Over recent years there has been a fall in the reserves to production (RP) ratio, which has prompted questions over whether 'peak coal' has been reached.¹¹ Recent falls in the RP ratio can be attributed to the lack of incentives to prove up reserves, rather than a lack of coal resources. Exploration activity is typically carried out by mining companies and there is no economic need for these entities to prove long-term reserves.

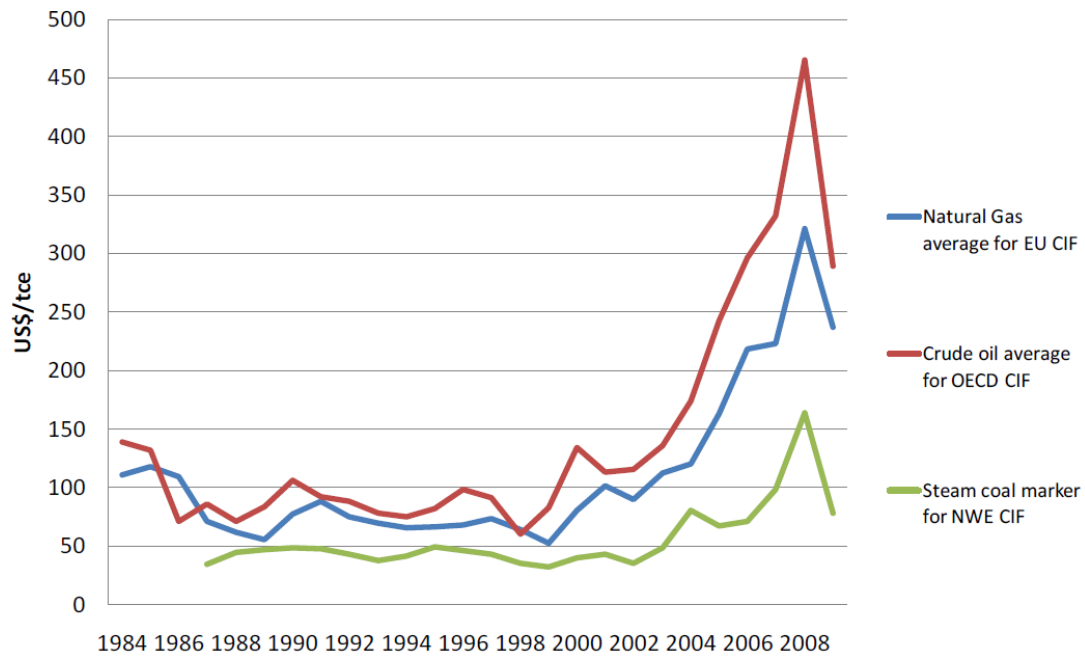
Turning resources into reserves could have a great effect on the global availability of coal. According to China's authorities there are 2.2 trillion tonnes (10^{12} t) of coal resources in Xinjiang – one of China's western provinces. This would be enough to fuel global coal demand for another 367 years at the current consumption rate. In fact, it is estimated that the global coal resource could be as much as four times the estimated current reserves of 860 billion tonnes (10^9 t). According to the German Federal Institute for Geosciences and Natural Resources, global coal resources make up an estimated 82 % of the world's non-renewable energy sources.

IV. Coal prices

Coal prices have historically been lower and more stable than oil and gas prices and it is likely to remain the most affordable fuel for power generation in many developed and industrialising countries for several decades.

¹¹ The peak of a resource is a point in time at which the maximum global coal production rate is reached and after which the rate of production enters irreversible decline.

Figure 9: International fuel price comparison



Source: IEA Clean Coal Centre, 2011

Note: The NWE (NW Europe price marker) is based on coal delivery into the ARA (Amsterdam-Rotterdam-Antwerp) hub of the most economic vessel in the current freight market from the sourcing countries

Section 2: Coal use

Coal and electricity generation

Coal plays a vital role in electricity generation worldwide. Coal-fired power plants currently fuel 41 % of global electricity. In some countries, coal fuels a much higher percentage of electricity.¹² Most of the coal used in electricity generation is steam coal, however in a number of countries worldwide brown coal is a commonly used resource for generating electricity.

¹² International Energy Agency (IEA), World Energy Outlook 2010, Electricity Information 2010, OECD, Paris, 2010.

Table 6: Coal in electricity generation

Country	Proportion of electricity from coal in 2008
South Africa	93 %
Poland	92 %
PR China	79 %
Australia	77 %
Kazakhstan	70 %
India	69 %
Israel	63 %
Czech Republic	60 %
Morocco	55 %
Greece	52 %
USA	49 %
Germany	46 %

Source: World Coal Association, 2009

According to the IEA, current energy consumption trends indicate that there will be a rise in global coal consumption of 59 % by 2035, with almost 85 % of the incremental growth coming from China and India alone.¹² Coal consumption is only expected to substantially decrease in Europe.¹²

The key driver of rising coal consumption is growing energy demand. In fact, by 2035 global energy demand is expected to increase by 47 % as more people will have access to electricity and energy demand of households in emerging economies and the least developing countries will continue to grow.

Coal and steel

Global steel production relies to a large extent on coking coal. In fact, metallurgical coal – or coking coal – is a vital ingredient in the steel making process and coal is used in almost 70 % of steel production. In 2009, world crude steel production was 1.2 billion tonnes (10^9 t) and around 761 million tonnes of coking coal was used in the production of steel.¹³ In 2010, global steel production rose by almost 15 %, up to over 1.4 billion tonnes (10^9 t).¹⁴

Because of its strength, durability and affordability, steel is a universal building material and is used for building skyscrapers, bridges, residential and commercial buildings. Steel is also a vital material for transport systems, such as cars, trains and ships. Finally, steel is also a critical material for the energy sector as it is used for fuel exploration, production, electricity generation and in supply infrastructure. It is used in offshore platforms, thermal and nuclear power plants, hydroelectric dams and renewable energy systems.

In Europe alone, the wind industry consumes around 700,000 tonnes of steel a year. In fact

¹³ International Energy Agency (IEA), Coal Information 2010, OECD, Paris, 2010.

¹⁴ World Steel Association statistics.

about 85 % of the wind turbines are installed on steel structures and steel represents around 80 % of all materials used to build wind turbines.¹⁵ As a result, it is estimated that 170 tonnes of coking coal are required to build a 70 metre high wind turbine.

Coal and cement

Coal is used as a primary energy source in cement production. Usually 450g of coal is used to produce approximately 900g of cement. Around 2.5 billion tonnes (10^9 t) of cement are used globally every year, mainly in the construction industry, as an essential ingredient for producing concrete.¹⁶ Conventional fuels, amongst which coal is the biggest, are used to produce 90 % of the world's cement output.¹⁶ Recycled coal combustion products, such as fly ash are also used in concrete production, as a replacement for primary raw materials.

According to the IEA, concrete is second only to water in total volumes consumed annually by society and its consumption is set to grow with the economic development and modernisation in the developing countries.

Coal liquefaction

Converting coal to a liquid (CTL) fuel – a process referred to as coal liquefaction – allows coal to be used as an alternative to oil. South Africa has been producing coal-derived fuels since 1955 and currently around 30 % of the country's gasoline and diesel needs are produced from indigenous coal. Today, around 96 % of all energy used in transport comes from petroleum. Liquid fuels from coal can be delivered from an existing pump at a filling station via existing distribution infrastructure and used, without modification, in the current vehicle fleet.

Section 3: Policy perspectives

I. General policy context

In the 1970s governments around the world began to develop policies to tackle the environmental impacts of using coal as a resource for generating electricity. These impacts include the release of pollutants – such as oxides of sulphur (SO_x) and nitrogen (NO_x) – and particulate and trace elements, such as mercury. More recently, the focus has been on developing and deploying technologies to tackle greenhouse gas emissions associated with the use and production of coal, including carbon dioxide (CO_2) and methane (CH_4).

Technologies are now available to improve the environmental performance of coal-fired power stations for a range of pollutants, including those mentioned above. In many cases a number of technologies are available to mitigate any given environmental impact. As a result

¹⁵ World Steel Association, Environmental Case Study: Wind Energy, 2008.

¹⁶ International Energy Agency (IEA), Cement Technology Roadmap, OECD, Paris, 2009.

SO_x and NO_x emissions have dropped in many countries. In the USA, coal use has risen by 77 % since 1980 while SO₂ emissions have declined by 40 %.

In terms of regulating greenhouse gas (GHG) emissions from coal combustion, carbon capture and storage (CCS) technology is the only currently available technology that allows very deep cuts to be made in CO₂ emissions to the atmosphere from fossil fuels at the scale needed. Its deployment is strongly supported by governments and organisations around the world, including USA, Australia, Canada, China, the EU, the International Energy Agency (IEA) and the G20.

II. International environmental policy

International climate talks, setting international targets for GHG emissions reduction and defining the policy framework in which international climate mitigation effort takes form, shape the policy environment in which the coal industry operates.

So far the only international agreement which sets legally binding GHG emissions reduction targets internationally is the Kyoto Protocol. This Protocol was agreed on in 1997 and committed industrialised countries and countries in transition to a market economy to reduce their overall emissions of GHG by an average of 5.2 % below 1990 levels between 1998-2012, with different targets set for each country. As the first commitment period under the Kyoto Protocol expires in 2012, the international community has been trying to agree on a post 2012 legal framework for climate change mitigation since the 2007 climate conference in Bali.

Although the deadline for concluding the negotiations had been initially set for 2009, the Copenhagen summit in December 2009 failed to deliver a new agreement and it is now becoming more obvious that the international community will not be able to finalise a new agreement before the current framework expires.

Developing and developed countries are currently unable to find common ground for agreement on most of the key issues, including the future of the Kyoto Protocol, the legal form of a post 2012 framework and financing. There is currently no international regulation of GHG emissions from the world's largest economies such as the USA, China and India.

III. Regional and national environmental policies

While prospects for an international climate agreement appear weak, policy frameworks and regulations aimed at reducing GHG emissions are being introduced by governments around the world and by the EU.

China

China accounts for around 50 % of the world's coal consumption and production. This makes

it the single most important coal market in the world, with a capacity to affect developments on the international coal market. Historically, China's coal demand has not been as high. In 1980, China's coal demand accounted for 17 % of the world's total. However, with the Chinese Government's ambition to provide universal energy access to all its citizens, coal-based energy has become the answer to China's growing energy demand. Coal has played a vital part in China providing access to electricity to over 450 million people in just 15 years. Utilisation of its coal resource enabled China to double energy output from 1990 to 2005 – coal provided 65 % of that increase.

China's most recent Five-year Plan for National Economic and Social Development, covering the period from 2011-2015 includes a series of environmental and coal production targets which are likely to affect the speed at which coal consumption grows in China. The key targets in China's 12th Five-year Plan are:

- Energy consumption per unit of GDP to be cut by 16 %
- CO₂ emissions per unit of GDP to be cut by 17 %
- Non-fossil fuel sources to account for 11.4 % of primary energy consumption (currently 8.3 %)
- Pollutant emissions to be cut by 8- 10 %
- Share of natural gas in China's energy mix to double, from 3.8 % to 8.3 %

Studies show that the new government policies on GHG emissions in China are likely to affect domestic coal consumption; however coal will remain the key energy resource in China's energy mix in the foreseeable future.¹⁷

USA

The USA accounts for 14.1 % of the current global coal consumption and for 15.3 % of the world's coal production. Coal also accounts for around 45 % of electricity produced in the USA.

Plans for a federal cap-and-trade scheme in the USA failed after the proposed climate and clean energy legislation did not gather enough political support and failed to pass in July 2010. As a result no federal carbon pricing policies are expected to be adopted in the USA in the near future, in spite of climate being one of the current President's priorities.

In the absence of a legislative development on GHG reduction in the USA, the US Environment Protection Agency (EPA) – the US federal regulatory body in charge of protecting the environment - announced it would issue performance standards for GHG emissions from fossil-fuel power plants, among others. Agency-led regulation of greenhouse gases in the USA seems to be an alternative to the unsuccessful cap-and-trade bill. However, the EPA's legal competence to regulate greenhouse gases is not recognised by all stakeholders and has been subject to debate for the past 10 years.

¹⁷ Lawrence Berkeley National Laboratory, "China's Energy and Carbon Emissions Outlook to 2050", Berkeley, 2011.

European Union

The EU accounts for 9.5 % of the current global coal consumption,¹⁸ however historically its share was as high as 25 % in the 1980s. As a result of the EU's climate policy, and other environmental regulations, coal consumption among EU countries has remained on a similar level since the 1990s and has not expanded regardless of growing energy demand. As a result coal now represents a lower proportional share in the EU's electricity generation mix than it used to a couple of decades ago (29 % now, compared to 40 % in 1990).¹⁹

The key policy regulating GHG emissions in the European Union is the Emissions Trading Scheme (EU ETS). The EU ETS establishes a European carbon market whereby emissions allowances can be traded across borders, setting an EU-wide price for carbon. The number of tradable emission allowances is capped and reduces gradually over time, with the intention of making carbon prices higher over a number of years.

Currently around 40 % of the EU's CO₂ emissions are covered by the EU ETS. This covers CO₂ emissions from installations such as power stations, combustion plants, oil refineries and iron and steel works, as well as factories making cement, glass, lime, bricks, ceramics, pulp, paper, board and soon, GHG emissions from the aviation sector. Given that fugitive methane emissions from coal mines are not covered by the scheme, the operating environment of the coal industry is mainly affected in an indirect way, through the energy generation sector.

Australia

Australia accounts for a relatively small fraction of the current global coal consumption (1.6 %), however it is a major exporter of coking and steam coal where it has a global market share of over 50 and 20 % respectively. Recent proposals by the current government to introduce carbon taxation, in advance of an emissions trading scheme, would affect the operating environment of multinational coal mining companies in Australia, potentially diverting companies' revenue away from necessary investment.

The plans recently announced by the Australian Government will put a fixed price on carbon from July 2012. The carbon price, imposed per tonne of CO₂ emitted, would increase annually at a pre-determined rate for a period of three to five years and would constitute the first stage of a two stage plan proposed by the government to reduce Australia's CO₂ emissions.

The proposed emissions trading scheme in Australia differs in scope and in ambition from the one in place in the EU. Most importantly for the coal industry, the scheme currently proposed would cover fugitive GHG emissions from mining operations, including methane emissions.

Section 4: Clean coal technologies

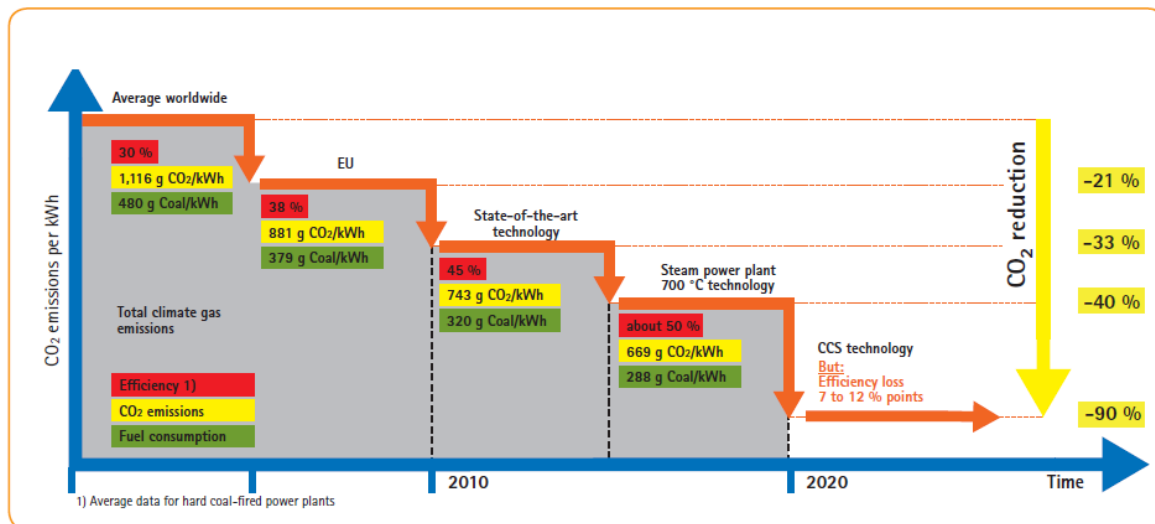
Technologies are now available to improve the environmental performance of coal-fired power stations for a range of pollutants. A key strategy in the mitigation of coal's

¹⁸ International Energy Agency, World Energy Outlook 2010, OECD, Paris, 2010.

¹⁹ European Commission, EU Energy in Figures 2010, Brussels 2010.

environmental impacts is to improve the energy efficiency of power plants.

Figure 10: Possible CO₂ emissions reduction from increased efficiency



Source: VGB PowerTech, Fact and Figures. Electricity Generation, 2010

Note: VGB PowerTech = the journal of the Verband der Großkessel- Besitzer e. V. (abbreviated VGB)

I. Efficiency improvements

Efficient plants burn less coal per unit of energy produced and consequently have lower associated environmental impacts. Efficiency improvements, particularly those related to combustion technologies, are an active area of research and an important component of a climate change mitigation strategy.

Maximum power plant efficiency went from 38 % in the mid 80s to 47 % in the mid 1990s.²⁰ In the EU, average efficiency is currently 38 % and research is currently being carried out to increase power plant efficiency to over 50 %.²¹ Efficiency improvements also allow a substantial reduction of CO₂ emissions, as one percentage point improvement in the efficiency of a conventional pulverised coal combustion plant results in a 2-3 % reduction in CO₂ emissions. This means that CO₂ emissions can be reduced by around 20 % through replacing an old, 36 % efficient coal-fired power plant with a new one reaching efficiency levels of 45 %.

²⁰ H.D. Schilling, 'How did the efficiency of coal power stations evolve, and what can be expected in the future', www.sealnet.org, 2005, page 1, retrieved 10 March 2010, <http://www.sealnet.org/s/8.pdf>

²¹ See Figure 10

There is great scope for achieving significant efficiency improvements as the existing fleet of power plants are replaced over the next 10-20 years with new, higher efficiency supercritical and ultra-supercritical plants. In fact, in the OECD countries, roughly half of the coal-fired capacity will need to be replaced within the next 20 years.

II. Carbon capture and storage

Carbon capture and storage (CCS) has been identified by the international community, as the most promising technology allowing coal combustion with near-to-zero CO₂ emissions. The International Panel on Climate Change (IPCC) and the International Energy Agency (IEA) estimate that carbon capture and storage has a strong potential to contribute to climate change mitigation through allowing a sustainable use of coal in the future.^{22,23}

Various components of CCS technology have already been demonstrated and have been in use for a number of decades. The objective of the current CCS demonstration programmes globally is to demonstrate the technology at a commercial scale, integrated within power plants.

The first major international commitment towards CCS technology came during the 2008 G8 summit in Japan, where G8 countries committed to launch 10 demonstration projects by 2010 in order for the technology to be deployed after 2020.²⁴ According to the Global CCS Institute (GCCSI), today there are over 200 active or planned CCS projects. Among them 77 are integrated large scale projects and eight are currently operating.²⁵

The Intergovernmental Panel on Climate Change (IPCC) has identified CCS as a critical technology to stabilise atmospheric greenhouse gas concentrations in an economically efficient manner. The IPCC found that CCS could contribute up to 55 % of the cumulative mitigation effort by 2100 while reducing the costs of stabilisation to society by 30 % or more. Many countries, including the USA, Australia, Norway, Canada and the UK, as well as the European Union invest heavily in the development of CCS technology. US\$14 billion has been allocated to over 33 CCS projects around the world since 2005.²⁶

III. Other technologies

Coal can also be used as a source of unconventional and synthetic gas which have similar properties to natural gas and can be used for electricity generation with a lower carbon footprint than direct coal combustion.

Underground Coal Gasification (UCG) is the on-site gasification of coal in the coal bed deep

²² IPCC Special report, '*Carbon Dioxide Capture and Storage*', Cambridge, Cambridge University Press, 2005

²³ IEA, '*Energy Technology Perspectives 2008*', Paris, OECD, 2008

²⁴ In support of recommendations of IEA and the Carbon Sequestration Leadership Forum

²⁵ GCCSI, "*Global Status of CCS 2010*", Canberra, 2011

²⁶ Global CCS Institute, "*The Global Status of CCS: 2010*", 2011

below the surface. It allows access to coal resources that are not economically recoverable by other technologies, usually because the coal deposits are too deep, low grade, or coal seams are too thin. The product of underground coal gasification is a synthetic gas which can be used as fuel for power generation and in chemical processes. Many experts believe underground coal gasification could double the availability of coal globally, enhancing the energy security of countries which do not have natural gas resources.

Coal Bed Methane (CBM) is a technology allowing methane recovery from un-mined coal seams. It can be fed into the existing gas pipeline network to supplement or replace conventional natural gas in pipeline networks, as an energy resource for thermal power plants and household, for cooking and heating. CBM provides a useful 'unconventional' source of natural gas and allows countries with restricted access to natural gas but plentiful coal supplies to utilise alternative sources of natural gas.

Outline of domestic mine production

		2006	2007	2008	2009	2010
Energy minerals						
Uranium	t U	383	322	290	286	259
	Concentrate production, t U ⁽¹⁾	358	291	261	243	237
Bituminous coal	kt	13 017	12 462	12 197	10 621	11 193
Brown coal	kt ⁽²⁾	48 915	49 134	47 456	45 354	43 931
Lignite	kt	459	437	416	262	0
Crude oil	kt	259	240	236	217	173
Natural gas	mil m ³	148	148	168	180	201
Industrial minerals						
Graphite	kt	5	3	3	0	0
Pyrope bearing rock	kt	39	34	24	26	23
Moldavite (tectite) bearing rock	ths m ³	95	114	99	58	57
	kt (1 m ³ = 1.8 kt)	171	205	177	104	103
Kaolin	Raw, kt ⁽³⁾	3 768	3 604	3 833	2 886	3 493
	Beneficiated, kt	673	682	664	488	636
Clays	kt	561	679	574	377	429
Bentonite ⁽⁴⁾	kt	267	335	235	177	183
Diatomite	kt	53	19	31	0	32
Feldspar	kt	487	514	488	431	388
Feldspar substitutes	kt	31	25	36	23	19
Silica minerals	kt	17	19	18	16	14
Glass sand	kt	963	942	1 151	990	888
Foundry sand	kt	773	850	702	374	473
Limestones and corrective additives for cement production	kt	10 441	11 670	11 465	9 488	9 828
Dolomite	kt	409	385	449	337	385
Gypsum	kt	16	66	35	13	5

Construction minerals						
Dimension stone	Mine production in reserved deposits, ths m ³ ⁽⁵⁾	242	242	229	209	262
	Mine production in reserved deposits, kt (1 m ³ = 2.7 kt) ⁽⁵⁾	653	653	618	564	707
	Mine production in non-reserved deposits, ths m ³ ⁽⁶⁾	55	50	45	54	43
	Mine production in reserved deposits, kt (1 m ³ = 2.7 kt) ⁽⁶⁾	149	130	105	146	116
Crushed stone	Mine production in reserved deposits, ths m ³ ⁽⁵⁾	14 093	14 655	14 799	13 947	12 350
	Mine production in reserved deposits, kt (1 m ³ = 2.7 kt) ⁽⁵⁾	38 051	39 569	39 957	37 657	33 350
	Mine production in non-reserved deposits, ths m ³ ⁽⁶⁾	1 300	1 350	1 600	1 350	1 450

	Mine production in non-reserved deposits, kt ($1 \text{ m}^3 = 2.7 \text{ kt}$) ⁽⁶⁾	3 510	3 645	4 320	3 650	3 920
Sand and gravel	Mine production in reserved deposits, ths m^3 ⁽⁵⁾	9 110	9 185	8 770	7 269	6 187
	Mine production in reserved deposits, kt ($1 \text{ m}^3 = 1.8 \text{ kt}$) ⁽⁵⁾	16 398	16 533	15 786	13 084	11 140
	Mine production in non-reserved deposits, ths m^3 ⁽⁶⁾	6 000	6 450	6 350	6 050	4 500
	Mine production in non-reserved deposits, kt ($1 \text{ m}^3 = 1.8 \text{ kt}$) ⁽⁶⁾	10 800	11 700	11 520	10 890	8 100
Brick clays and related minerals	Mine production in reserved deposits, ths m^3 ⁽⁵⁾	1 286	1 433	1 242	1 028	838
	Mine production in reserved deposits, kt ($1 \text{ m}^3 = 1.8 \text{ kt}$) ⁽⁵⁾	2 315	2 579	2 236	1 850	1 508

	Mine production in non-reserved deposits, ths m ³ ⁽⁶⁾	290	300	270	203	182
	Mine production in non-reserved deposits, kt (1 m ³ = 1.8 kt) ⁽⁶⁾	540	540	520	365	328
Metallic ores (not mined)						

- (1) corresponds to sales production (without beneficiation losses)
- (2) ČSÚ (Czech Statistical Office) presents so-called sales mining production which is production of marketable brown coal and reaches on average about 95 % of given mine production
- (3) raw kaolin, total production of all technological grades
- (4) including mining of montmorillonite clays overburden of kaolins since 2004
- (5) decrease of mineral reserves by mining production
- (6) estimate

Domestic share in the world mine production

		2006	2007	2008	2009	2010
Energy minerals						
Uranium (U)	world: WNA	0.97%	0.78%	0.66%	0.56%	0.48%
Bituminous coal	world: EIA, BP	0.25%	0.23%	0.22%	0.17%	0.18%
Brown coal + Lignite	world: EIA, BP, Vereine der Kohlen- importeure	5.15%	5.08%	4.90%	5.42%	4.22%
Crude oil	world: BP	0.006%	0.006%	0.006%	0.005%	0.004%
Natural gas	world: BP	0.005%	0.005%	0.005%	0.006%	0.006%
Industrial minerals						
Graphite	world: WBD, MCS	0.66%	0.27%	0.27%	0.00%	0.00%
Gemstones	Pyrope bearing rock	N	N	N	N	N
	Moldavite (tectite) bearing rock	N	N	N	N	N
Kaolin	world: MCS	8.41%	9.24%	10.68%	9.43%	10.27%
Clays		N	N	N	N	N
Bentonite	world: MCS	2.28%	2.82%	2.01%	1.81%	1.83%
Diatomite	world: MCS	2.45%	0.90%	1.41%	0.00%	1.75%
Feldspar	world: MCS	3.16%	2.84%	2.23%	2.28%	1.94%
Feldspar substitutes		N	N	N	N	N
Glass + Foundry sand	world: MCS	1.47%	1.42%	1.53%	1.22%	1.26%
Limestones and corrective additives for cement production	world: MCS *	0.34%	0.35%	0.33%	0.28%	0.28%
Dolomite		N	N	N	N	N
Gypsum	world: MCS	0.01%	0.04%	0.02%	0.01%	0.00%
Construction minerals						
		N	N	N	N	N
Metallic ores (not mined)						

* calculation based on lime and cement production, 2 t of limestone = 1 t of lime or 2 t of cement

ENVIRONMENT AND MINERALS

Mining and nature protection

1,495 reserved and 741 non-reserved mineral deposits were registered in the Czech Republic as of December 31, 2010. The number of exploited deposits was markedly lower – 467 reserved and 165 non-reserved. Only 48 reserved and 13 non-reserved deposits were mined in the specially nature protected areas, which represents 10.3 % and 7.9 % of the total number, respectively.

Act No 114/1992 Sb. on nature and landscape protection in its present wording regulates activities in specially protected areas (ZCHÚ) of the Czech Republic (national parks – NP (Národní park), protected landscape areas – CHKO (Chráněná krajinná oblast), national nature reserves, nature reserves, national nature monuments and nature monuments). According to this Act, all mineral mining (section 16) in national parks (with exception of crushed stone and sand mining for construction in the territory of the national park), in the first zone of protected landscape areas (section 26) and in national nature reserves (section 29) is prohibited. Although the mining of mineral resources is not prohibited by law in other areas (2nd to 4th zones of the CHKO, nature reserves, national nature monuments and nature monuments), it is very difficult to obtain authorization. Legal regulations which mention prohibition of the “permanent damage of the soil surface” are the main reason – and they practically exclude mineral mining. A further reason is the civil activity in the field of environmental protection.

Mineral deposits are mined, and were in the past mined, in the CHKO in majority of cases where the mining claims were already determined before these CHKO were established. Mining in the CHKO declined after 1989 till 2002, after it rather grows namely of registered deposits, which follows from the data in the table “Mining of reserved and non-reserved mineral deposits in CHKO” below and also from the fact that reserved deposits were mined in 19 from 25 CHKO in 2007 and 2008 (see the table “Mining of reserved and non-reserved mineral deposits in individual CHKO”) compared to 17 from 25 CHKO in 2006. Deposits were mined only in 16 CHKO in 2009 and 2010.

Specialty protected areas (ZCHÚ) in the Czech Republic

Number/Year	2006	2007	2008	2009	2010
Total number	2 217	2 221	2 234	2 247	2 267
national parks (NP)	4	4	4	4	4
protected landscape areas (CHKO)	25	25	25	25	25
others	2 188	2 192	2 205	2 218	2 238

Source: AOPK ČR (2010)

Structure of ZCHÚ in 2010

Category of specially protected areas	Number	Area (km ²)	Proportion on the territory of the Czech Republic 78 864 km ² (%)
LARGE-EXTENT ZCHÚ:			
national parks (NP) – mining explicitly prohibited	4	1 195	1.52
protected landscape areas (CHKO)	25	10 867	13.78
– (in them the 1 st zones of CHKO where	25	881	1.12
ZCHÚ with mining explicitly prohibited by	29	2 076	2.64
SMALL-EXTENT ZCHÚ:			
national nature monuments (NPP)	107	39	0.05
national nature reserve (NPR)	114	289	0.37
nature monuments (PP)	1 218	226	0.29
nature reserves (PR)	799	383	0.49
NPP, NPR, PP, PR	2 236	937	1.19
– (from them NPP, NPR, PP, PR on the area of NP, CHKO)	722	509	0.65
LARGE-EXTENT AND SMALL-EXTENT	2 265	12 490	15.85

Source: AOPK ČR (2010)

Mining of reserved and non-reserved mineral deposits in CHKO, kt

	Reserved deposits					Non-reserved deposits				
mineral	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
Gemstones*	31	21	24	26	23	–	–	–	–	–
Crude oil	0.9	0	0	0	0.5	–	–	–	–	–
Natural gas**	14.1	13.8	8.8	6.0	4.4	–	–	–	–	–
Quartz sand	1.5	0.8	0.6	0.9	0	–	–	–	–	–
Feldspar	290	306	280	230	214	–	–	–	–	–
Limestone	3 111	3 171	3 301	3 283	3 384	–	–	–	–	–

Dimension stone**	39	31	37	46	42	3.6	3.2	5.2	2.4	1.2
Crushed stone**	3 739	3 604	3 950	3 941	3 027	51	32	38	94	67
Sand and gravel**	1 737	1 735	1 463	1 175	1 133	116	51	50	40	45
Brick clay**	0	23	29	0	0	3.6	3.6	3.6	0	0
Total	8 963	8 906	9 093	8 708	7 827	174	90	97	136	113
Index, 1990=100	56	55	56	54	48	–	–	–	–	–
Index, 2000=100	–	–	–	–	–	57	29	31	44	36

* *pyrope bearing rocks*

** *conversion to kt: natural gas (1,000,000 m³ = 1 kt), dimension and crushed stone (1,000m³ = 2.7 kt), sand and gravel and brick clays (1,000 m³ = 1.8 kt)*

Mining of reserved and non-reserved mineral deposits in individual CHKO, kt*

Name of CHKO	2006	2007	2008	2009	2010
Beskydy Mts.	68	46	51	64	71
Bílé Karpaty Mts.	28	31	136	490	260
Blaník	0	0	0	0	0
Blanský les	761	632	729	490	604
Broumov region	137	133	123	145	110
České středohoří Mts.	1 876	1 736	1 818	1 788	1 142
Český kras (Bohemian Karst)	3 353	3 338	3 421	3 357	3 405
Český les Mts.	0.2	0.2	0.2	0	0
Český ráj	0	0	0	0	0
Jeseníky Mts.	173	162	138	138	103
Jizerské hory Mts.	0	0	0	0	0
Kokořínský region	4	4	4	0	0
Křivoklátský region	324	402	387	432	355
Labské pískovce (Elbe sandstones)	0	0	0	0	0
Litovelské Pomoraví region	49	92	67	54	7
Lužické hory Mts.	9	10	12	8	9
Moravský kras (Moravian Karst)	143	154	194	168	178
Orlické hory Mts.	0	0	0	0	0
Pálava region	0	0	0	0	0
Poodří region	0	23	29	0	0

Slavkovský les region	181	204	171	129	119
Šumava Mts.	70	51	70	78	70
Třeboň region	1 813	1 760	1 521	1 241	1 243
Žďárské vrchy Mts.	68	91	98	131	130
Železné hory Mts.	81	127	223	130	135
Total mine production (rounded)	9 138	8 996	9 192	8 843	7 941

As far as the impact of mining on the area is concerned, the CHKO Český kras (Bohemian Karst – limestone mining) is especially unfavourably affected. The impact on some other CHKO, especially CHKO Třeboň region, Poodří, České středohoří Mts., Blanský les and Moravský kras (Moravian Karst) is still rather high (see Tab. “Impact of mining of reserved deposits in CHKO”).

Impact of mining of reserved deposits in CHKO, t/km² in a year

(areas of CHKO as of December 31)

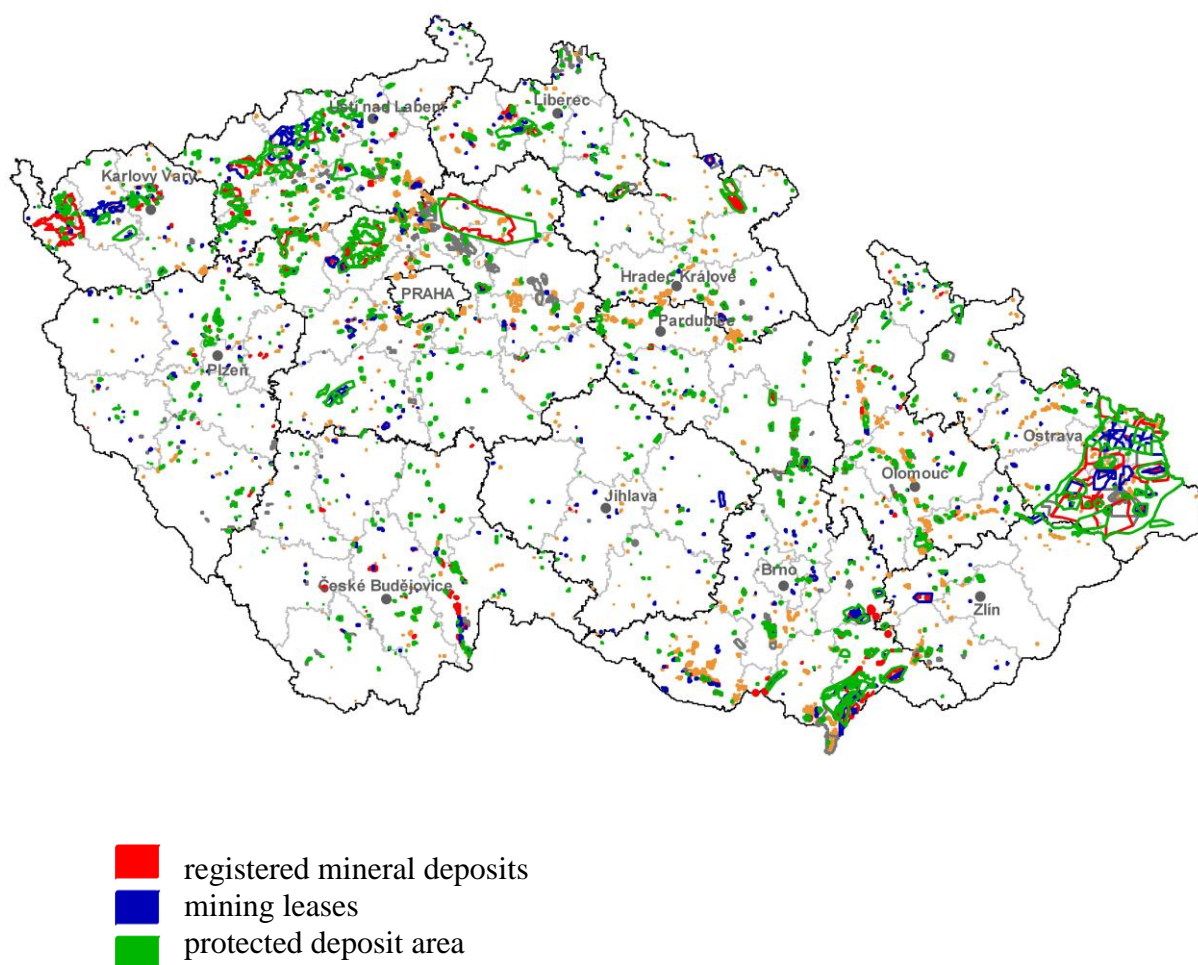
Name of CHKO	area km ² in 2010	2006	2007	2008	2009	2010
Beskydy Mts.	1 160	59	40	44	55	61
Bílé Karpaty Mts.	715	39	43	190	685	364
Blaník	40	0	0	0	0	0
Blanský les	212	3 592	2 981	3 439	2 311	2 849
Broumov region	410	334	324	300	354	268
České středohoří Mts.	1 070	1 753	1 622	1 699	1 671	1 067
Český kras (Bohemian Karst)	132	25 402	25 288	25 917	25 432	25 795
Český les Mts.	473	0	0	0	0	0
Český ráj	182	0	0	0	0	0
Jeseníky Mts.	740	234	219	186	186	139
Jizerské hory Mts.	350	0	0	0	0	0
Kokořínský region	270	13	15	15	0	0
Křivoklátský region	630	514	638	614	686	563
Labské pískovce (Elbe sandstones)	245	0	0	0	0	0
Litovelské Pomoraví	96	506	958	698	563	73
Lužické hory Mts.	270	34	37	44	30	33

Moravský kras (Moravian Karst)	92	1 559	1 674	2 109	1 826	1 935
Orlické hory Mts.	200	0	0	0	0	0
Pálava region	70	0	0	0	0	0
Poodří region	82	0	280	354	0	0
Slavkovský les	640	283	319	267	202	186
Šumava Mts. (CHKO + NP)	1 684	42	30	42	46	42
Třeboň region	700	2 589	2 514	2 173	1 773	1 776
Žďárské vrchy Mts.	715	95	127	137	183	182
Železné hory Mts.	380	213	334	587	342	355
TOTAL(total mining/total area)	10 868	841	828	846	814	731

Note: an impact exceeding 10,000 t/km² in a year is concerned critical

It is possible to get a clearer picture of mining activities in the Czech Republic from following map.

Mining activities charge of the Czech Republic territory



As well as the Act No. 114/1992 Sb. on nature and landscape protection, Act No. 100/2001 Sb. on environmental impact assessment and the Decree of the MŽP No. 175/2006 Sb. (formerly No. 395/1992 Sb.), by which some provisions of the Act No. 114/1992 Sb. are applied, have a fundamental influence on permission for exploration and mining.

The Mining Act No. 44/1988 Sb. obliges the mining companies by its section 31 to reclaim the areas with mining impacts and to create financial means for this reclamation. These are considered as mining costs from the viewpoint of the profit tax. Table “Development of reclamations after mining” shows that the areas with mining impact decreased and those reclaimed increased in 2006–2010.

Methods of reclamation used in 2010 are shown in the table “Reclamation after mining of reserved minerals in 2010”.

Development of reclamations after mining

km ²		2006	2007	2008	2009	2010
Reserved deposits	Area with manifestation of mining, not yet reclaimed	697	663	637	642	551
	Reclamations in process	110	113	115	115	105
	Reclamations finished since the start of mining	178	181	195	204	213
	Reclamations finished in the given year	11	8	11	11	11
Non-reserved deposits	Area with manifestation of mining, not yet reclaimed	17	16	16	15	17
	Reclamations in process	3	3	3	2	3
	Reclamations finished since the start of mining	2	2	2	2	3
	Reclamations finished in the given year	0.5	0.5	0.2	0.5	0.2

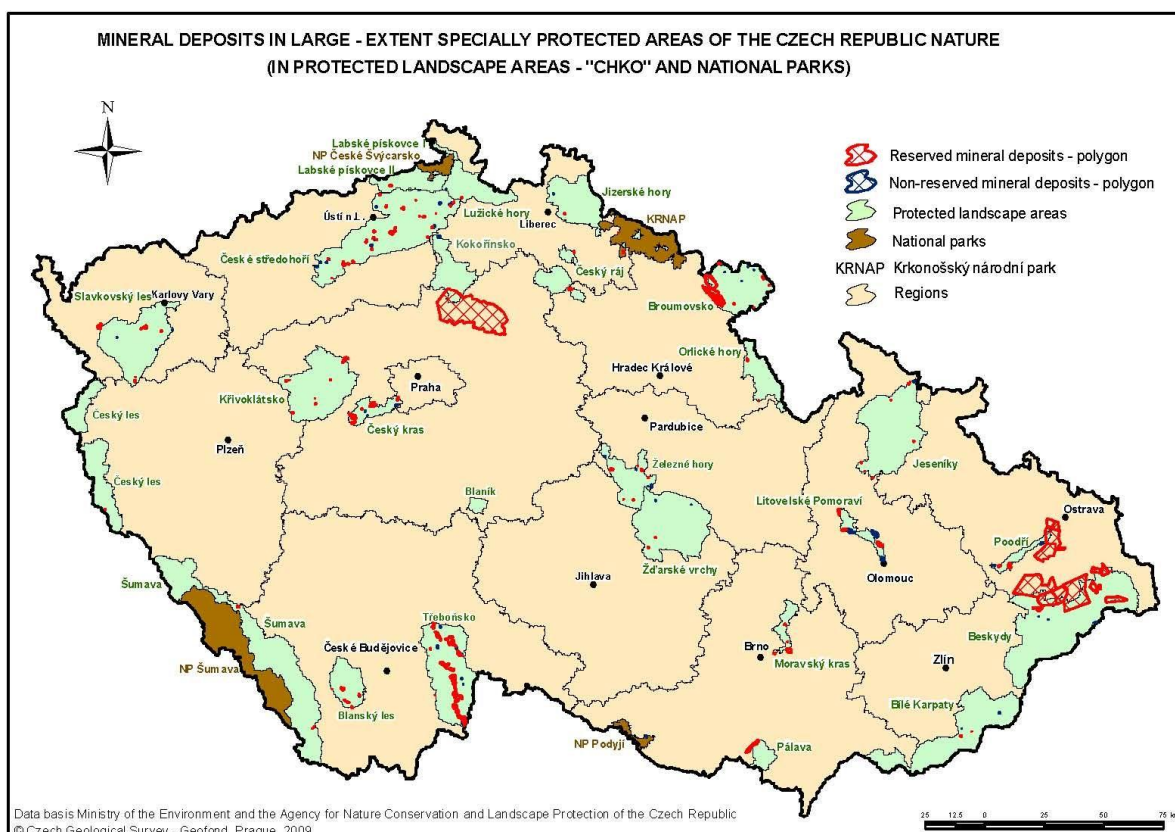
Reclamation after mining of reserved minerals in 2010

[ranked according to regions and way of reclamation; DP = mining lease (in = within, out = outside), areas in hectares (1 km² = 100 ha)]

Region	Reclamations in process								Reclamations finished							
	agricultural		forest		water		other		agricultural		forest		water		other	
	in DP	out DP	in DP	out DP	in DP	out DP	in DP	out DP	in DP	out DP	in DP	out DP	in DP	out DP	in DP	out DP
Prague	1	0	0	0	0	0	8	0	2	5	0	0	0	0	2	1
Central Bohemia	203	1	166	11	20	0	69	2	505	35	69	8	151	31	69	16

South Bohemia	10	0	35	3	4	0	9	0	70	55	107	2	316	0	33	1
Plzeň	26	0	40	1	0	0	9	0	41	36	36	48	2	0	22	12
Karlovy Vary	79	130	801	1 187	506	6	54	23	332	1 046	682	1 554	58	27	107	27
Ústí nad Labem	608	298	1 648	1 080	331	30	786	570	1 195	2 081	1 837	3 273	390	210	816	1 547
Liberec	34	0	89	20	0	0	23	0	65	45	202	16	5	0	3	0
Hradec Králové	34	1	25	5	3	0	12	0	78	7	114	4	99	39	21	15
Pardubice	8	0	6	7	56	0	2	5	35	0	18	9	39	0	7	2
Vysočina	0	1	2	0	0	0	3	2	0	0	29	5	0	0	3	4
South Moravia	169	8	54	1	2	0	21	9	500	40	158	15	9	0	15	16
Olomouc	17	3	60	60	100	2	1	0	28	47	7	3	48	0	7	5
Zlín	30	0	1	0	3	0	3	0	78	54	31	0	130	6	98	4
Moravia and Silesia	27	0	538	35	66	2	155	12	948	68	557	21	342	7	298	13
Czech Republic in total	1 246	442	3 465	2 410	1 091	40	1 155	623	3 877	3 519	3 847	4 958	1 589	320	1 501	1 663

Mining influences the environment, changes the character of the landscape, and alters ecological conditions for flora and fauna. In some areas mining activities can last several human generations. This way the impact of mining persists and a more permanent new arrangement of natural conditions and relationships in its area is not quickly evident. The new arrangement can be equal to or even better than the original one, of course on a different level. Examples include artificial lakes formed e.g. in south Bohemia by sand and gravel mining, constructions and sport grounds in former quarries or specially protected nature areas proclaimed paradoxically in the territory of former quarries, and also 35 hectares of new vineyards planted as agricultural reclamation of a closed brown coal mine in the north of Bohemia in the Most wine region. They represent by their area almost 6.5 % of the total 550 hectares of productive vineyards of the Czech wine region.



In Bavaria, Germany, they studied the plant biodiversity in local quarries (S.Gilcher-U.Tränkle (2005): Steinbrüche und Gruben Bayerns und ihre Bedeutung für den Arten- und Biotopschutz.-Bayerischen Industrieverband Steine und Erden e.V.,München.). Of the 2 533 known plant species (of which 701 are endangered) in Bavaria in quarries whose combined area amounts to 0.006 % of Bavaria's total area, they counted 1039 species (41 % of the total count), of which 87 species were endangered (12.4 % of all endangered plant species).

In Baden-Württemberg, Germany, (Schelkingen quarries – raw material for cement) an original research project was developed (Brodskom E.-Benett P.-Jans D. (editors)(2001): *Good environmental practice in the European extractive industry. A reference guide.- Environnement, hors-série no 1, p. 35. Société de l'industrie minérale. Paris.*). „This consisted of using cut grass to encourage vegetation growth by spreading it over the floor of a closed-down quarry. In order to protect germination, the grass counteracts high soil temperatures. The moisture of the soil is retained much longer, and the air humidity under the grass is higher. ... Corresponding tests on the following substrates were carried out at the quarry: raw soil substrate (unchanged quarry site), mixed substrate (screen residue and excavated material), excavated material. ... With regard to effectiveness, it can be stated that 50 to 60 % of the species established on the areas from which the cut grass was taken were introduced and naturalised in an single mowing process. The costs incurred by such the process range between a minimum of 0.43 – 0.61 EUR/m² (without site preparation) and a maximum of 1.36 – 1.87 EUR/ m² (including distribution of substrate and further measures).

In contrast to that, the costs occurring for recultivation for agricultural or forestry purposes, amount to between 1.02 – 3.07 EUR/ m².“

In 2009, participants in the workshop *Obnova území narušených těžbou nerostných surovin* (“Restoration of Mining-Impacted Land“) organized by the citizens association *Calla-Association for Preservation of the Environment* and by the Department of Botany of the Faculty of Science at the University of South Bohemia set down principles of eco-friendly restoration of mining-impacted land (J.Řehounek (2010): *Přírodovědci formulovali zásady ekologické obnovy ekological restoration po těžbě.-Minerální suroviny/Surowce mineralne*,1:32-33.*Těžební unie, Brno./ Naturalists formulate principles of post-mining ecological restoration.-Minerální suroviny/Surowce mineralne (magazine)*,1:32-33.*Mining Union of the Czech Republic,Brno.*):

1. Prior to commencing mining, a qualified biological assessment not only of the mining area, but also of its surroundings is essential. It would be beneficial if the actual mining were to be managed, if possible, in such a way so as to preserve (possibly maintain and expand) as many (semi) natural habitats in the immediate vicinity of the mine site or dumping ground. A roughly 100-metre zone in an area that can be accessed by most of the species is key for the subsequent colonization of the mining-impacted land during spontaneous succession.

2. Environmental impact assessments, biological assessments and reclamation plans, which concern the restoration of mining-impacted land and dumping grounds, should be prepared by experts, who are not only familiar with the current state of knowledge in the field of ecological restoration, but also with realistic possibilities and limits of mining technology. These problems should henceforth be included in the examinations for persons authorized to prepare environmental impact assessments pursuant to Act No. 100/2001 Coll. (EIA), and for persons certified in preparing biological assessments pursuant to § 67 of Act No. 114/1992 Coll. and in preparing assessments evaluating impacts on bird areas and on Special Areas of Conservation (SAC) pursuant to § 45i of said Act. Ongoing training in ecological restoration should be mandatory for these persons.

3. A basic restoration plan (e.g. in the form of a remediation and reclamation summary) should already be known when a mining lease (in the case of reserved deposits) is granted, or when a planning permit that designates the area for mining (in the case of non-reserved deposits) is granted, and should take into account the potential possibilities of the area. Room must be left to make any possible changes according to current conditions during the mine planning phase (plan of mine development work /POPD/ including detailed rehabilitation and reclamation plans, mining permits, etc.) and during the actual mining and completion phases.

4. It is essential to conduct another continuous assessment of the locality (a scheduled monitoring programme) already during the course of mining and after its termination, which may discover the presence of rare and endangered species and communities, as well as important geological and geomorphological phenomena. The restoration plan will have to be modified with respect to this assessment, which should be provided by the mining company via or under supervision of a qualified person.

5. Prior to, during and after mining, it is necessary to monitor invasive species at the mine site and in its surroundings. If their presence may possibly jeopardize the intended restoration method, then they must be removed by sanitation methods.

6. The great majority of mining-impacted land can restore itself spontaneously – via spontaneous succession, which may in some cases also be guided (directed, blocked or reversed). As a rule, at least 20 % of a large mine site's total area should be left to spontaneous succession in the most biologically valuable areas. Smaller mining sites and dumping grounds can usually be integrated into the landscape without problem, thus ecological succession may be implemented in their entire area.

7. If endangered and specially protected species and communities are highly dependent on the mine site environment, then their population and biotypes will have to be managed appropriately. This should be covered by mandatory funds generated by the mining company for reclamation, after its completion by public funds designated for landscape programmes.

8. The most valuable mine sites and dumping grounds should be declared specially protected areas (most often classified specifically as a nature monument) and managed accordingly, or declared temporary protected areas if only temporary protection is needed. Less valuable mine sites and dumping grounds left to eco-friendly restoration should almost always at least be registered as important landscape elements. Special attention should be paid to mine sites that may be incorporated into the territorial system of ecological stability.

9. Restoration of a mine site or dumping ground should primarily increase the observable landscape diversity. It is necessary to break up straight lines and surfaces (peripheries, shore lines, etc.) with uneven areas, at the very latest after termination of (or preferably during the course of) mining. Shallow shore areas are necessary at flooded mine sites.

10. Unsuitable pieces of equipment and waste should be removed after mining is terminated, if the aim is to integrate a mine site or dumping ground into the environment.

11. The nutrient-rich top soil sections must be permanently removed from those parts of the mine site that are designated for eco-friendly restoration in the least amount of time. This already needs to be taken into account during the reclamation planning phase. As overburden is returned, so are excess nutrients, which mostly support the evolution of a few less abundant, aggressive species, including invasive ones. Once mining commences it is therefore necessary to verify, in collaboration with protection of agricultural land resources authorities (hereinafter OZPF), if the overburden is being carefully and completely removed from areas designated for eco-friendly restoration. Otherwise it is necessary to modify the implementation of the reclamation plan, again however in collaboration with OZPF and mining authorities.

12. From an environmental protection perspective, phased mining and restoration works best at larger mine sites, specifically when spread out over a longer period so that abandoned areas of the mining area are gradually left to restoration. This procedure helps create more varied and higher-quality communities with regard to age and extent in restored areas.

13. It is beneficial to place permanent study areas designated for scientific research, testing of eco-friendly interventions and monitoring in all types of mining areas. These areas should be respected by the mining companies.

Conclusion of the workshop: Eco-friendly restoration of mining-impacted land is certainly not the only option of how to deal with the integration of these areas into the landscape. Our laws should however allow for this restoration method, which is common in many countries, to become an equivalent alternative to the thus far predominant forest and agricultural reclamations.

Share of specially Protected Areas of the Czech Republic nature [zvláště chráněná území přírody České republiky (ZCHÚs)] established in localities with former mining ("after mining") in all the ZCHÚs

(compiled after data of the Agency for Nature Conservation and Landscape Protection of the Czech Republic – AOPK ČR)

Region	Number of ZCHÚs (without CHKOs)	Area of ZCHÚs (without CHKOs) (ha)	Number of ZCHÚs "after mining"	Area of ZCHÚs (without CHKOs) "after mining" (ha)	Share of ZCHÚ areas "after mining" in the all ZCHÚs area	Share of ZCHÚ number "after mining" in the all ZCHÚs number
Central Bohemia	225	13 044	44	2 334	17.89 %	19.56 %
Prague	89	2 266	21	367	16.20 %	23.60 %
Karlovy Vary	70	3 381	7	237	7.01 %	10.00 %
Olomouc	139	5 441	9	228	4.19 %	6.47 %
South Moravia	283	10 469	10	253	2.42 %	3.53 %
Pardubice	97	5 715	3	92	1.61 %	3.09 %
Plzeň	181	8 900	14	100	1.12 %	7.73 %
Zlín	169	2 232	7	25	1.12 %	4.14 %
Moravia and Silesia	147	5 851	11	32	0.55 %	7.48 %
Liberec	112	43 487	6	215	0.49 %	5.36 %
Vysočina	170	5 677	3	28	0.49 %	1.76 %
Ústí nad Labem	141	11 363	8	27	0.24 %	5.67 %
Hradec Králové	110	7 434	6	12	0.16 %	5.45 %
South Bohemia	304	83 420	8	42	0.05 %	2.63 %
Czech Republic total	2 237	208 680	157	3 992	1.91 %	7.02 %

MINERALS CURRENTLY MINED IN THE CZECH REPUBLIC

ENERGY MINERALS

Bituminous coal

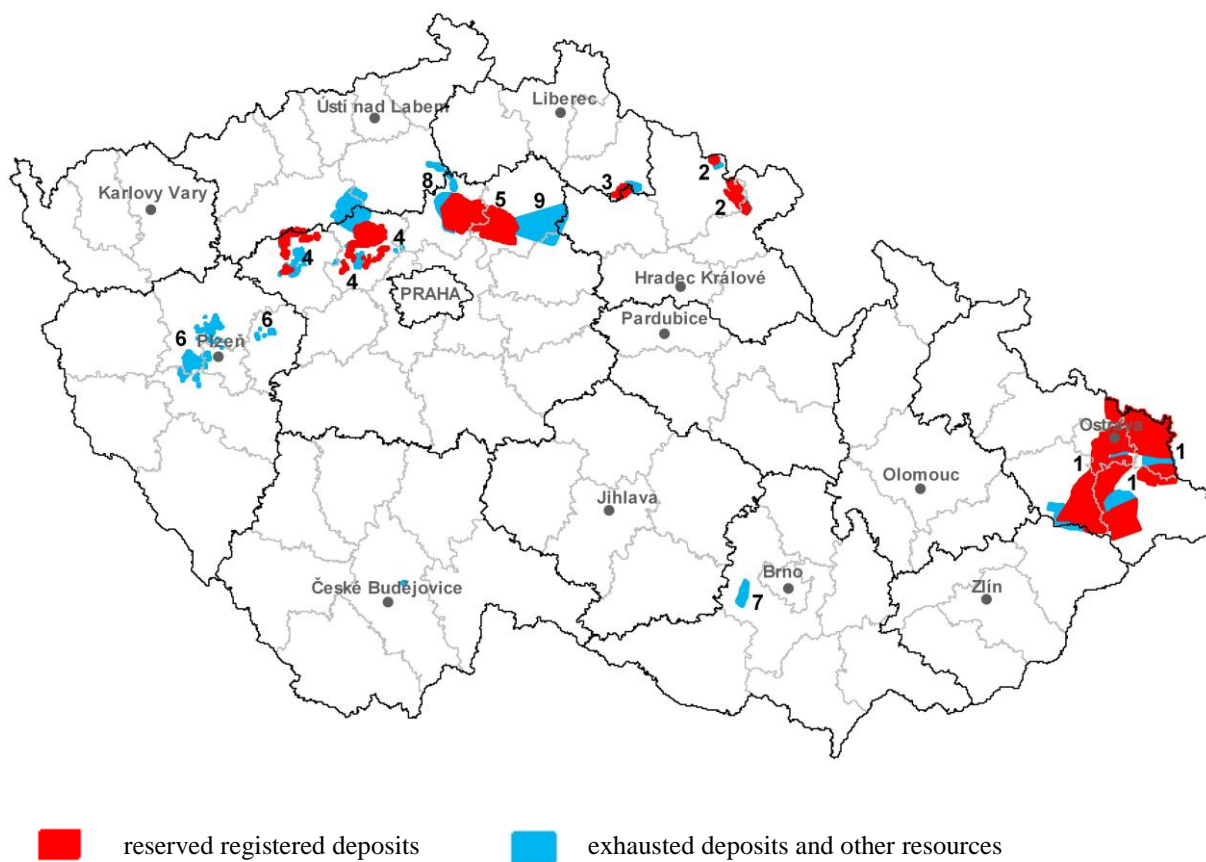
1. Registered deposits and other resources of the Czech Republic

(see map)

Coal basins:

(Names of basins with mined deposits are indicated in **bold type**)

- 1 **Czech part of the Upper-Silesian Basin**
- 2 Czech part of the Intra-Sudetic Basin
- 3 Krkonoše Mts. Piedmont Basin
- 4 Central Bohemian Basins (namely Kladno-Rakovník Basin)
- 5 Mšeno Part of Mšeno-Roudnice Basin
- 6 Plzeň Basin and Radnice Basin
- 7 Boskovice Graben
- 8 Roudnice Part of Mšeno-Roudnice Basin
- 9 Mnichovo Hradiště Basin



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	63	63	62	62	62
exploited	10	9	8	8	8
Total mineral *reserves, kt	16 063 718	16 159 327	16 193 970	16 455 297	16 421 504
economic explored reserves	1 587 320	1 566 771	1 523 979	1 543 177	1 536 411
economic prospected reserves	5 869 966	5 876 191	5 928 406	6 011 672	6 009 407
potentially economic reserves	8 606 432	8 716 365	8 741 585	8 900 448	8 875 686
exploitable (recoverable) reserves	134 060	182 165	192 182	205 630	168 917
Mine production, kt	13 017	12 462	12 197	10 621	11 193

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	590 300	590 300	590 300	590 300	590 300
P ₂	-	-	-	-	-
P ₃	-	-	-	-	-

3. Foreign trade

2701 - Bituminous coal, briquettes and similar solid fuels made of bituminous coal

		2006	2007	2008	2009	2010
Import	kt	1 959	2 532	1 997	1 789	2 022
Export	kt	6 401	6 687	6 112	6 032	6 445

2701 - Bituminous coal, briquettes and similar solid fuels made of bituminous coal

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 950	2 040	3 289	2 390	2 775
Average export prices	CZK/t	2 187	2 307	3 144	2 612	3 015

2704 - Coke and semi-coke from bituminous coal, brown coal or peat, agglomerated retort coal

		2006	2007	2008	2009	2010
Import	kt	784	725	503	517	787
Export	kt	970	798	777	531	891

2704 - Coke and semi-coke from bituminous coal, brown coal or peat, agglomerated retort coal

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 557	4 132	5 638	3 365	6 387
Average export prices	CZK/t	4 670	5 630	8 194	4 737	7 291

4. Prices of domestic market

The prices of bituminous coal on the domestic market are contractual and OKD, a.s. considers them to be confidential.

5. Mining companies in the Czech Republic as of December 31, 2010

OKD a.s., Ostrava

Brown coal

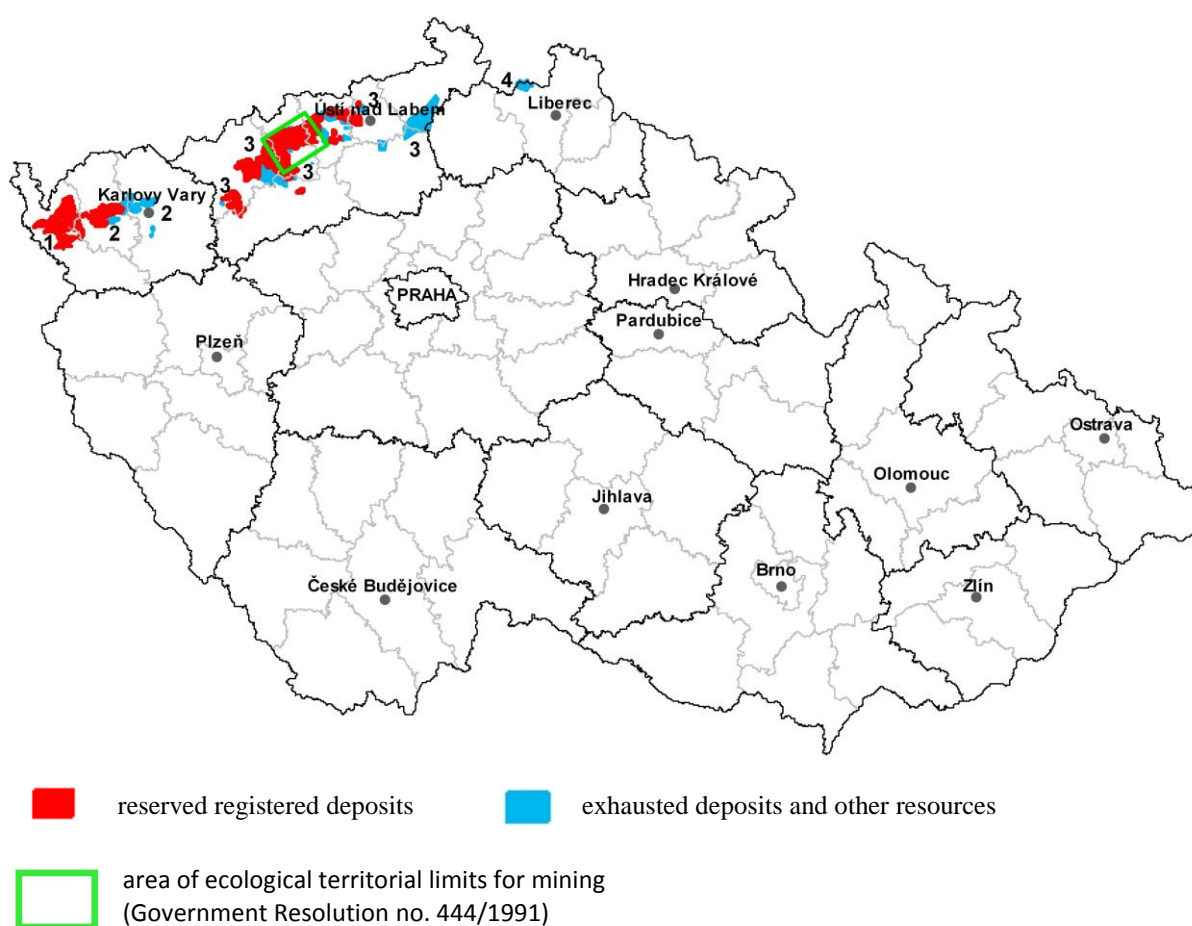
1. Registered deposits and other resources of the Czech Republic

(see map)

Coal basins:

(Names of basins with mined deposits are indicated in **bold type**)

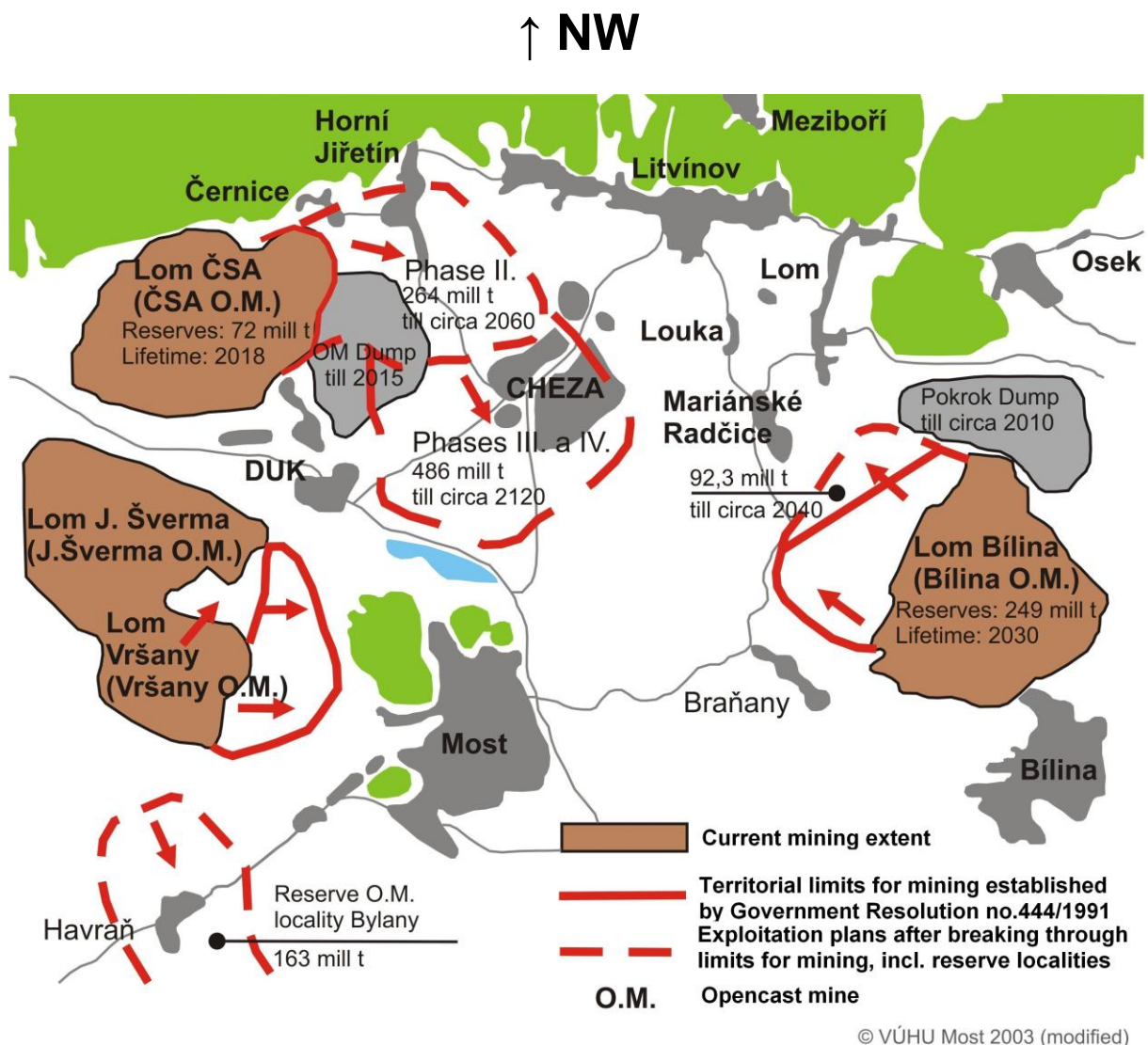
- | | |
|------------------------|---|
| 1 Cheb Basin | 3 North-Bohemian Basin |
| 2 Sokolov Basin | 4 Czech part of the Zittau (Žitava) Basin |



Ecological territorial limits

Rather large brown coal reserves in northern Bohemia (in North-Bohemian Basin) are blocked based on the announcement of the so-called ecological territorial limits of brown coal

mining in northern Bohemia. These were established by the Czech Republic Government Resolution No. 444 from 1991. The resolution of the government defines mining leases and areas which should remain unexploited. Environmental and landscape protection in the area of northern Bohemia was the main reason for their establishment. Lifetime of reserves beyond the ecological territorial limits represents about 18-year mining and concerns namely the ČSA, Bílina and Vršany open-pit mines. Reserves of about 0.9 billion tonnes are bound by these so-called ecological territorial limits. There is an increasing pressure on revaluation or correction of the original decision from 1991 in relation to decreasing brown coal reserves in the mined localities. It remains a fact that brown coal is, along with nuclear power stations, a single relevant raw material for the Czech energy production. Brown coal represents also an essential raw material for the Czech heating plant industry. In terms of energy security, domestic raw material resources are also gaining in importance.



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	54	54	54	54	54
exploited	9	9	9	10	10
Total mineral *reserves, kt	9 192 305	9 140 769	9 090 892	9 055 290	8 998 999
economic explored reserves	2 562 306	2 516 982	2 608 212	2 789 379	2 405 345
economic prospected reserves	2 305 437	2 305 437	2 168 466	2 168 466	2 063 444
potentially economic reserves	4 324 562	4 318 350	4 314 214	4 097 445	4 530 210
exploitable (recoverable) reserves	978 839	931 488	886 223	862 633	915 100
Mine production, kt	48 915	49 134	47 456	45 354	43 931

Notes:

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

After MPO ČR report “A. Bufka: Uhlí, koks a brikety v České republice v roce 2006” (A. Bufka: Coal, coke and briquettes in the Czech Republic in 2006) mine production after treatment of coal was 48,600 kt inclusive 3,692 kt sorted and 44,908 kt industrial brown coal in 2006.

3. Foreign trade

2702 - Brown coal, also agglomerated, except jet

		2006	2007	2008	2009	2010
Import	kt	47	34	75	163	187
Export	kt	1 514	1 164	1 636	1 300	1 109

2702 - Brown coal, also agglomerated, except jet

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 479	1 371	1 283	1 763	2 106
Average export prices	CZK/t	1 109	1 155	1 228	1 400	1 432

Note: Jet is a compact black variety of brown coal used in (mourning) jewelry

4. Prices of domestic market

Brown coal prices depend on the calorific value and granularity. Severočeské doly a.s. offered graded coal from the Důl Bílina mine, with an average calorific value of 17.6 MJ/kg,

categorised as nut coal II at CZK 1,868–2,143 per tonne, as cube coal I at CZK 1,742–1,937 per tonne, and as cube coal II at CZK 1,461–1,782 per tonne. Prices of coarse brown coal dust fluctuated between CZK 796 and 1,146 per tonne, and prices of brown coal industrial mixtures (with a calorific value of 11.4–15.6 MJ/kg) between CZK 691 and 943 per tonne. The industrial mixture from the Doly Nástup Tušimice mine (calorific value of 10.5–11.5 MJ/kg) was offered at CZK 527 per tonne. Mostecká uhelná společnost a.s. offered graded coal categorised as nut coal at about CZK 1,870 per tonne, as cube coal I at about CZK 1,780 per tonne, and as cube coal II at about CZK 1,180 per tonne until 2007. After the structure of the Mostecká uhelná a.s. was changed, the Czech Coal a.s. does not make public prices of produced coal; all contracts are formed based on negotiated prices. Sokolovská uhelná offered nut coal at CZK 950–1,120 per tonne and cube coal at CZK 880–1,020 per tonne. Dried brown coal dust was sold at prices fluctuating between CZK 1,270 and 1,625 per tonne. Prices of brown coal briquettes fluctuate from CZK 1,540/t (fragments) to CZK 4,200/t (packaged prisms). The price list has not been published in recent years.

Sokolovská uhelná Company has not been producing graded coal since 2009. Mostecká uhelná Company has been selling the coal in auctions, price lists will no longer be issued.

Product specification	2007*	2008*	2009*	2010*
graded; cube coal II; 17.6 MJ/kg; Severočeské doly	1 707–2 045	1 707–2 045	1 847–2 143	1 868-2 143
graded; nut coal I; 17.6 MJ/kg; Severočeské doly	1 619–1 942	1 619–1 942	1 748–1 942	1 742-1 937
graded; nut coal II; 17,6 MJ/kg; Severočeské doly	1 325–1 586	1 325–1 697	1 461–1 782	1 461-1 782
coarse coal dust I, II; Severočeské doly	708 –1 023	N	758–1 095	796-1 146
industrial mixture; 10,5–11,5 MJ/kg; Severočeské doly	627–855	N	511–915	691-943
graded; cube coal; Mostecká uhelná	1 869	1 680–2 015	2 015	N
graded; cube coal I; Mostecká uhelná	1 780	1 589–1 910	1 910	N
graded; cube coal II; Mostecká uhelná	1 181	995	995	N
graded; cobble; Sokolovská uhelná	N	950–1 120	N	N
graded; cube coal; Sokolovská uhelná	N	880–1 020	N	N
dried brown coal dust; Sokolovská uhelná	N	1 270–1 625	N	N

* Prices given without taxes on solid fuels.

5. Mining companies in the Czech Republic as of December 31, 2010

Severočeské doly a.s., Chomutov

Vršanská uhelná a.s., Most

Sokolovská uhelná, právní nástupce, a.s., Sokolov

Litvínovská uhelná a.s., Most

Důl Kohinoor a.s., Dolní Jiřetín

Crude oil

1. Registered deposits and other resources of the Czech Republic

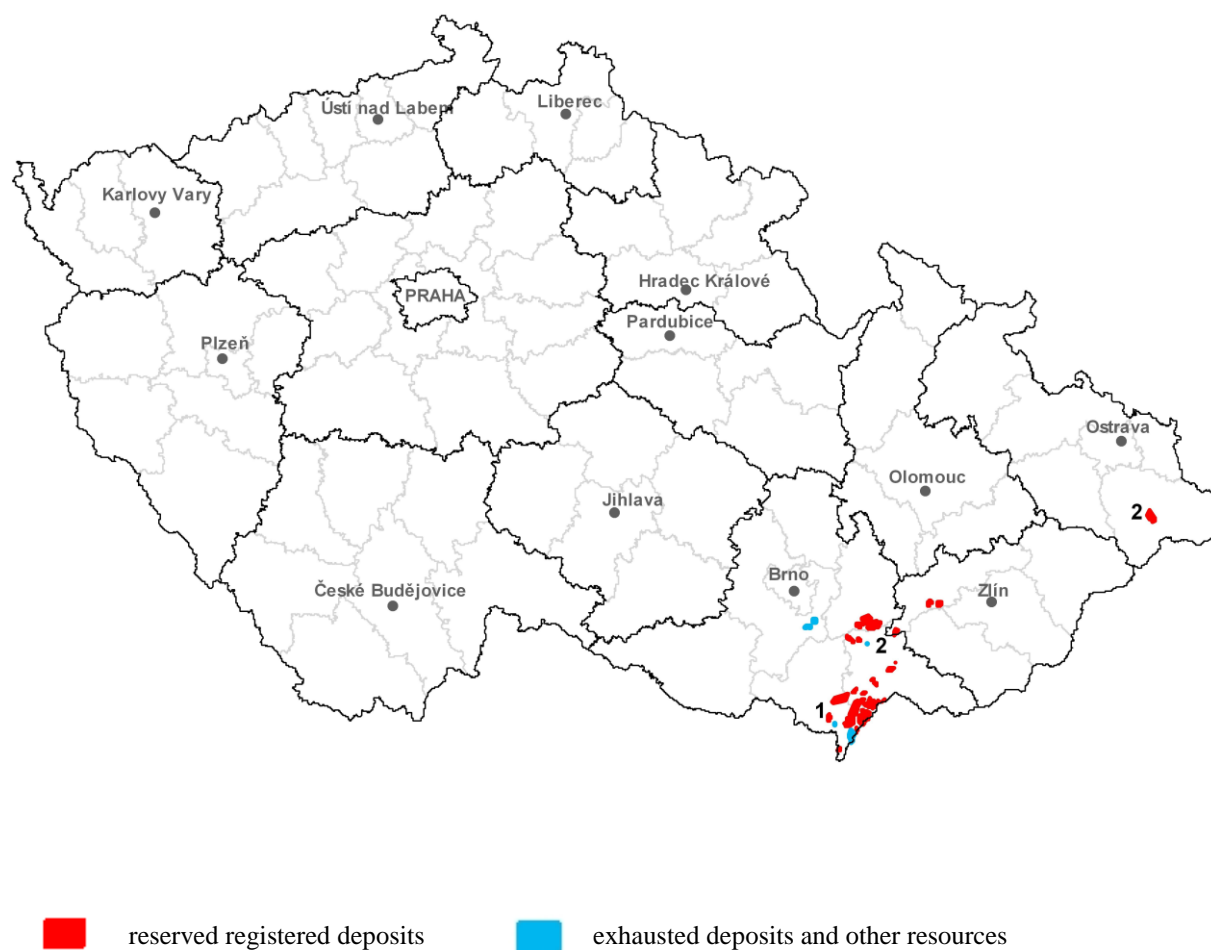
(see map)

Principal areas of deposits presence:

(names of areas with exploited deposits are indicated in **bold type**)

1 **Vienna Basin**

2 **West-Carpathian Foredeep**



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	28	28	30	33	34
exploited	21	22	24	27	27
Total mineral *reserves, kt	32 277	31 118	31 144	31 031	29 015
economic explored reserves	12 315	14 602	15 553	15 440	15 424
economic prospected reserves	8 609	5 163	5 113	4 482	4 475
potentially economic reserves	11 353	11 353	10 478	11 109	9 116
exploitable (recoverable) reserves	2 135	1 793	1 718	1 535	1 415
Mine production, kt	259	240	236	217	173

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

3. Foreign trade

2709 - Petroleum oils and oils obtained from bituminous minerals, crude

		2006	2007	2008	2009	2010
Import	kt	7 752	7 147	8 142	7 452	7 770
Export	kt	42	17	20	22	18

2709 - Petroleum oils and oils obtained from bituminous minerals, crude

		2006	2007	2008	2009	2010
Average import prices	CZK/t	10 646	10 079	12 641	8 115	10 907
Average export prices	CZK/t	10 103	9 975	11 695	8 174	10 334

271011 - Petrol (Gasoline)

		2006	2007	2008	2009	2010
Import	kt	1 159	5 469	2 276	697	501
Export	kt	689	171	233	142	220

Notice: It was used the conversion 1 000 litres of petrol = 750 kg

271011 - Petrol (Gasoline)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	9 269	2 148	4 306	12 653	16 814
Average export prices	CZK/t	6 546	18 245	14 852	13 897	18 366

Notice: It was used the conversion 1 000 litres of petrol = 750 kg

4. Prices of domestic market

Prices of domestic producers are not open to public.

5. Mining companies in the Czech Republic as of December 31, 2010

MND a.s., Hodonín

MND Production a.s., Hodonín

Česká naftařská společnost s.r.o., Hodonín

Unigeo a.s., Ostrava - Hrabová

Natural gas

1. Registered deposits and other resources of the Czech Republic

(see map)

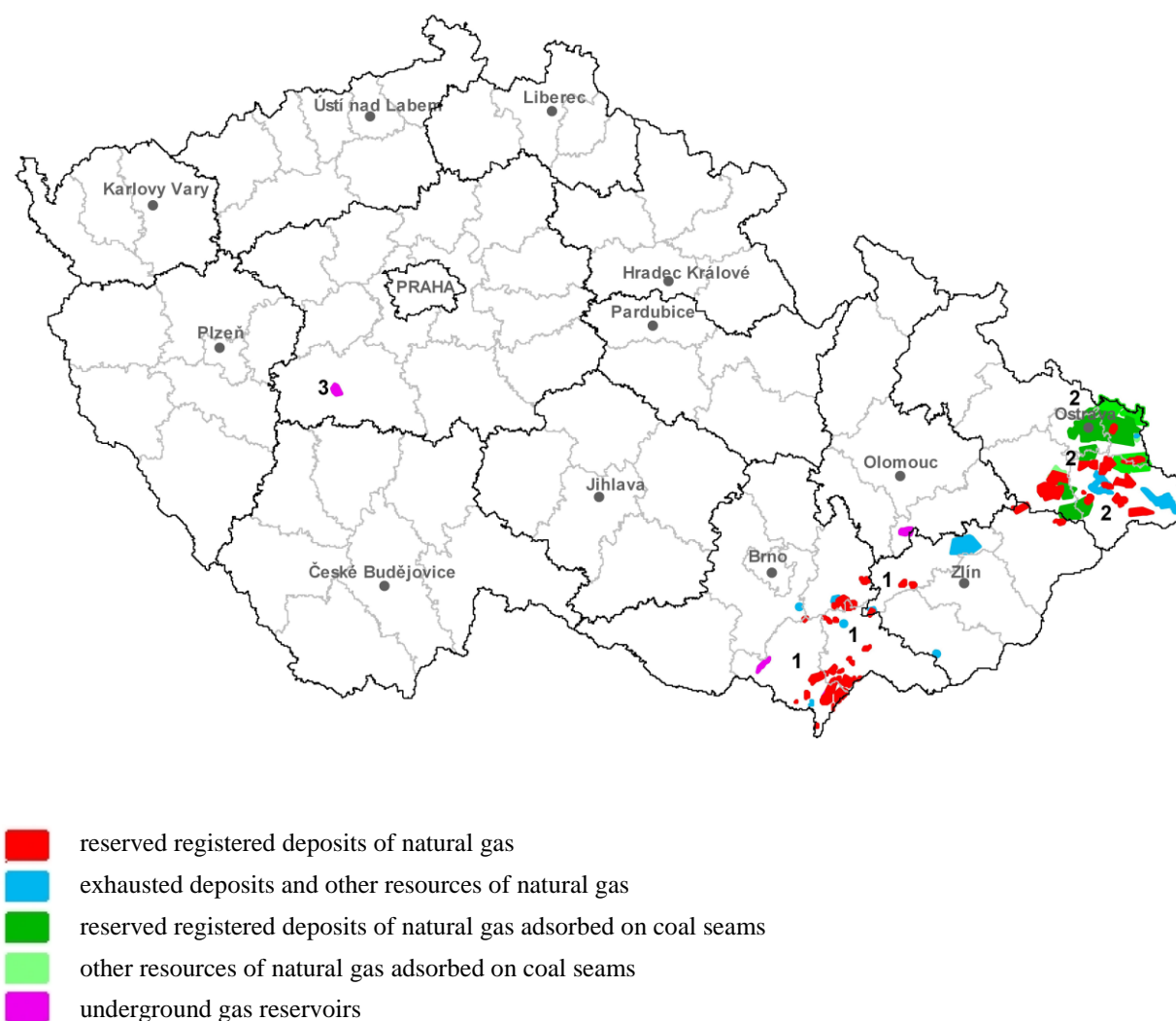
Principal areas of deposits and underground gas reservoir Háje:

(Names of regions with mined deposits are indicated in **bold type**)

1 South-Moravian region

2 North-Moravian region

3 underground gas reservoir Háje



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	84	85	88	92	94
exploited	40	39	41	49	52
Total mineral *reserves, mill m ³	46 811	45 989	46 044	46 140	28 924
economic explored reserves	4 109	4 139	4 265	4 339	6 123
economic prospected reserves	40 593	39 765	39 807	39 895	2 281
potentially economic reserves	2 109	2 085	1 973	1 906	20 520
exploitable (recoverable) reserves	28 160	27 819	27 812	27 846	4 767
Mine production, mill m ³	148	148	168	180	201

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , mill m ³	16 767	16 767	16 767	16 767	16 767
P ₂ ,	-	-	-	-	-
P ₃	-	-	-	-	-

3. Foreign trade

271121 - Natural gas

		2006	2007	2008	2009	2010
Import	ths m3	N	N	N	N	N
Export	ths m3	N	N	N	N	N

271121 - Natural gas

		2006	2007	2008	2009	2010
Average import prices	CZK/ths m3	N	N	N	N	N
Average export prices	CZK/ths m3	N	N	N	N	N

4. Prices of domestic market

Prices of domestic producers are not open to public.

5. Mining companies in the Czech Republic as of December 31, 2010

MND a.s., Hodonín

MND Production a.s., Hodonín

Česká naftařská společnost s.r.o., Hodonín

Unigeo a.s., Ostrava - Hrabová

Uranium

1. Registered deposits and other resources of the Czech Republic

(see map)

Reserved registered deposits

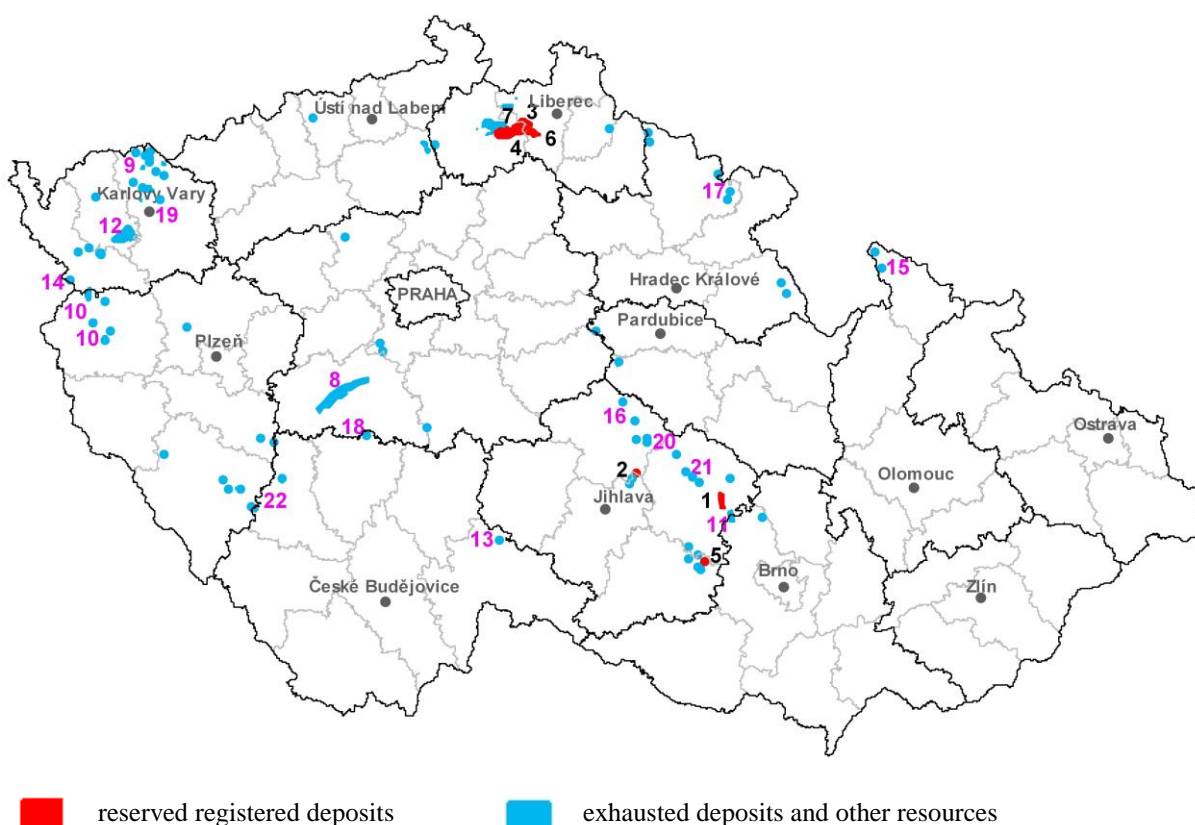
(Names of mined deposits are indicated in **bold type**)

- | | | | |
|----------------|-------------------------|------------------|----------------------|
| 1 Rožná | 3 Břevniště pod Ralskem | 5 Jasenice-Pucov | 7 Stráž pod Ralskem* |
| 2 Brzkov | 4 Hamr pod Ralskem | 6 Osečná-Kotel | |

* uranium is recovered only as a byproduct from the treatment of groundwater and technological solutions during mine liquidation and reclamation work upon termination of in-situ leaching (ISL), otherwise in situ recovery (ISR), of uranium ores

Exhausted deposits and other resources

- | | | |
|----------------------------|--|-----------------------|
| 8 Příbram | 13 Okrouhlá Radouň | 18 Předbořice |
| 9 Jáchymov | 14 Dyleň | 19 Hájek + Ruprechtov |
| 10 Zadní Chodov + Vítkov 2 | 15 Javorník | 20 Chotěboř |
| 11 Olší | 16 Licoměřice-Březinka | 21 Slavkovice |
| 12 Horní Slavkov | 17 Radvanice + Rybníček
+ Svatoňovice | 22 Mečichov-Nahošín |



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	7	7	7	7	7
exploited	1	1	1	1	1
Total mineral * reserves, t U	135 812	135 729	135 553	135 425	135 361
economic explored reserves	1 671	1 677	1 545	1 426	1 416
economic prospected reserves	19 476	19 435	19 428	19 420	19 427
potentially economic reserves	114 665	114 617	114 581	114 579	114 518
exploitable (recoverable) reserves	677	643	503	377	374
Mine production, t U	383	322	290	286	259
Production of concentrate, t U **	358	291	261	243	237

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

** sales production (without ore milling losses)

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁	-	-	-	-	-
P ₂ , t U	8 480	8 480	8 480	8 480	8 480
P ₃	-	-	-	-	-

3. Foreign trade

28441030 - Natural uranium - wrought

		2006	2007	2008	2009	2010
Import	t	0	0	0	0	0
Export	t	529	420	131	103	169

28441030 - Natural uranium - wrought

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	-	-
Average export prices	CZK/kg	1 345	1 764	2 491	3 771	3 522

4. Prices of domestic market

Extracted uranium is exported.

5. Mining companies in the Czech Republic as of December 31, 2010

DIAMO, s. p., Stráž pod Ralskem

INDUSTRIAL MINERALS

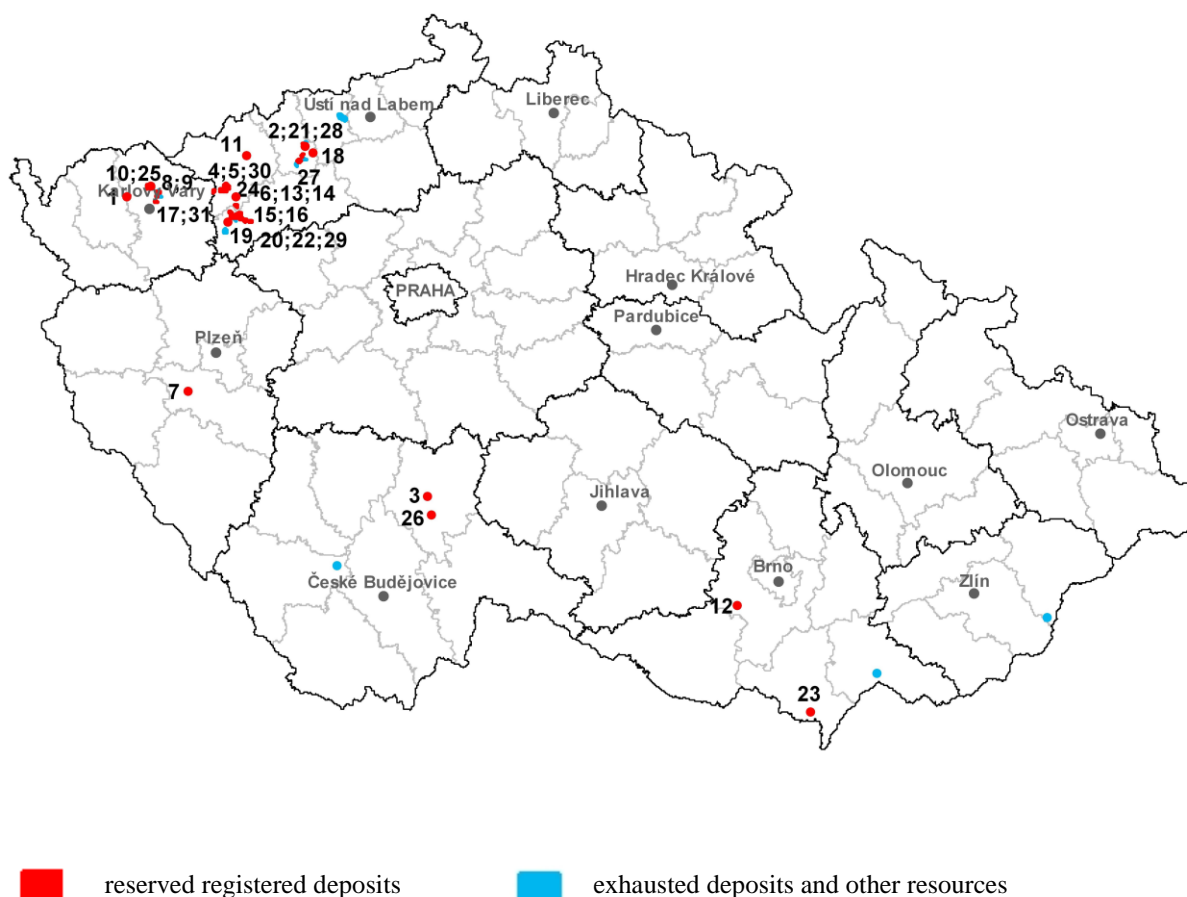
Bentonite

1. Registered deposits and other resources of the Czech Republic

(see map)

Names of exploited deposits are in **bold type**

- | | |
|-----------------------------------|---------------------------------|
| 1 Božičany-Osmosa-jih | 16 Krásný Dvůr-Vysoké Třebušice |
| 2 Braňany-Černý vrch | 17 Lesov |
| 3 Maršov u Tábora | 18 Liběšice |
| 4 Rokle | 19 Nepomyšl |
| 5 Blov-Krásný Dvoreček | 20 Nepomyšl-Velká |
| 6 Blšany 2 | 21 Obrnice-Vtelno |
| 7 Dnešice-Plzeňsko-jih | 22 Podbořany-Letov |
| 8 Hájek 1 | 23 Poštorná |
| 9 Hájek 2 | 24 Račetice |
| 10 Hroznětín-Velký Rybník | 25 Ruprechtov |
| 11 Chomutov-Horní Ves | 26 Rybova Lhota |
| 12 Ivančice-Réna | 27 Stránce |
| 13 Krásný Dvůr-Brody | 28 Střimice 1 |
| 14 Krásný Dvůr-Podbořany | 29 Veliká Ves-Nové Třebčice |
| 15 Krásný Dvůr-Vysoké Třebušice 1 | 30 Vlkaň |
| | 31 Všeborovice |



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	29	29	29	30	32
exploited	4	4	4	4	6
Total mineral *reserves, kt	327 155	317 813	319 613	303 313	304 673
economic explored reserves	53 893	50 895	51 228	60 598	62 401
economic prospected reserves	177 893	162 625	163 176	139 809	139 670
potentially economic reserves	95 369	104 293	105 209	102 906	102 602
Mine production, kt**	267	335	235	177	183

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

** Including montmorillonite clays from kaolin deposits overburden

Approved prognostic resources P₁, P₂, P₃

Year		2006	2007	2008	2009	2010
P ₁ ,	kt	23 792	23 792	23 792	23 792	23 792
P ₂ ,	kt	36 874	36 874	36 874	36 874	36 874
P ₃		-	-	-	-	-

3. Foreign trade

250810 - Bentonite

		2006	2007	2008	2009	2010
Import	kt	19	25	24	25	19
Export	kt	86	97	105	100	120

250810 - Bentonite

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	3 782	4 936	3 714	3 370	2 738
Average export prices	CZK/kg	2 365	2 307	2 134	2 760	2 626

250820 - Decolourizing earths and fuller's earth

		2006	2007	2008	2009	2010
Import	kt	0	0	1	0	0
Export	kt	0	0	0.5	0	0

250820 - Decolourizing earths and fuller's earth

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	5 372	-	-
Average export prices	CZK/kg	-	-	42 308	-	-

4. Prices of domestic market

Technical bentonite, which can be used as a sealant, backfill material or as an additive in fertilizers, has been sold domestically for prices starting at CZK 2 500 per tonne.

5. Mining companies in the Czech Republic as of December 31, 2010

KERAMOST a.s., Most

Sedlecký kaolin a.s., Božičany

LITH s.r.o., Malé Chvojno

Clays

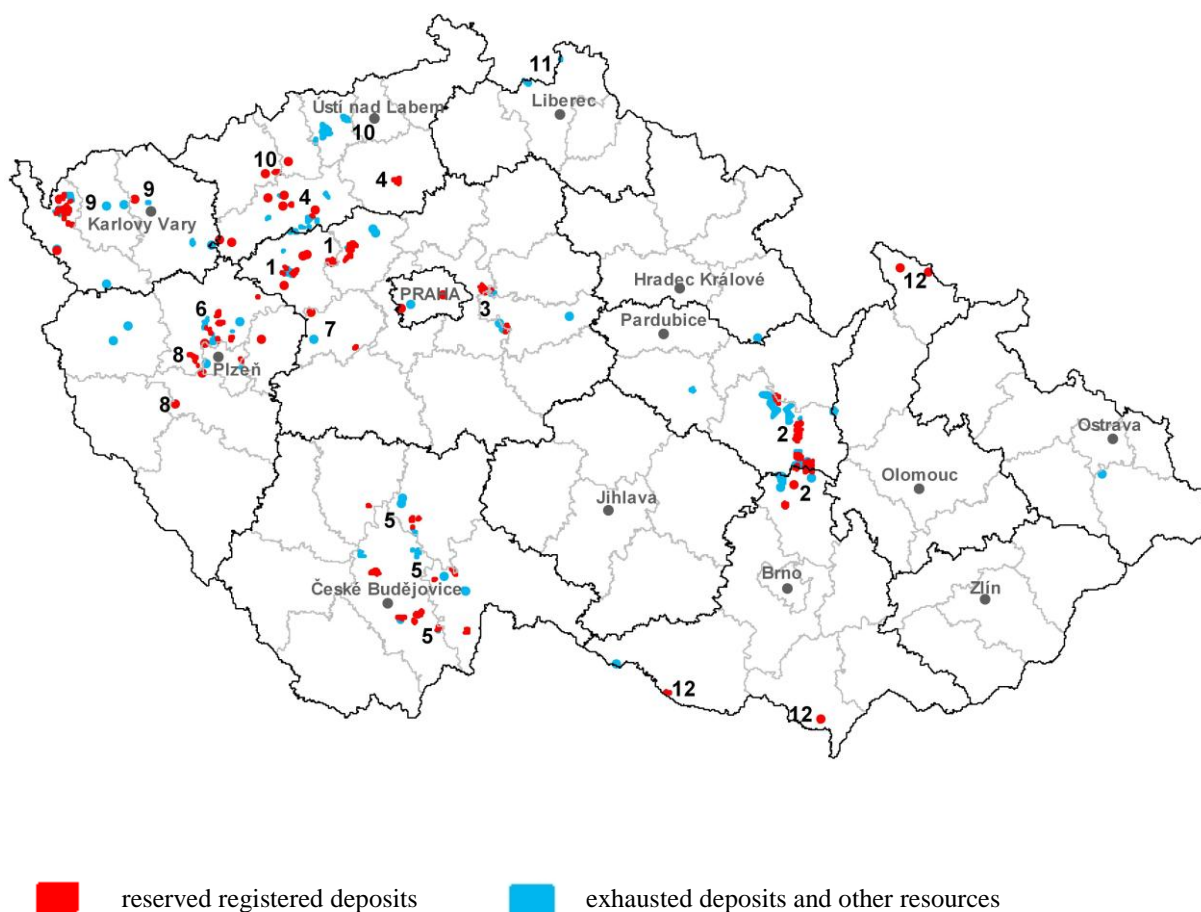
1. Registered deposits and other resources of the Czech Republic

(see map)

Major deposit areas:

(Names of areas with exploited deposits are in **bold**)

- | | |
|--|--|
| 1 Kladno-Rakovník Carboniferous | 7 Tertiary relicts of Central Bohemia |
| 2 Moravian and East Bohemian Cretaceous | 8 Tertiary relicts of West Bohemia |
| 3 Cretaceous around Prague | 9 Cheb Basin and Sokolov Basin |
| 4 Louny Cretaceous | 10 North Bohemian Basin |
| 5 South Bohemian Basins | 11 Zittau Basin |
| 6 Plzeň Basin | 12 Tertiary and Quaternary in Moravia |



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	110	106	106	106	108
exploited	22	21	19	18	18
Total mineral *reserves, kt	944 607	927 520	927 639	925 714	924 112
economic explored reserves	188 102	185 168	179 551	180 311	180 945
economic prospected reserves	411 630	396 645	397 614	402 944	401 419
potentially economic reserves	344 875	345 707	350 474	342 459	341 748
Mine production, kt	561	679	574	377	429

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	83 544	83 544	83 544	83 544	83 544
P ₂ , kt	38 196	38 196	38 196	38 196	38 196
P ₃	-	-	-	-	-

3. Foreign trade

2508 - Other clays (not including expanded clays of heading 6806), andalusite, kyanite and sillimanite, whether or not calcined; mullite; chamotte or dinas earth

		2006	2007	2008	2009	2010
Import	t	64 285	70 556	64 753	47 192	52 332
Export	t	189 026	201 953	216 106	223 080	242 640

2508 - Other clays (not including expanded clays of heading 6806), andalusite, kyanite and sillimanite, whether or not calcined; mullite; chamotte or dinas earth

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 368	4 027	3 673	4 384	3 978
Average export prices	CZK/t	2 424	2 485	2 370	2 435	2 374

250830 - Refractory (fire) clay

		2006	2007	2008	2009	2010
Import	t	18 087	23 275	14 171	9 459	12 332
Export	t	36 623	31 830	30 666	20 996	22 361

250830 - Refractory (fire) clay

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 896	1 932	2 250	3 024	3 092
Average export prices	CZK/t	1 249	1 331	1 183	1 294	1 226

250840 - Other clays

		2006	2007	2008	2009	2010
Import	t	17 655	14 055	16 478	4 840	12 667
Export	t	8 940	11 405	11 098	50 494	51 453

250840 - Other clays

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 985	3 038	1 995	4 334	1 759
Average export prices	CZK/t	1 815	2 237	2 096	857	916

250870 - Chamotte or dinas earth

		2006	2007	2008	2009	2010
Import	t	2 168	2 862	3 026	3 035	4 422
Export	t	56 556	61 127	68 934	52 005	48 679

250870 - Chamotte or dinas earth

		2006	2007	2008	2009	2010
Average import prices	CZK/t	5 309	4 617	4 147	4 609	5 341
Average export prices	CZK/t	3 300	3 405	3 301	3 806	3 822

4. Prices of domestic market

Various qualities of clay and schistose clay have different market prices. For example, crude

refractory clay is delivered at CZK 450–850 per tonne, roughly CZK 650 per tonne on average, and dried refractory clay costs CZK 860–2 000 per tonne, about CZK 1 400 per tonne on average. Kaolinic clay with high plasticity and refractoriness of about 1 700 °C was sold in crude state for CZK 450–1 110 and dried for CZK 2 500–5 000.

Prices of crude stoneware clay fluctuate between CZK 200–800 per tonne, around CZK 450 per tonne on average. Dried stoneware clay is sold for CZK 1 200 per tonne. Prices of crude bleaching clay fluctuate between CZK 400–1 700 per tonne, around CZK 1 300 per tonne on average, and prices of dried bleaching clay are CZK 1 400–3 000 per tonne, about CZK 2,200 per tonne on average. The average prices of other crude clays are about CZK 300 per tonne, and of dried clays about CZK 1 450 per tonne.

Prices of crude schistose clay on the domestic market fluctuate between CZK 400–600 per tonne. Calcined schistose clay is sold for CZK 3 700 –5 600 per tonne.

Prices of clays vary depending on the locality as well as on the level of processing , e. g. the prices of clays from Nová Ves range between CZK 320–950 per tonne, from Vackov CZK 200–630 per tonne, and from Suchá CZK 650–1 200 per tonne, etc.

5. Mining companies in the Czech Republic as of December 31, 2010

LB MINERALS, s.r.o., Horní Bříza

KERAMOST a.s., Most

České lupkové závody a.s., Nové Strašecí

P-D Refractories CZ a.s., Velké Opatovice

RAKO - LUPKY s.r.o., Lubná u Rakovníka

Kaolin Hlubany, a.s.

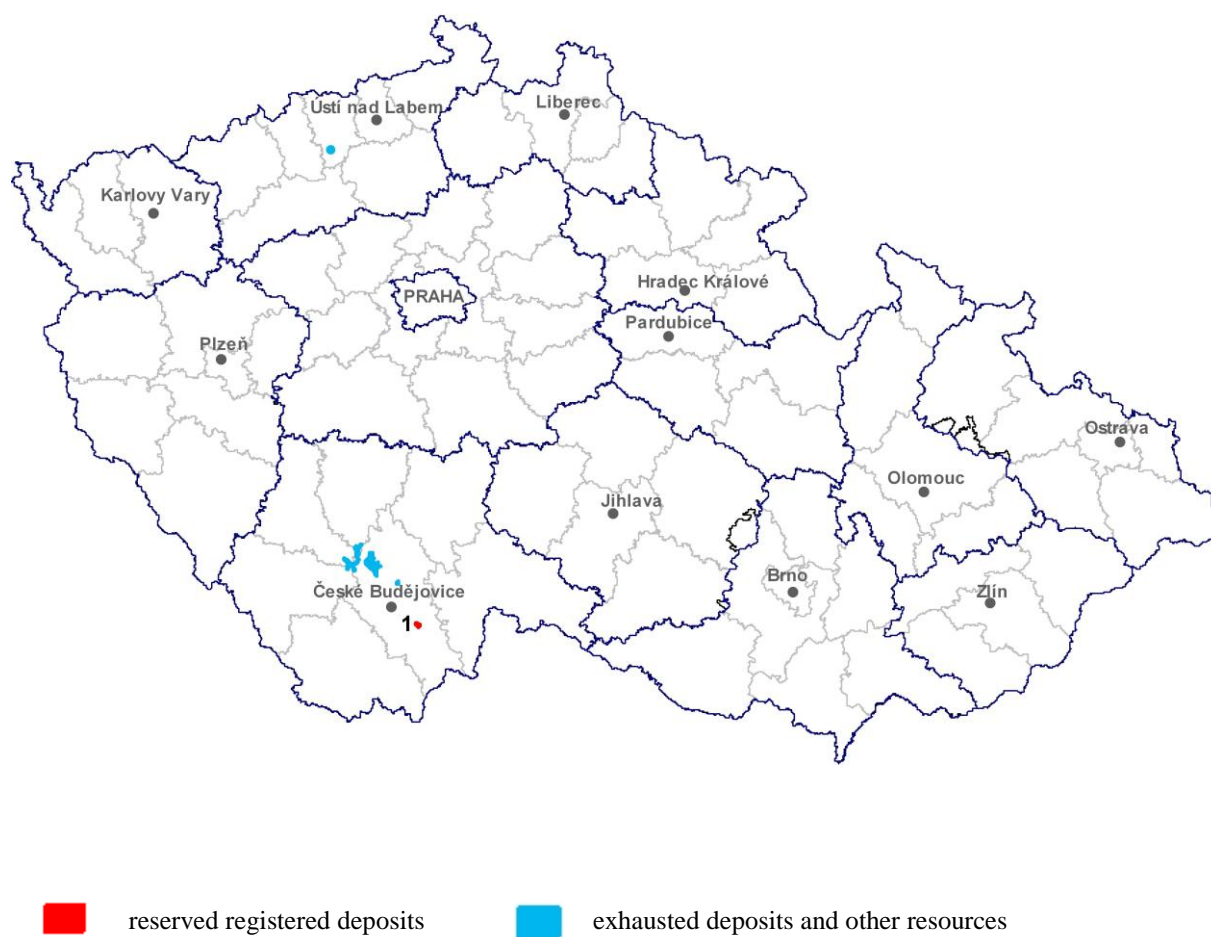
Diatomite

1. Registered deposits and other resources of the Czech Republic

(see map)

Exploited deposit:

1 Borovany-Ledenice



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2009	2008	2009	2010
Deposits – total number	1	1	1	1	1
exploited	1	1	1	1	1
Total mineral *reserves, kt	4 451	4 432	4401	4 401	4 367
economic explored reserves	4 123	4 104	4073	4 073	4 039
economic prospected reserves	328	328	328	328	328
potentially economic reserves	0	0	0	0	0
Mine production, kt	53	19	31	0**	32

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

** Production from previously mined raw material

3. Foreign trade

2512 - Siliceous fossil meal*, siliceous earth

		2006	2007	2008	2009	2010
Import	t	2 262	3 273	4 824	3 175	2 753
Export	t	4 566	3 616	4 166	3 599	4 230

Note: * diatomite

2512 - Siliceous fossil meal*, siliceous earth

		2006	2007	2008	2009	2010
Average import prices	CZK/t	12 945	10 803	7 034	8 292	8 690
Average export prices	CZK/t	8 520	8 825	9 029	8 072	6 671

Note: * diatomite

6901 - Bricks, blocks, tiles and other ceramic goods of siliceous fossil meals

		2006	2007	2008	2009	2010
Import	t	3 938	3 697	3 220	2 173	726
Export	t	3 303	4 684	191	43	19

6901 - Bricks, blocks, tiles and other ceramic goods of siliceous fossil meals

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 553	7 609	8 524	6 977	6 298
Average export prices	CZK/t	2 791	3 055	15 160	60 533	12 389

4. Prices of domestic market

Diatomite for filtration purposes is sold domestically for CZK 14–15 thousand per tonne based on various parameters (filtration velocity, bulk density, pH). Crushed diatomite was sold at CZK 8 400 per tonne. Diatomite absorbents, used as pet litter or to remove odour, were available for around CZK 40 per kg.

5. Mining companies in the Czech Republic as of December 31, 2010

LB MINERALS, s.r.o., Horní Bříza

Names of exploited deposits are in **bold type**



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	12	12	12	12	12
exploited	2	2	2	2	2
Total mineral *reserves, kt	514 554	514 168	513 719	513 382	512 996
economic explored reserves	79 427	79 041	78 600	78 277	77 959
economic prospected reserves	340 843	340 843	340 843	340 843	340 843
potentially economic reserves	94 284	94 284	94 276	94 262	94 194
Mine production, kt	409	385	449	337	385

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	23 946	23 946	23 946	23 946	23 946
P ₂	-	-	-	-	-
P ₃	-	-	-	-	-

3. Foreign trade

2518 - Dolomite calcined, roughly trimmed or cut; agglomerated

		2006	2007	2008	2009	2010
Import	t	447 424	493 559	588 025	417 189	432 068
Export	t	19 047	19 908	22 613	18 303	15 133

2518 - Dolomite calcined, roughly trimmed or cut; agglomerated

		2006	2007	2008	2009	2010
Average import prices	CZK/t	214	224	239	244	202
Average export prices	CZK/t	2 587	2 389	2 379	2 563	2 569

4. Prices of domestic market

Prices of lump dolomite start at CZK 75 per tonne and dolomite aggregates are sold for

CZK 210–350 per tonne depending on granularity. Ground calcitic dolomite is sold in bulk for CZK 622–694 per tonne and bagged for CZK 1 615 per tonne. Crushed white dolomite is offered from 1 000 CZK/t (0–2 mm) to 1 280 CZK/t (2–5, 5–8, 8–16 mm).

Average domestic prices of traded commodities

Product specification	2007	2008	2009	2010
Dolomite aggregates, CZK/t	210–350	210–350	210–350	210–350
Ground calcitic dolomite bulk, CZK/t	540–640	600–690	600–700	620–700
Ground calcitic dolomite, bagged, CZK/t	1 580	1 615	1 615	1 615

5. Mining companies in the Czech Republic as of December 31, 2010

Krkonošské vápenky Kunčice, a.s.

UNIKOM a.s., Kutná Hora

Feldspar

1. Registered deposits and other resources of the Czech Republic

(see map)

(Names of exploited deposits are in **bold type**)

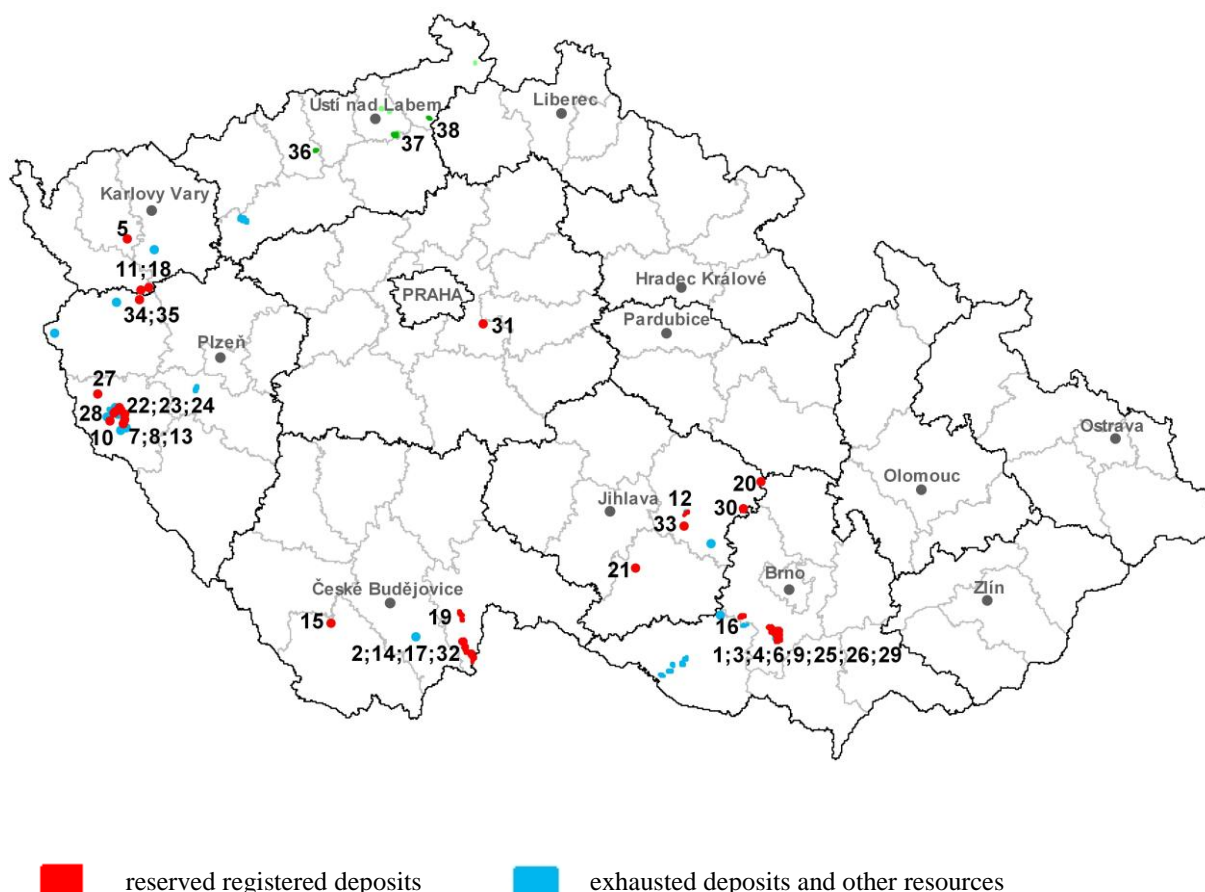
Feldspar minerals:

1 Bratčice	12 Bory-Olší	24 Meclov-západ
2 Halámky	13 Bozdíš	25 Medlov
3 Hrušovany u Brna	14 Dvory nad Lužnicí-Tušť	26 Medlov-Smolín
4 Hrušovany u Brna-Protlas	15 Chvalšiny	27 Mutěnin
5 Krásno-Vysoký Kámen	16 Ivančice-Němčice	28 Ohnišťovice-Za Kulichem
6 Ledce-Hrušovany u Brna	17 Krabonoš	29 Smolín-Žabčice
7 Luženičky	18 Křepkovice-Nezdice	30 Smrček
8 Mračnice	19 Majdalena	31 Štíhlce
9 Žabčice-Smolín	20 Malé Tresné*	32 Tušť-Halámky
10 Ždánov	21 Markvartice u Třebíče	33 Velké Meziříčí-Lavičky
11 Beroun-Tepelsko	22 Meclov 2	34 Zhořec 1
	23 Meclov-Letiště	35 Zhořec 2-Hanovské pásmo

* also known under the name Velké Tresné

Feldspar mineral substitutes:

36 Želenice	37 Tašov-Rovný	38 Valkeřice-Zaječí vrch
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2. Basic statistical data of the Czech Republic as of December 31

Feldspar

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	33	33	34	34	35
exploited	10	10	8	8	8
Total mineral *reserves, kt	65 497	71 092	69 234	68 788	68 696
economic explored reserves	24 518	30 126	28 594	28 176	27 784
economic prospected reserves	27 566	27 220	26 829	26 804	27 107
potentially economic reserves	13 413	13 746	13 811	13 808	13 805
Mine production, kt	487	514	488	431	388

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year		2006	2007	2008	2009	2010
P ₁ ,	kt	19 737	19 737	19 737	19 737	19 737
P ₂		-	-	-	-	-
P ₃		-	-	-	-	-

Number of deposits; reserves; mine production

Feldspar substitutes (nepheline phonolites)

Year		2006	2007	2008	2009	2010
Deposits – total number		3	3	3	3	3
exploited		1	1	1	1	1
Total mineral *reserves, kt		200 030	200 005	199 969	199 946	199 927
economic explored reserves		0	0	0	0	0
economic prospected reserves		200 030	200 005	199 969	199 946	199 927
potentially economic reserves		0	0	0	0	0
Mine production, kt		31	25	36	23	19

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year		2006	2007	2008	2009	2010
P ₁		-	-	-	-	-
P ₂ ,	kt	52 900	52 900	52 900	52 900	52 900
P ₃		-	-	-	-	-

3. Foreign trade

252910 - Feldspar

		2006	2007	2008	2009	2010
Import	kt	16	13	11	5	6
Export	kt	155	186	172	137	130

252910 - Feldspar

		2006	2007	2008	2009	2010
Average import prices	CZK/t	2 442	2 681	2 586	3 205	2 972
Average export prices	CZK/t	834	991	942	875	889

252930 - Leucite, nepheline and nepheline syenite

		2006	2007	2008	2009	2010
Import	kt	1	2	2	1	2
Export	kt	0,0008	0,004	0	0,04	0,002

252930 - Leucite, nepheline and nepheline syenite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 346	7 045	6 413	6 893	6 170
Average export prices	CZK/t	3 529	29 858	-	7 132	9 709

4. Prices of domestic market

Potassium feldspar suitable for the manufacture of flat, utility and container glass is sold domestically for CZK 950–1 150 per tonne, and feldspar suitable for the manufacture of special utility glass, light bulbs and TV-screens for CZK 1 100–1 250 per tonne. Potassium feldspar suitable for the manufacture of ceramics, porcelain, glazes and electrical porcelain is sold for CZK 1 350–1 700 per tonne. Sodium-potassium feldspar used as a fluxing agent and grog in ceramic bodies is sold domestically for CZK 500 per tonne. The raw material is delivered already crushed to a size of 0–5 mm. Feldspars from Krásno were sold domestically for CZK 560–582 per tonne, ground and bagged feldspar for CZK 2 350 per tonne.

Average prices of traded feldspar on the domestic market

Product specification	2007	2008	2009	2010
feldspar Krásno, ŽK 05 Ž 55 NaK 60, CZK/t	560	560	560	560
feldspar Krásno, Ž 55 NaK 60, CZK/t	582	582	582	582
feldspar Krásno, Ž 55 NaK 60 – ground, CZK/t	2 350	2 350	N	N

5. Mining companies in the Czech Republic as of December 31, 2010

LB MINERALS, s.r.o., Horní Bříza

KMK GRANIT, a.s., Krásno
Pískovna Hrušovany a.s., Hradčany
Družstvo DRUMAPO, Němčičky
AGRO Brno - Tuřany, a.s.
KERAMOST a.s., Most (náhrady živců)

Gemstones

1. Registered deposits and other resources of the Czech Republic

(see map)

Names of exploited deposits are in **bold type**

Pyrope-bearing rock:

1 **Podsedice-Dřemčice**

2 Vestřev

3 Dolní Olešnice

4 Horní Olešnice 1

5 Horní Olešnice 2

6 Linhorka-Staré

7 Třebívlice

Moldavite-bearing rock:

8 **Ločenice-Chlum**

9 Besednice

10 Chlum nad Malší-východ

11 Slavče-sever

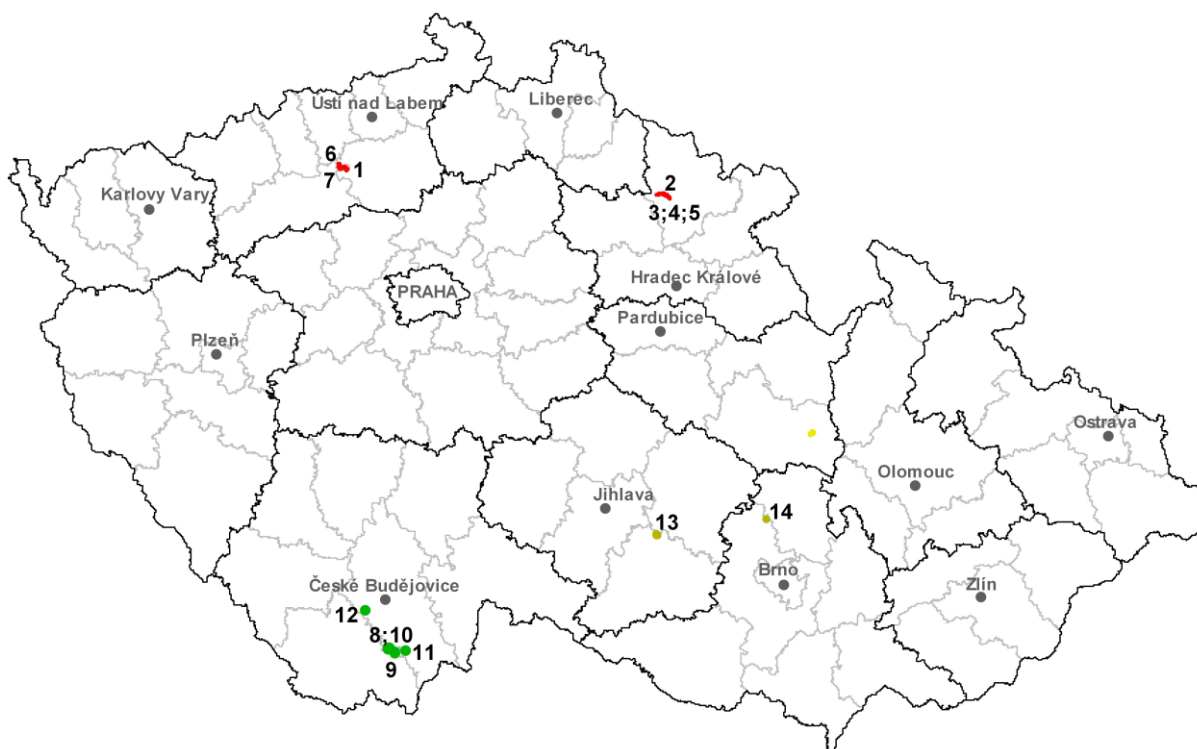
12 Vrábče-Nová Hospoda







Other gemstones:

13 Bochovice *

14 Rašov **

* amethyst, ** opal



	reserved registered deposits of pyrope-bearing rock
	exhausted deposits and other resources of pyrope-bearing rock
	reserved registered deposits of moldavite-bearing rock
	exhausted deposits and other resources of moldavite-bearing rock
	reserved registered deposits of other gemstones
	exhausted deposits and other resources of other gemstones

2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	13	13	13	14	14
exploited ^{b)}	4	4	3	2	2
Total mineral *reserves, kt ^{a)}	19 196	19 155	19 131	19 510	19 487
economic explored reserves	3 412	3 384	3 360	3 328	3 305
economic prospected reserves	12 895	12 882	12 882	13 283	13 283
potentially economic reserves	2 889	2 889	2 889	2 899	2 899
Mine production, kt ^{a)}	39	34	24	26	23
Mine production, ths m ³ ^{c)}	95	114	99	58	57
Mine production, kt ^{c)} (1 m ³ = 1.8 t)	171	205	177	104	103

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

a) pyrope-bearing rock

b) two deposits of pyrope, two deposits of moldavite till 2007, one deposit of pyrope , two deposits of moldavite in 2008, one deposit of pyrope, one deposit of moldavite in 2009 and 2010.

c) moldavite-bearing rock

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁	-	-	-	-	-
P ₂ , ^{a)} t	100	100	100	100	100
P ₂ , ^{b)} kt	749	749	749	749	749
P ₂ , ^{c)} ths m ³	66 000	66 000	66 000	66 000	66 000
P ₃	-	-	-	-	-

Notes:

a) jasper

b) pyrope-bearing rock

c) moldavite-bearing rock

3. Foreign trade

7102 - Diamonds, whether or not worked, but not mounted or set

		2006	2007	2008	2009	2010
Import	kg	175	317	322	283	156
Export	kg	43	185	46	55	67

7102 - Diamonds, whether or not worked, but not mounted or set

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	442 023	410 814	977 435	851 025 1 605	2 129 526
Average export prices	CZK/kg	452 209	109 135	2 850 022	673	1 885 761

7103 - Precious (other than diamond) and semi-precious stones, whether or not worked or graded but not strung, mounted or set

		2006	2007	2008	2009	2010
Import	kg	45 963	147 541	222 338	173 606	311 474
Export	kg	1 925	2 230	601	1 495	1 346

7103 - Precious (other than diamond) and semi-precious stones, whether or not worked or graded but not strung, mounted or set

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	508	199	205	230	126
Average export prices	CZK/kg	3 391	4 060	12 156	16 012	3 779

251320 - Emery, natural corundum, natural garnet and other natural abrasives

		2006	2007	2008	2009	2010
Import	t	2 614	4 037	2 240	987	1 213
Export	t	246	374	155	45	47

251320 - Emery, natural corundum, natural garnet and other natural abrasives

		2006	2007	2008	2009	2010
Average import prices	CZK/t	5 758	5 513	6 541	7 385	6 281
Average export prices	CZK/t	11 490	7 870	8 789	17 394	39 921

4. Prices of domestic market

The international gemstone trade is currently so globalized that no substantial price differences exist anywhere in the world including the Czech Republic. The only difference is that rather lower-quality gemstones are imported due to lower purchasing power as well as to less experienced jewellers and customers; high-quality gemstones in the Czech market are rare.

5. Mining companies in the Czech Republic as of December 31, 2010

Granát, družstvo umělecké výroby, Turnov
FONSUS první těžební a.s., Praha 1

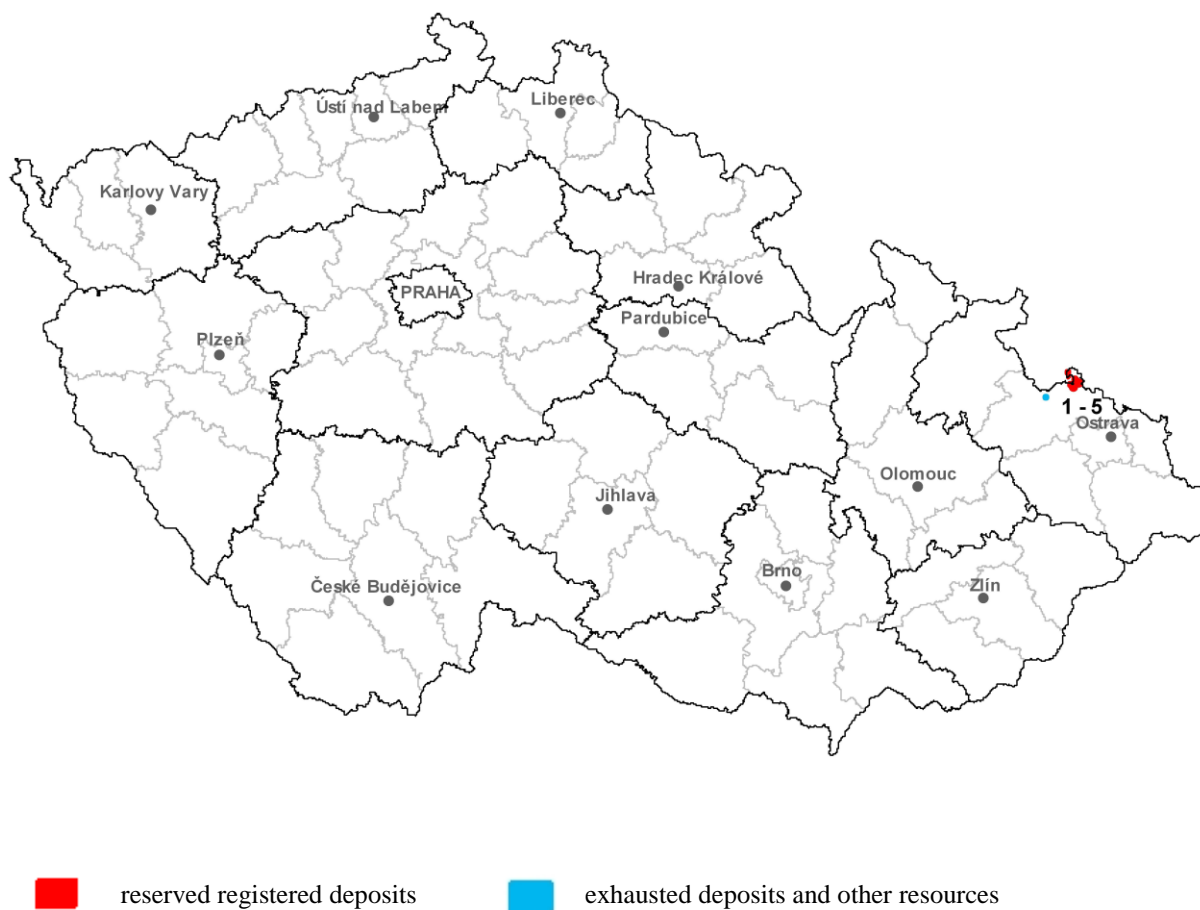
Gypsum

1. Registered deposits and other resources of the Czech Republic

(see map)

Names of exploited deposits are in **bold type**

- | | | |
|------------------------------------|--------------------|----------|
| 1 Kobeřice ve Slezsku-jih | 3 Rohov-Strahovice | 5 Třebom |
| 2 Kobeřice ve Slezsku-sever | 4 Sudice | |



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	5	5	5	5	5
exploited	1	1	1	1	1
Total mineral *reserves, kt	504 470	504 349	504 295	504 276	504 269
economic explored reserves	119 343	119 222	119 168	119 149	119 142
economic prospected reserves	302 990	302 990	302 990	302 990	302 990
potentially economic reserves	82 137	82 137	82 137	82 137	82 137
Mine production, kt	16	66	35	13	5

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

3. Foreign trade

252010 - Gypsum, anhydrite

		2006	2007	2008	2009	2010
Import	t	39 679	60 027	77 320	86 641	55 096
Export	t	46 837	107 180	100 038	12 677	48 606

252010 - Gypsum, anhydrite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	2 118	2 124	1 860	2 006	2 017
Average export prices	CZK/t	416	181	213	1 180	132

4. Prices of domestic market

Average prices of traded commodities on the domestic market

Specifikace produktu	2006	2007	2008	2009	2010
vytěžený sádrovec, Kč/t	300	300	330	330	N
sádrové pojivo šedé, balené po 30 kg, palety, Kč/t	2 600	2 700	2 720	2 766	3 460
sádrové pojivo bílé, balené po 30 kg, palety, Kč/t	4 400	4 500	4 600	4 675	5 851

5. Mining companies in the Czech Republic as of December 31, 2010

GYPSTREND s.r.o., Kobeřice

Industrial sands

1. Registered deposits and other resources of the Czech Republic

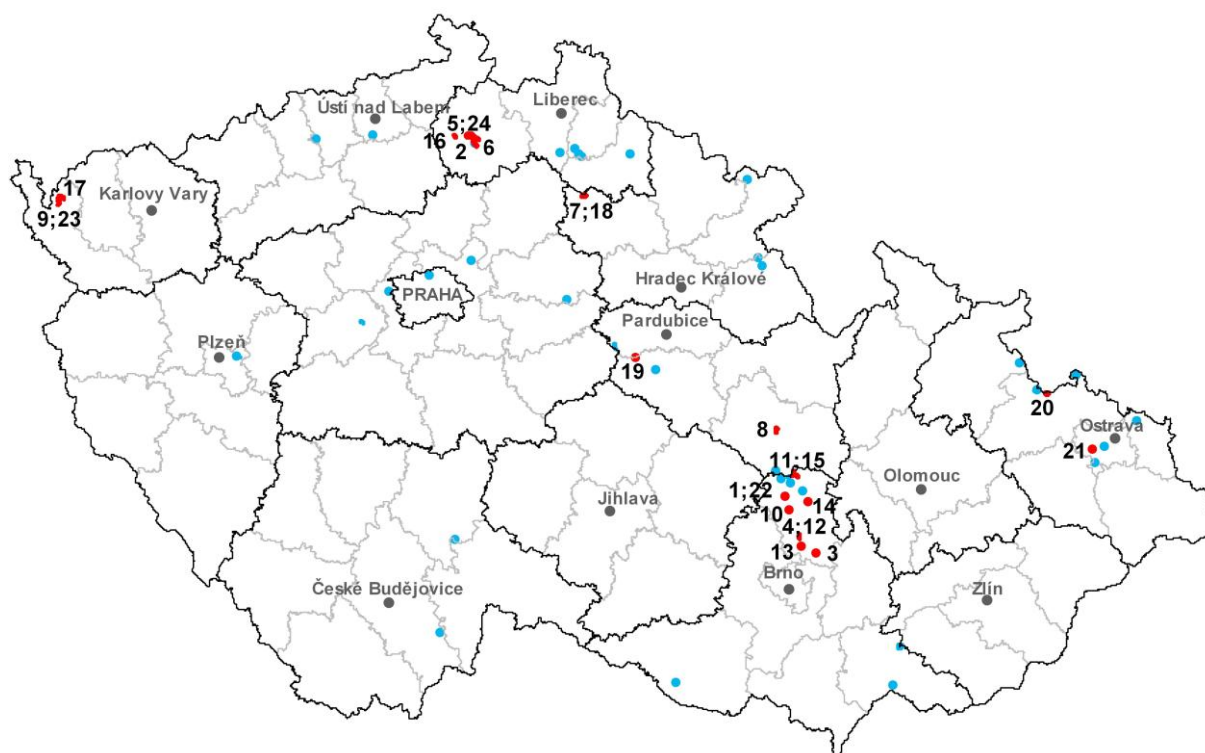
(see map)

Names of exploited deposits are in **bold type**

1 Nýrov**	9 Velký Luh*	17 Lomnička u Plesné**
2 Provodín*	10 Voděrady**	18 Mladějov v Čechách*
3 Rudice-Seč**	11 Babolky**	19 Načešice**
4 Spešov-Dolní Lhota**	12 Blansko 1-Jezírka**	20 Palhanec-Vávrovice**
5 Srní-Okřešice*	13 Blansko 2-Mošna**	21 Polanka nad Odrou**
6 Srní 2-Veselí*	14 Boskovice-Chrudichromy**	22 Rudka-Kunštát**
7 Střeleč*	15 Deštná-Dolní Smržov**	23 Velký Luh 1**
8 Svitavy-Vendolí**	16 Holany**	24 Zahrádky-Srní**

* deposits of glass and foundry sands

** deposits of foundry sands



reserved registered deposits



exhausted deposits and other resources

2. Basic statistical data of the Czech Republic as of December 31

Glass sand

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	6	6	6	6	6
exploited	5	5	5	5	5
Total mineral* reserves, kt	260 917	254 871	260 440	259 344	258 366
economic explored reserves	92 382	91 391	90 231	89 378	88 415
economic prospected reserves	25 947	25 892	25 781	25 538	25 523
potentially economic reserves	142 588	137 588	144 428	144 428	144 428
Mine production, kt	963	942	1 151	990	888

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	21 750	21 750	0	0	0
P ₂ , kt	14 927	14 927	14 927	14 927	14 927
P ₃	-	-	-	-	-

Foundry sand

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	26	22	24	23	23
exploited	10	10	10	10	11
Total mineral* reserves, kt	387 667	378 201	378 977	376 774	409 668
economic explored reserves	137 955	134 964	134 202	133 071	129 561
economic prospected reserves	81 907	80 465	80 455	97 066	133 470
potentially economic reserves	167 805	162 772	164 320	146 637	146 637
Mine production, kt	773	850	702	374	473

- * See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year		2006	2007	2008	2009	2010
P ₁ ,	kt	23 157	23 157	23 157	15 157	15 157
P ₂ ,	kt	14 723	14 723	14 723	14 723	14 723
P ₃		-	-	-	-	-

3. Foreign trade

250510 - Silica sands and quartz sands

		2006	2007	2008	2009	2010
Import	t	360 174	322 259	333 863	284 932	285 692
Export	t	564 608	516 050	515 830	445 608	421 217

250510 - Silica sands and quartz sands

		2006	2007	2008	2009	2010
Average import prices	CZK/t	501	626	552	491	500
Average export prices	CZK/t	528	590	508	475	498

7001 - Cullet and other waste and scrap of glass; glass in the mass

		2006	2007	2008	2009	2010
Import	t	71 259	75 966	80 804	101 287	89 298
Export	t	8 542	13 007	14 459	11 080	8 931

7001 - Cullet and other waste and scrap of glass; glass in the mass

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 640	2 807	2 886	2 449	2 874
Average export prices	CZK/t	2 360	1 786	1 548	847	621

4. Prices of domestic market

Prices of glass sands are based on their properties and quality. Domestic prices of wet glass

sand fluctuated between CZK 300–600 per tonne. Dry glass sand (not bagged) cost about CZK 800–1 050 per tonne, and bagged CZK 1 300–1 660 per tonne. Prices of very finely milled sand fluctuated between CZK 3 000–4 600 per tonne depending on quality. Wet and dry filter sand was sold for CZK 530–690 per tonne and CZK 1 050–1 350 per tonne, respectively.

Prices of foundry sand are lower than prices of glass sand. In 2008, bulk sand was sold at CZK 220–300 per tonne, dry bulk sand at CZK 750–850 per tonne, and bagged sand for CZK 1 250–1 500 per tonne.

5. Mining companies in the Czech Republic as of December 31, 2010

Glass sand

Sklopísek Střeleč, a.s., Mladějov
Provodínské písky a.s., Provodín
LB MINERALS, s.r.o., Horní Bříza

Foundry sand

Provodínské písky a.s., Provodín
Sklopísek Střeleč, a.s., Mladějov
LB MINERALS, s.r.o., Horní Bříza
Kalcit s.r.o., Brno
Jaroslav Sedláček - SEDOS, Drnovice
PEDOP s.r.o., Lipovec

Kaolin

1. Registered deposits and other resources of the Czech Republic

(see map)

Major deposit areas:

(Names of areas with exploited deposits are in **bold**)

1 **Karlovy Vary Region**

4 **Plzeň Region**

7 Třeboň Basin

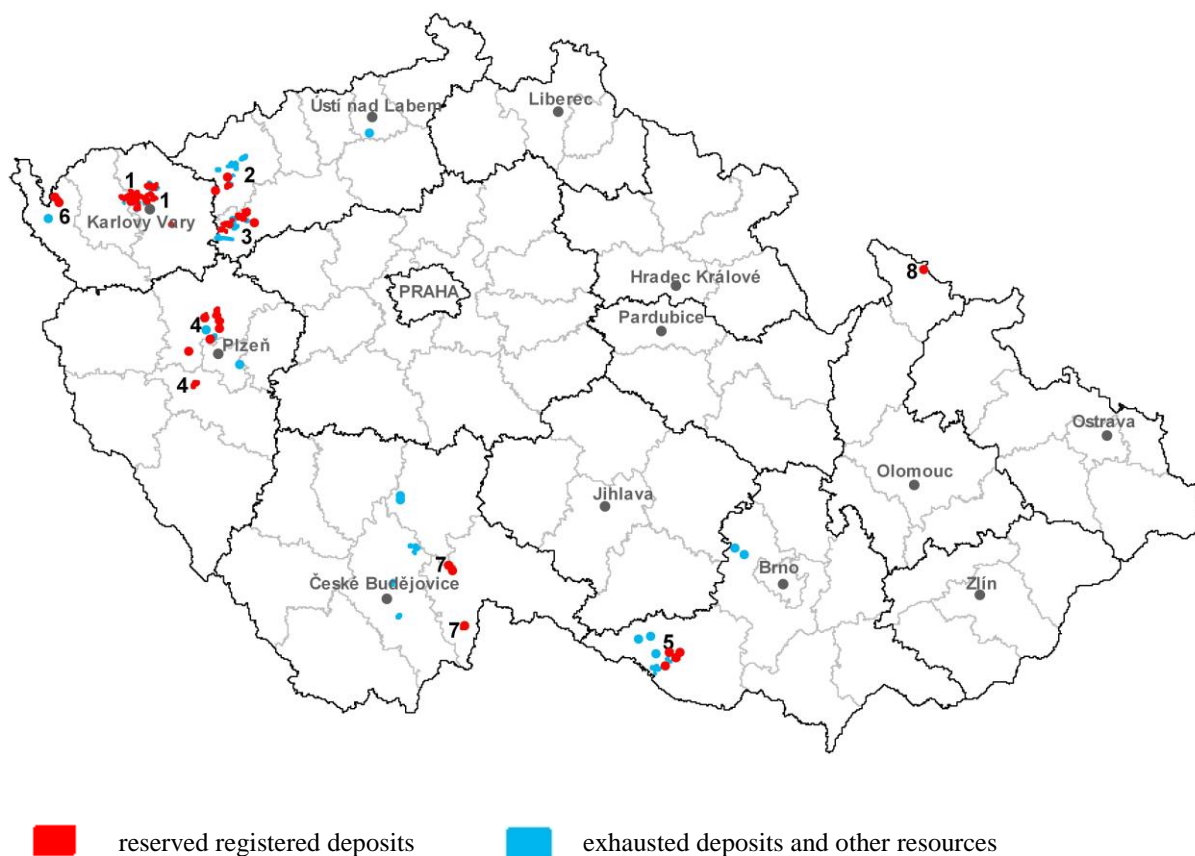
2 **Kadaň Region**

5 Znojmo Region

8 Vidnava

3 **Podbořany Region**

6 Cheb Basin



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits					
– total number	67	69	70	70	70
exploited	14	14	13	13	13
Total mineral *reserves, kt	1 204 349	1 220 315	1 212 123	1 208 331	1 207 631
economic explored reserves	191 326	249 703	244 494	244 636	240 673
economic prospected reserves	567 110	497 175	497 356	504 720	504 736
potentially economic reserves	445 913	473 437	470 273	458 975	462 222
Mine production, kt ^{a)}	3 768	3 604	3 833	2 886	3493
Beneficiated (water-washed) kaolin production, kt	673	682	672	525	636

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Raw kaolin, total production of all technological grades;

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	24 627	24 627	24 627	24 627	24 627
P ₂ , kt	4 998	4 998	4 998	4 998	4 998
P ₃	-	-	-	-	-

The data of kaolin for production of porcelain and fine ceramics (KJ) and kaolin used as fillers in paper industry (KP) have been stated separately due to great varieties of end use and prices of the individual kaolin types.

Number of deposits; reserves; mine production

Kaolin for production of porcelain and fine ceramics (KJ)	2006	2007	2008	2009	2010
Deposits – total number	29	30	30	30	30
exploited ^{a)}	7	6	6	6	7
Total mineral *reserves, kt	255 331	259 416	256 317	256 023	253 228
economic explored reserves	54 965	54 054	53 042	52 748	50 196
economic prospected reserves	107 762	111 858	111 713	111 713	111 713
potentially economic reserves	92 604	93 504	91 562	91 562	91 319
Mine production, kt	449	383	331	257	297

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official

application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

- a) Exploited deposits of KJ: Božičany-Osmosa-jih, Jimlíkov, Krásný Dvůr-Podbořany, Mírová, Podlesí 2, Ruprechtov

Number of deposits; reserves; mine production

Kaolin for paper industry (KP)	2006	2007	2008	2009	2010
Deposits – total number	23	23	24	25	25
exploited ^{a)}	7	7	6	6	6
Total mineral *reserves, kt	349 689	312 105	310 982	301 670	300 649
economic explored reserves	31 228	57 019	55 980	58 589	57 614
economic prospected reserves	231 906	185 205	185 205	183 999	184 015
potentially economic reserves	86 555	69 881	69 797	59 082	59 020
Mine production, kt	1 013	1 021	969	700	901

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

- a) Exploited deposits of KP: Horní Bříza-Trnová, Chlumčany-Dnešice, Kaznějov-jih, Lomnička-Kaznějov, Otovice-Katzenholz, Rokle

3. Foreign trade

2507 - Kaolin and other kaolinic clays, whether or not calcined

		2006	2007	2008	2009	2010
Import	t	23 023	24 161	20 871	13 744	14 124
Export	t	261 065	248 673	234 500	379 593	485 427

2507 - Kaolin and other kaolinic clays, whether or not calcined

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 783	4 378	4 548	3 658	4 375
Average export prices	CZK/t	2 400	2 636	2 449	2 263	2 519

25070020 - Kaolin

		2006	2007	2008	2009	2010
Import	t	12 289	15 239	15 629	6 558	7 991
Export	t	259 395	247 076	233 868	379 117	484 843

25070020 - Kaolin

		2006	2007	2008	2009	2010
Average import prices	CZK/t	4 456	4 819	4 304	4 995	5 180
Average export prices	CZK/t	2 393	2 608	2 441	2 260	2 517

25070080 - Kaolinic clay (other than kaolin)

		2006	2007	2008	2009	2010
Import	t	10 735	8 922	5 243	7 186	6 133
Export	t	1 670	1 597	632	476	583

25070080 - Kaolinic clay (other than kaolin)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 011	3 626	5 275	2 437	3 325
Average export prices	CZK/t	3 449	7 005	5 667	4 723	4 015

In recent years, average import prices have been about twice as high as export prices, primarily because high-quality British and German kaolin has been imported to the Czech Republic for the most demanding applications. Average export prices for Czech kaolin basically remain stable between 2 300–2 700 CZK/t.

4. Prices of domestic market

The average prices of ceramic grade kaolin on the domestic market fluctuate between CZK 2 200–3 000 per tonne depending on quality and the average export prices between CZK 2 400–2 600 per tonne. Paper grade kaolin is sold for CZK 1 700–2 500 per tonne. Only a small amount exceeds CZK 2 500 per tonne (bulk kaolin). Only the products for the chemical industry, which are produced by grinding paper grade kaolin, reach prices above CZK 3 000 per tonne. Crude kaolin for construction ceramics is sold for CZK 200–300 per tonne. Beneficiated (water-washed) kaolin from Podbořany is sold domestically for CZK 1 949 per tonne, kaolin for the manufacture of fine porcelain and glazes for roughly CZK 2 392 per tonne, and activated kaolin for CZK 2 900 per tonne.

Average prices of traded kaolin on the domestic market

Product specification	2007	2008	2009	2010
Ceramic grade kaolin, CZK/t	2 000–3 500	2 200–2 950	2 200–2 950	N
Paper grade kaolin, CZK/t	1 500–2 200	1 700–2 500	1 700–2 500	N

Kaolin for chemical industry, microground, CZK/t	above 3 000	above 3 000	above 3 000	N
Kaolin for porcelain manufacture from Sedlec, CZK/t	3 000–3 500	N	N	N
Beneficiated kaolin from Podbořany KD, CZK/t	1 640	1 800	1 949	1 949
Kaolin for manufacture of fine porcelain and glazes from Podbořany KDG, CZK/t	2 100	2 200	2 392	2 392
Activated kaolin from Podbořany KDA, CZK/t	2 500	2 700	2 900	2 900

5. Mining companies in the Czech Republic as of December 31, 2010

LB MINERALS, s.r.o., Horní Bříza

Sedlecký kaolin a.s., Božičany

Kaolin Hlubany, a.s., Podbořany

KERAMOST a.s., Most

KSB s.r.o., Božičany

Limestones and corrective additives for cement production

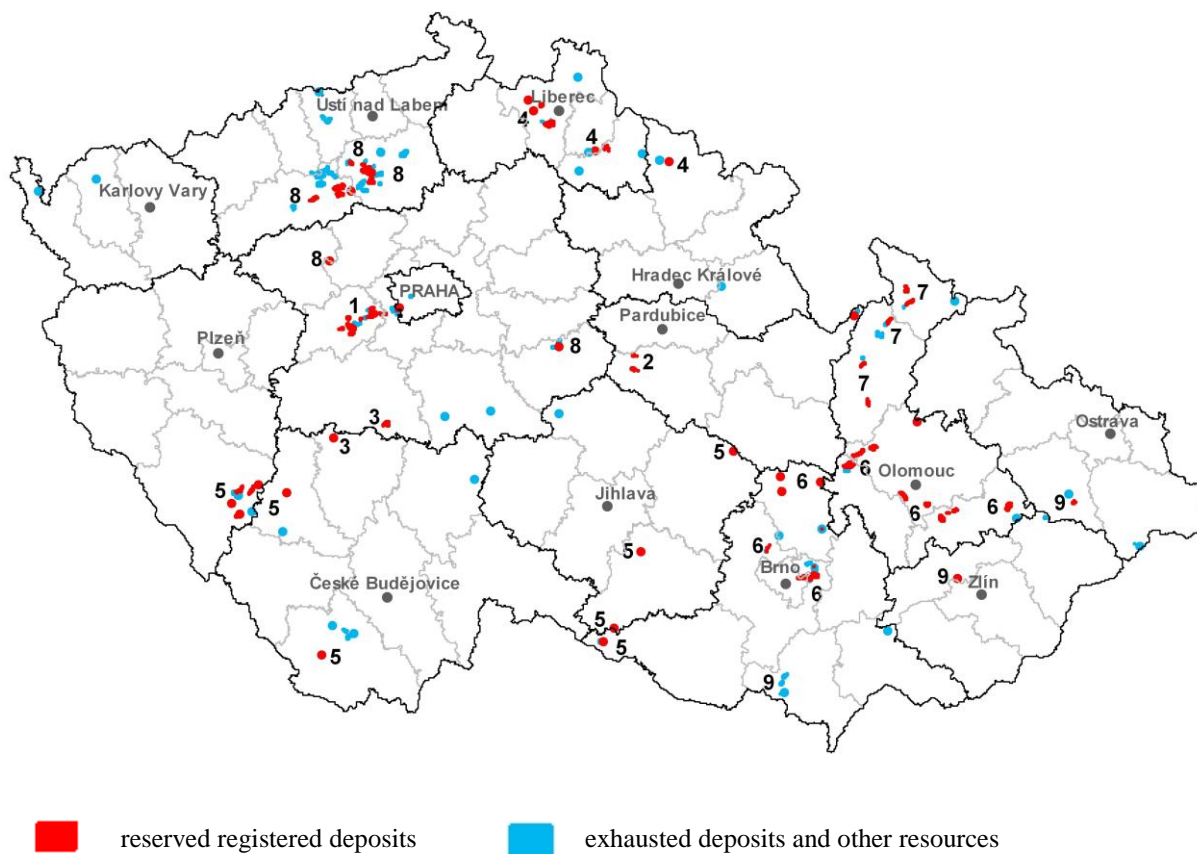
1. Registered deposits and other resources of the Czech Republic

(see map)

Major deposit areas:

(Names of areas with exploited deposits are **in bold**)

- 1 **Devonian of the Barrandian**
- 2 **Paleozoic of the Železné hory Mts.**
- 3 **Central Bohemian Islet Zone**
- 4 **Krkonoše Mts.-Jizerské hory Mts. Crystalline Complex**
- 5 **South-Bohemian and Moravian Moldanubicum**
- 6 **Moravian Devonian**
- 7 **Silesicum (Branná Group), Orlické hory Mts.-Kladsko Crystalline Complex and Zábřeh Group**
- 8 **Bohemian Cretaceous Basin**
- 9 **Outer Klippen Belt of the Western Carpathians**



2. Basic statistical data of the Czech Republic as of December 31

Limestones – total number

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	88	87	86	85	85
exploited	23	22	21	21	23
Total mineral *reserves, kt	4 295 554	4 279 084	4 265 039	4 286 327	4 887 573
economic explored reserves	1 699 360	1 755 091	1 742 662	1 762 240	2 082 724
economic prospected reserves	1 804 009	1 778 279	1 777 976	1 777 754	1 934 314
potentially economic reserves	792 185	745 714	744 401	746 333	870 535
Mine production, kt	10 193	11 279	10 958	9 116	9 828

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Limestones – total number

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	106 899	106 899	106 899	106 899	106 899
P ₂ , kt	400 957	400 957	400 957	400 957	400 957
P ₃	-	-	-	-	-

Owing to the importance and considerable differences in technological use and prices, high-percentage limestones (VV), corrective additives for cement production (CK) and other limestones (VO) are monitored separately.

High-percentage limestones containing 96 % or more of CaCO₃ (VV)

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	28	28	27	27	27
exploited	11	11	10	10	10
Total mineral *reserves, kt	1 388 433	1 355 031	1 349 890	1 369 283	1 368 089
economic explored reserves	626 781	622 492	617 467	635 737	634 543
economic prospected reserves	553 972	546 162	546 096	546 096	546 096
potentially economic reserves	207 680	186 377	186 327	187 450	187 450
Mine production, kt	4 386	4 885	4 602	4 174	4 389

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

High-percentage limestones containing 96 % or more of CaCO₃ (VV)

Approved prognostic resources P₁, P₂, P₃

Year		2006	2007	2008	2009	2010
P ₁ ,	kt	5 400	5 400	5 400	5 400	5 400
P ₂ ,	kt	26 345	26 345	26 345	26 345	26 345
P ₃		-	-	-	-	-

Other limestones (VO)

Number of deposits; reserves; mine production

Year		2006	2007	2008	2009	2010
Deposits – total number		47	47	48	48	48
exploited		14	14	16	16	16
Total mineral *reserves, kt		2 258 386	2 283 330	2 277 099	2 279 853	2 273 803
economic explored reserves		908 015	970 282	964 288	966 455	960 653
economic prospected reserves		814 494	796 574	796 337	796 115	795 890
potentially economic reserves		535 877	516 474	516 474	517 283	517 260
Mine production, kt		4 643	5 138	5 198	4 115	4 300

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Other limestones (VO)

Approved prognostic resources P₁, P₂, P₃

Year		2006	2007	2008	2009	2010
P ₁ ,	kt	95 677	95 677	95 677	95 677	95 677
P ₂ ,	kt	50 000	50 000	50 000	50 000	50 000
P ₃		-	-	-	-	-

Corrective additives for cement production (CK)

Number of deposits; reserves; mine production

Year		2006	2007	2008	2009	2010
Deposits – total number		15	15	15	15	15

exploited	5	4	3	3	3
Total mineral *reserves, kt	628 591	628 191	622 440	621 989	621 629
economic explored reserves	342 187	341 787	341 245	340 794	340 434
economic prospected reserves	159 688	159 688	156 785	156 785	156 785
potentially economic reserves	126 716	126 716	124 410	124 410	124 410
Mine production, kt	248	391	507	372	343

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Corrective additives for cement production (CK)

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	86 880	86 880	86 880	86 880	86 880
P ₂	-	-	-	-	-
P ₃	-	-	-	-	-

In many limestone deposits, VV and VO are extracted together. Six out of fifteen CK deposits make part of VO deposits.

3. Foreign trade

2521 - Limestone flux; limestone and other calcareous stone, of kind used for the manufacture of lime or cement

		2006	2007	2008	2009	2010
Import	t	215 210	580 545	497 775	441 951	520 502
Export	t	161 380	97 417	99 367	99 693	84 696

2521 - Limestone flux; limestone and other calcareous stone, of kind used for the manufacture of lime or cement

		2006	2007	2008	2009	2010
Average import prices	CZK/t	182	160	169	173	167
Average export prices	CZK/t	437	427	452	474	493

2522 - Quicklime, slaked lime and hydraulic lime

		2006	2007	2008	2009	2010
Import	t	123 068	124 159	125 685	88 026	106 266
Export	t	154 260	157 850	153 301	126 743	153 391

2522 - Quicklime, slaked lime and hydraulic lime

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 403	1 529	1 610	1 691	1 604
Average export prices	CZK/t	1 640	1 657	1 791	2 098	1 989

2523 - Portland cement, aluminous cement, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers

		2006	2007	2008	2009	2010
Import	t	1 138 064	1 055 695	1 099 248	1 058 852	890 708
Export	t	495 128	644 975	653 982	616 926	670 725

2523 - Portland cement, aluminous cement, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 646	1 744	1 730	1 791	1 692
Average export prices	CZK/t	1 191	1 415	1 493	1 587	1 434

4. Prices of domestic market

Prices are influenced by quality requirements. Prices of high-purity limestones, used primarily in metallurgy and in the chemical and sugar industries, are the highest. The average prices of lump high-purity limestone fluctuated between CZK 165–500 per tonne in recent years. Prices of bulk cement fluctuated depending on quality between CZK 2 200–2 550 per tonne, and cement on pallets between CZK 2 300–2 700 per tonne. Prices of ground lime were CZK 1 300–2 800 per tonne, and of lump lime CZK 2 000–2 500 per tonne. Hydrated lime was sold at CZK 2 618–3 410 per tonne. Prices of crushed limestone were CZK 210–350 per tonne depending on CaCO₃ content. Prices of ground limestone were CZK 390–690 depending on end-use and grain fraction.

Average prices of traded commodities on the domestic market

Product specification	2007	2008	2009	2010
-----------------------	------	------	------	------

Cement CEM I, 42,5 R, on pallets, CZK/t	2 560	2 560	2 400	2 400-2 640
Cement CEM I, 42,5 R, on pallets, covered with foil, CZK/t	2 640	2 650	2 750	2 700
Cement CEM III A, 32,5 R, on pallets, CZK/t	2 260	2 260	N	N
Cement CEM III A, 32,5 R, on pallets, covered with foil, CZK/t	2 340	2 340–2 400	N	N
Dolomitic hydrated lime, CZK/t	2 300–2 565	2 300–2 600	N	2 618- 3 410
Quicklime, ground, CZK/t	1 290	1 320	N	1 560

5. Mining companies in the Czech Republic as of December 31, 2010

Limestones

Českomoravský cement, a.s., nástupnická společnost, Mokrá

Velkolom Čertovy schody a.s., Tmaň

Holcim (Česko) a.s., člen koncernu, Prachovice

Cement Hranice, a.s.

Lafarge Cement, a.s., Čížkovice

Vápenka Vitošov s.r.o., Leština

LOMY MOŘINA spol. s r.o., Mořina

Omya CZ s.r.o.

HASIT Šumavské vápenice a omítkárny, a.s., V.Hydčice

LOM SKALKÁ, s.r.o., Ochoz u Brna

Krkonošské vápenky Kunčice, a.s.

Vápenka Vitoul s.r.o., Mladeč

Kalcit s.r.o., Brno

LB Cemix, s.r.o., Borovany

Agir spol. s r.o., Petrovice

Kamenolom a vápenka Malá dohoda, s.r.o., Holštejn

PRACTIC 99, s.r.o., Brno

Corrective additives for cement production

Českomoravský cement, a.s., nástupnická společnost, Mokrá

Cement Hranice, a.s.

Holcim (Česko) a.s., člen koncernu, Prachovice

Silica minerals

1. Registered deposits and other resources of the Czech Republic

(see map)

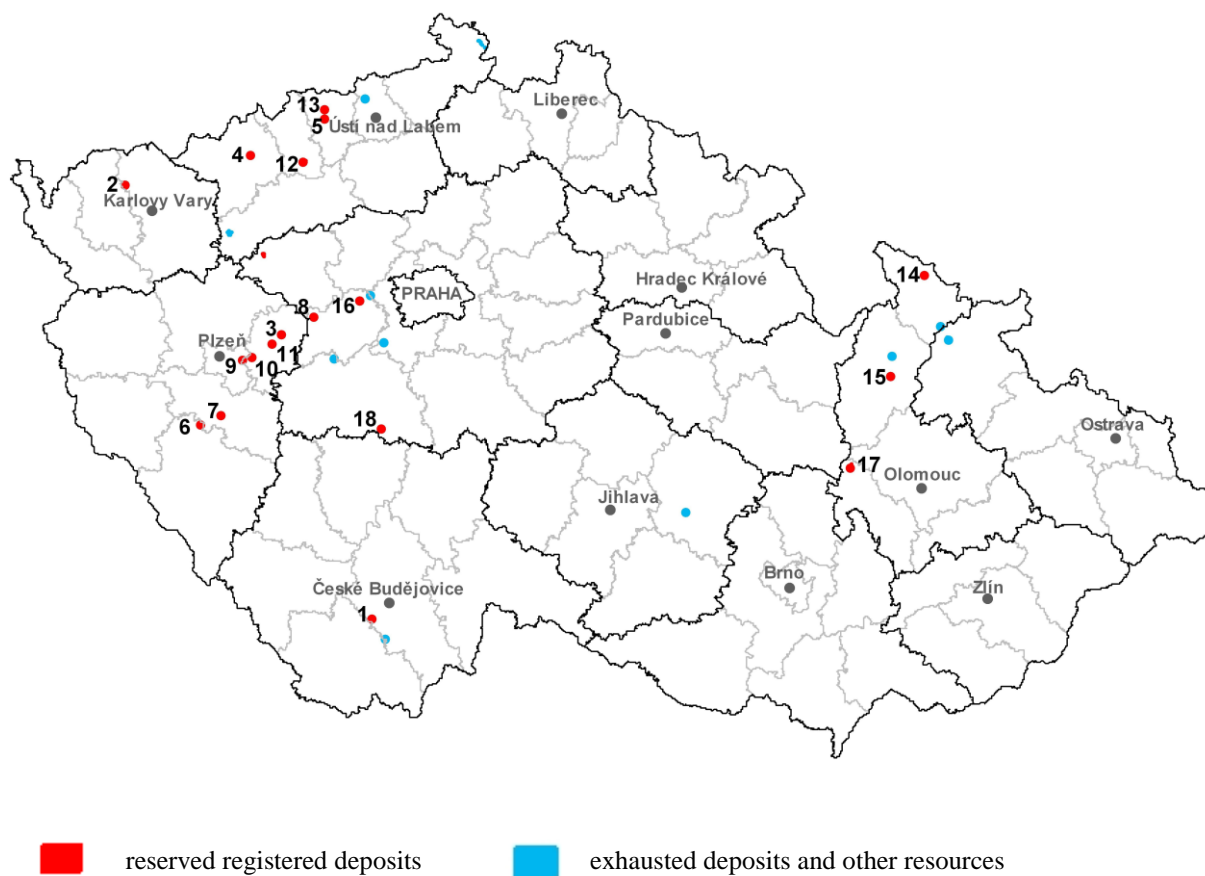
Names of exploited deposits are in **bold type**

Quartz – quartzites:

1 Vrábče-Boršov	7 Kbelnice	13 Střelná
2 Černava-Tatrovice	8 Kublov-Dlouhá Skála	14 Velká Kraš
3 Drahoňův Újezd-Bechlov	9 Kyšice-Pohodnice	15 Víkřovice
4 Chomutov-Horní Ves	10 Litohlavy-Smrkový vrch	16 Źelezná
5 Jeníkov-Lahoř	11 Sklená Huť	
6 Kaliř	12 Stránc	

Quartz for special glass:

17 Dětkovice	18 Krařovice
--------------	--------------



2. Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	18	18	18	18	18
exploited	1	1	1	1	1
Total mineral *reserves, kt	28 455	28 673	28 655	28 640	28 626
economic explored reserves	4 463	907	907	907	907
economic prospected reserves	23 283	23 014	22 996	22 981	22 967
potentially economic reserves	709	4 752	4 752	4 752	4 752
Mine production, kt	17	19	18	16	14

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	4 533	4 533	4 533	4 533	4 533
P ₂	-	-	-	-	-
P ₃	-	-	-	-	-

3. Foreign trade

2506 - Quartz (other than natural sands); quartzite, whether or not roughly trimmed or merely cut

		2006	2007	2008	2009	2010
Import	t	13 037	16 560	18 228	10 483	12 507
Export	t	36	24	29	55	29

2506 - Quartz (other than natural sands); quartzite, whether or not roughly trimmed or merely cut

		2006	2007	2008	2009	2010
Average import prices	CZK/t	2 614	2 837	2 781	2 946	2 535
Average export prices	CZK/t	36 237	50 852	41 174	20 600	15 253

720221 - Ferrosilicon

		2006	2007	2008	2009	2010
Import	t	34 114	39 658	35 913	22 181	28 758
Export	t	6 232	8 208	8 855	4 282	9 492

720221 - Ferrosilicon

		2006	2007	2008	2009	2010
Average import prices	CZK/t	19 570	22 367	31 069	25 859	30 562
Average export prices	CZK/t	17 759	21 058	30 088	23 801	30 284

4. Prices of domestic market

Lump quartz was sold domestically at CZK 50–200 per tonne.

5. Mining companies in the Czech Republic as of December 31, 2010

Budějovické šterkopísky spol. s r.o., Vrábče

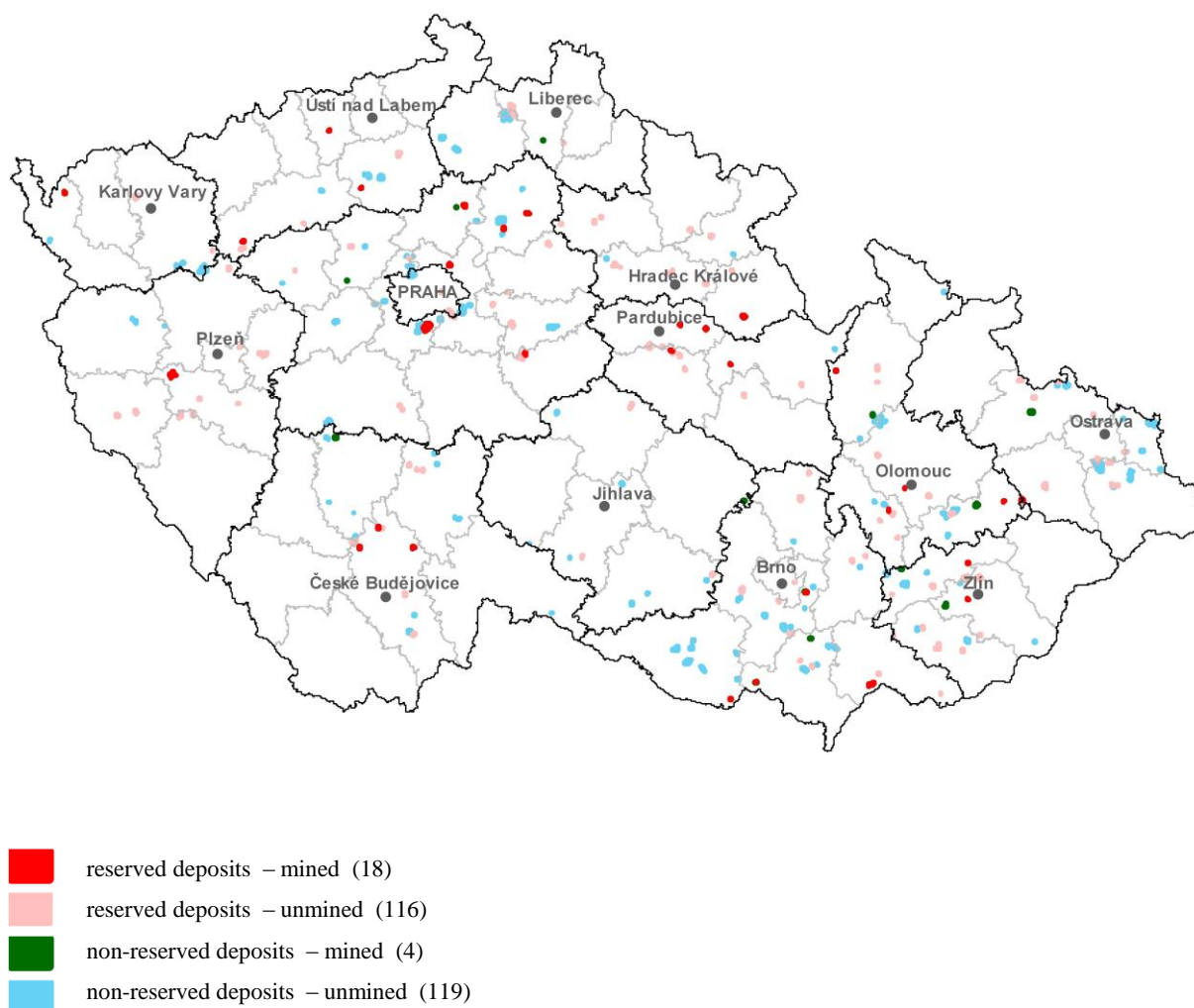
CONSTRUCTION MINERALS

Brick clays and related minerals

1. Registered deposits and other resources of the Czech Republic

(see map)

There are large numbers of brick mineral deposits registered in the Czech Republic and thus they are not listed in this overview. Their distribution over the Czech territory is rather uneven and consequently in some regions there is a shortage of these minerals (e.g. Českomoravská vrchovina Highlands covering most of the area of Vysočina Region with capital Jihlava).



2. Basic statistical data of the Czech Republic as of December 31

Reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	141	142	136	134	134
exploited	33	37	29	22	18
Total mineral *reserves, ths m ³	566 217	559 324	549 753	548 769	546 392
economic explored reserves	229 270	220 955	217 782	217 977	212 276
economic prospected reserves	240 315	238 341	232 729	232 709	231 886
potentially economic reserves	96 632	100 028	99 242	98 083	102 230
Mine production in reserved deposits, ths m ³	1 286	1 433	1 242	1 028	838

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , ths m ³	27 122	27 122	27 122	27 122	27 122
P ₂ , ths m ³	245 494	245 494	245 494	245 494	245 494
P ₃	-	-	-	-	-

Non-reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	126	123	123	122	123
exploited	10	9	9	4	4
Total mineral *reserves, ths m ³	687 311	686 805	687 075	686 873	683 609
economic explored reserves	65 464	65 161	65 114	65 114	63 622
economic prospected reserves	515 373	515 170	515 487	515 285	513 134
potentially economic reserves	106 474	106 474	106 474	106 474	106 853
exploitable reserves	1 613	1 315	1 054	725	544
Mine production in non-reserved deposits, ths m ³ a)	290	300	270	203	182

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

a) estimate

3. Foreign trade

690410 - Building bricks

		2006	2007	2008	2009	2010
Import	ths pcs	23 923	51 403	40 314	21 425	15 544
Export	ths pcs	2 023	14 461	17 983	12 459	12 914

690410 - Building bricks

		2006	2007	2008	2009	2010
Average import prices	CZK/piece	13	15	15	14	12
Average export prices	CZK/piece	15	14	17	18	20

690510 - Roof tiles

		2006	2007	2008	2009	2010
Import	ths pcs	5 134	6 708	6 252	4 633	7 834
Export	ths pcs	81 323	75 581	43 174	7 594	6 554

690510 - Roof tiles

		2006	2007	2008	2009	2010
Average import prices	CZK/piece	14	16	15	18	13
Average export prices	CZK/piece	5	5	6	18	17

4. Prices of domestic market

Domestic prices of brick products

Product specification	2006	2007	2008	2009	2010
Full brick; CZK/piece	5–10	6–12	5–12	6–12	5-9
Honeycomb brick; CZK/piece	6–12	7–14	8–15	10–14	10-14
Facing bricks; CZK/piece	N	10–16	10–17	10–17	7-17
Brick blocks Porotherm; CZK/piece	35–110	40–130	35–135	35–135	23-114
Classical shingle tile	13-28*	13-28*	11-20	12-26	7-20

* tile in general

Price of brick crude material on domestic market has been about CZK 500/t, brick clay roughly about CZK 80–180/t. Clay (ground clay bricks for tennis courts) is offered between

CZK 900-2,400 per tonne.

5. Mining companies in the Czech Republic as of December 31, 2010

Brick clays and related minerals – reserved deposits

HELUZ cihlářský průmysl v.o.s., Dolní Bukovsko
TONDACH Česká republika s.r.o., Hranice
Wienerberger Cihlářský průmysl, a.s., Č.Budějovice
Zlínské cihelny s.r.o., Zlín
Cihelna Kinský s.r.o., Kostelec n. Orlicí
Cihelna Hodonín, s.r.o.
Cihelna Polom, s.r.o.
Cihelna Vysoké Mýto s.r.o.
LB MINERALS, s.r.o., Horní Bříza

Brick clays and related minerals – non-reserved deposits

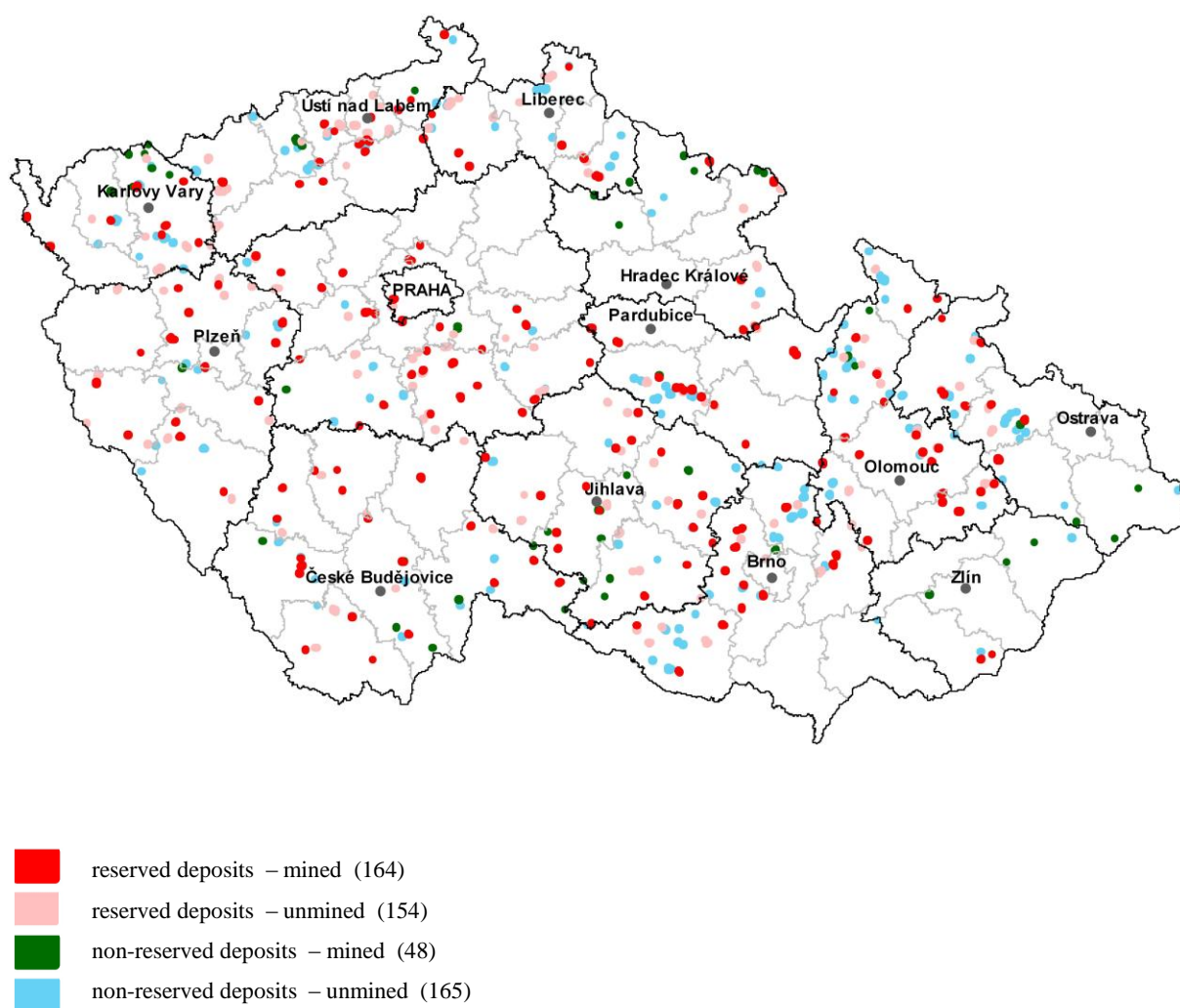
Wienerberger cihelna Jezernice, spol. s r.o.,
Wienerberger Cihlářský průmysl, a.s., České Budějovice
STAMP, s.r.o., Náchod
Ing.Jiří Hercl, cihelna Bratronice, Kyšice

Crushed stone

1. Registered deposits and other resources of the Czech Republic

(see map)

Because of the large number of crushed stone deposits in the Czech Republic, they are not listed.



2. Basic statistical data of the Czech Republic as of December 31

Reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	319	319	319	317	318
exploited	170	169	165	166	164
Total mineral *reserves, ths m ³	2 254 873	2 266 643	2 290 511	2 346 363	2 392 813
economic explored reserves	1 130 527	1 129 149	1 138 025	1 153 009	1 156 294
economic prospected reserves	996 531	1 005 144	1 017 433	1 043 741	1 089 355
potentially economic reserves	127 815	132 350	135 053	149 613	147 164
Mine production in reserved deposits, ths m ³	14 093	14 655	14 799	13 947	12 350

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , ths m ³	78 950	78 950	78 950	78 950	78 950
P ₂ , ths m ³	399 314	399 314	399 314	399 314	399 314
P ₃	-	-	-	-	-

Non-reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	207	208	210	215	213
exploited	45	45	47	50	48
Total mineral *reserves, ths m ³	1 034 345	1 033 583	1 036 450	1 038 869	1 011 792
economic explored reserves	46 599	46 090	45 616	45 772	43 376
economic prospected reserves	907 355	907 050	910 512	912 925	888 377
potentially economic reserves	80 391	80 443	80 322	80 172	80 039
exploitable reserves	17 907	29 804	34 906	34 708	35 985
Mine production in non-reserved deposits, ths m ³ a)	1 300	1 350	1 600	1 350	1 450

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

a) estimate

3. Foreign trade

251710 - Pebbles, gravel, broken or crushed stone

		2006	2007	2008	2009	2010
Import	kt	632	246	276	229	214
Export	kt	599	471	486	345	364

251710 - Pebbles, gravel, broken or crushed stone

		2006	2007	2008	2009	2010
Average import prices	CZK/t	237	378	401	342	403
Average export prices	CZK/t	221	220	148	187	249

4. Prices of domestic market

Crushed stone prices oscillate depending on the rock quality, grain size and also on availability of the mineral in certain region. In 2010 size fraction 4–8 mm was offered at following prices in CZK/t: spilite – approximately 259, amphibolite – approximately 336, granite – approximately 305, gneiss and porphyry – approximately 296, granodiorite – approximately 323, greywacke – approximately 298, basalt – approximately 230, chert – approximately 248, limestone – approximately 255. In size fraction 8–16 mm, the prices in CZK/t were as a whole lower: spilite – approximately 244, amphibolite – approximately 269, basalt – 240, chert and gneiss – approximately 243, granodiorites – 243, greywacke – 261, granite – 248, limestone – approximately 220. Prices of crushed stone in size fraction 16–32 mm were still lower (in CZK/t): spilite – approximately 200, basalt – approximately 195, amphibolite – approximately 270, gneiss – approximately 258, chert and porphyry – approximately 240, granodiorite – 200, greywacke – approximately 221, granite – 200, limestone – approximately 188. Prices of crushed stone in size fraction 32–63 mm as a whole were between 179 and 229 CZK/t in 2010; the cheapest was again limestone and the most expensive amphibolite.

Domestic prices of crushed stone

Product specification	2007	2008	2009	2010
crushed stone, spilite, fraction 4–8mm, CZK/t	310	315	284	259
crushed stone, amphibolite, fraction 4–8 mm, CZK/t	310	319	345	336
crushed stone, granite, fraction 4–8 mm, CZK/t	303	317	288	305
crushed stone, gneiss and porphyry, fraction 4–8 mm, CZK/t	300	314	319	296
crushed stone, granodiorite, fraction 4–8 mm, CZK/t	295	339	311	323

Product specification	2007	2008	2009	2010
crushed stone, greywacke, fraction 4–8 mm, CZK/t	288	307	297	298
crushed stone, basalt, fraction 4–8 mm, CZK/t	275	240	294	230
crushed stone, chert, fraction 4–8 mm, CZK/t	260	275	248	248
crushed stone, limestones, fraction 4–8 mm, CZK/t	230	248	271	255
crushed stone, spilite, fraction 8–16 mm, CZK/t	292	260	278	244
crushed stone, amphibolite, fraction 8–16 mm, CZK/t	255	266	276	269
crushed stone, granite, fraction 8–16 mm, CZK/t	236	249	265	248
crushed stone, gneiss, fraction 8–16 mm, CZK /t	242	243	258	247
crushed stone, granodiorites, fraction 8–16 mm, CZK /t	237	266	250	243
crushed stone, greywacke, fraction 8–16 mm, CZK /t	235	252	259	261
crushed stone, basalt, fraction 8–16 mm, CZK /t	253	221	261	240
crushed stone, chert, fraction 8–16 mm, CZK /t	242	248	238	238
crushed stone, limestones, fraction 8–16 mm, CZK /t	195	210	235	220

5. Mining companies in the Czech Republic as of December 31, 2010

Crushed stone – registered deposits

Českomoravský štěrk, a.s., Mokrý
 KAMENOLOMY ČR s.r.o., Ostrava - Svinov
 EUROVIA Kamenolomy, a.s., Liberec
 KÁMEN Zbraslav, spol. s r.o.
 EUROVIA Jakubčovice, s.r.o.
 M - SILNICE a.s., Pardubice
 Kámen a písek s.r.o. Český Krumlov
 COLAS CZ, a.s., Praha
 BASALT CZ s.r.o., Všchlapy
 Berger Bohemia a.s., Plzeň
 Stavební recyklace s.r.o., Sokolov
 EUROVIA Stone CZ, s.r.o., Praha
 BÖGL a KRÝSL, k.s., Praha
 Kamenolom Císařský a.s., Praha
 GRANITA s.r.o., Skuteč
 ZAPA beton a.s., Praha 4
 Kámen Brno s.r.o.
 DOBET s.r.o., Ostrožská Nová Ves
 Silnice Čáslav - Holding, a.s.
 Rosa s.r.o., Drásov

LOMY MOŘINA spol. s r.o., Mořina
SHB s.r.o., Bernartice
Ludvík Novák, Komňa
RENO Šumava a.s., Prachatice
Žula Rácov, s.r.o., Batelov
Lom Klecany, s.r.o., Praha 9
CEMEX Sand, s.r.o., Napajedla
BES s.r.o., Benešov
ŽPSV a.s., Uherský Ostroh
František Matlák, Mochov
HUTIRA - OMICE, s.r.o., Omice
KARETA s.r.o., Bruntál
Zemědělské družstvo Šonov u Broumova
Basalt s.r.o., Zabuřany
Madest s.r.o., Pavlice
VH PROSPEKT Olomouc s.r.o.
Froněk s.r.o., Rakovník
PETRA - lom Číměř, s.r.o.
Kozákov - družstvo, Záhoří
EKOZIS spol. s r.o., Zábřeh
ČNES dopravní stavby a.s., Kladno
OLZ, a.s., Olomouc
PEDOP s.r.o., Lipovec
KATORGA s.r.o., Praha
Weiss s.r.o., Děčín
NATRIX, a.s., Bojkovice
JHF Heřmanovice spol. s r.o.
Kamenolom KUBO s.r.o., Malé Žernoseky
Thorssen s.r.o., Kamenolom Mladecko
Pavel Dragoun, Cheb
Daosz, s.r.o., Jesenec
EKOSTAVBY Louny s.r.o.
Jan Hamáček - Stavby Prunéřov

Crushed stone – non-registered deposits

Sokolovská uhelná, právní nástupce, a.s., Sokolov
Basalt s.r.o., Zabuřany
SILNICE MORAVA s.r.o., Krnov
Kámen a písek s.r.o., Český Krumlov
Českomoravský štěrk, a.s., Mokrá

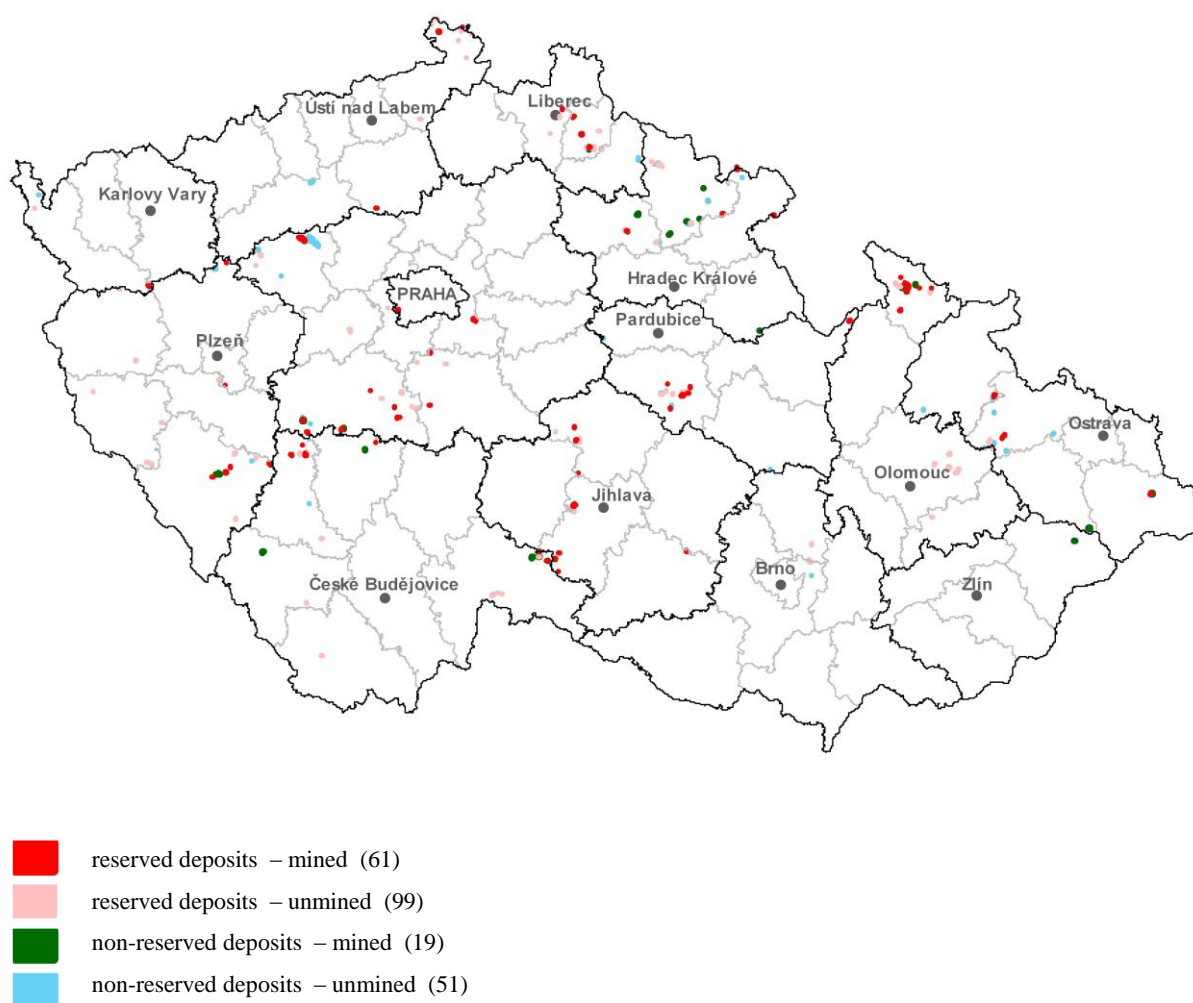
KÁMEN Zbraslav, spol. s r.o.
ZETKA Strážník a.s., Studenec
COLAS CZ, a.s., Praha
Kamenolom Žlutava, s.r.o.
SENECO s.r.o., Polná
LOMY MOŘINA spol. s r.o., Mořina
TS služby s.r.o., Nové Město na Moravě
EUROVIA Stone CZ, s.r.o., Praha
GRANITA s.r.o., Skuteč
LOM Babí, a.s., Trutnov
ZUD a.s., Zbůch
Stavoka Kosice a.s.
Valašské lesotechnické meliorace, a.s.
Lesostavby Frýdek-Místek, a.s.
Jihočeské lesy, a.s., České Budějovice
Lesy České republiky, s.p., Hradec Králové
LB spol. s r.o., Nová Role
RENO Šumava a.s., Prachatice
KAMENOLOMY ČR s.r.o., Ostrava - Svinov
Kalcit s.r.o., Brno
Vojenské lesy a statky ČR, s.p., Praha 6
Obec Hošťálková
EKOZIS spol. s r.o., Zábřeh
Petr Vaněk - Lomstav, Horní Maršov
Kamena výrobní družstvo Brno
Zemní a dopravní stavby Hrdý Milan, s.r.o., Dobrná

Dimension stone

1. Registered deposits and other resources of the Czech Republic

(see map)

There are many registered dimension stone deposits in the Czech Republic and therefore they are not listed.



2. Basic statistical data of the Czech Republic as of December 31

Reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	162	163	162	161	160
exploited	72	70	57	60	61
Total mineral *reserves, ths m ³	191 821	190 993	187 131	183 752	183 677
economic explored reserves	83 667	83 262	81 864	79 955	79 950
economic prospected reserves	67 998	66 778	66 464	65 826	65 757
potentially economic reserves	40 156	40 954	38 803	37 971	37 970
Mine production in reserved deposits, ths m ³	242	242	229	209	262

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , ths m ³	5 043	5 043	5 043	5 043	5 043
P ₂ , ths m ³	12 701	12 701	12 701	12 701	12 701
P ₃	-	-	-	-	-

Non-reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	68	66	67	70	70
exploited	21	22	19	19	19
Total mineral *reserves, ths m ³	33 425	33 211	33 503	33 546	33 503
economic explored reserves	2 674	2 307	2 304	2 293	2 280
economic prospected reserves	27 836	27 988	28 243	28 297	28 267
potentially economic reserves	2 916	2 916	2 956	2 956	2 956
exploitable reserves	2 436	2 881	2 775	2 755	2 686
Mine production in non-reserved deposits, ths m ³ ^{a)}	55	50	45	54	43

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} estimate

3. Foreign trade

2514 - Slate, also roughly worked or cut

		2006	2007	2008	2009	2010
Import	kt	5	5	4	11	7

Export	kt	57	59	48	31	29
--------	----	----	----	----	----	----

2514 - Slate, also roughly worked or cut

		2006	2007	2008	2009	2010
Average import prices	CZK/t	2 423	2 306	2 508	655	2 220
Average export prices	CZK/t	1 032	1 078	1 056	1 134	995

2515 - Marble, travertine, ecaussine and other calcareous stone

		2006	2007	2008	2009	2010
Import	kt	2	3	5	2	1
Export	kt	0.006	0.0002	0.01	0.1	0.0005

2515 - Marble, travertine, ecaussine and other calcareous stone

		2006	2007	2008	2009	2010
Average import prices	CZK/t	16 203	10 301	5 150	9 549	13 094
Average export prices	CZK/t	19 240	133 663	19 039	7 979	187 225

2516 - Granite, porphyry, basalt, sandstone and other stone

		2006	2007	2008	2009	2010
Import	kt	8	11	14	18	13
Export	kt	8	7	9	5	6

2516 - Granite, porphyry, basalt, sandstone and other stone

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 068	6 358	5 882	4 786	5 397
Average export prices	CZK/t	2 557	1 862	2 249	1 864	1 661

6801 - Setts, curbstones and flagstones of natural stone (except slate)

		2006	2007	2008	2009	2010
Import	kt	2	3	7	15	5
Export	kt	116	106	91	75	57

6801 - Setts, curbstones and flagstones of natural stone (except slate)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	14 655	16 317	4 239	18 851	26 938
Average export prices	CZK/t	1 914	2 034	1 853	5 422	1 854

6802 - Worked monumental and crushed stone (except slate) and stonework

		2006	2007	2008	2009	2010
Import	kt	22	26	29	21	19
Export	kt	73	92	83	62	54

6802 - Worked monumental and crushed stone (except slate) and stonework

		2006	2007	2008	2009	2010
Average import prices	CZK/t	14 109	12 692	12 037	15 192	14 689
Average export prices	CZK/t	3 463	3 764	5 389	4 455	6 823

6803 - Worked slate and articles of slate or of agglomerated slate

		2006	2007	2008	2009	2010
Import	kt	2	2	2	3	3
Export	kt	0.5	0.3	0.3	0.08	0.06

6803 - Worked slate and articles of slate or of agglomerated slate

		2006	2007	2008	2009	2010
Average import prices	CZK/t	12 498	12 323	13 179	11 927	10 576
Average export prices	CZK/t	6 605	9 324	17 033	14 795	29 607

4. Prices of domestic market

Prices of dimension stone products depend on mineral quality and on the level of processing. For example: prices of granite cobblestone of greyish blue Hlinec granite ranged depending on type within the limits CZK 2,400–3,400 per tonne, prices of granite margin stones of the same material range from CZK 340 to 440 per linear meter, cut granite panels made of it about CZK 2,400/m², granite curbs about CZK 1,250–1,400 per linear meter. Prices of Hlinec granite slabs ranged depending on a slab thickness and finish. It holds generally that polished slabs are the most expensive (CZK 1,800–3,800/m² for slabs thick from 2 to 8 cm), granite slabs

with scoring finish were little less expensive (CZK 1,600–3,600/m²) and even less expensive granite slabs with sand blasted finish (CZK 1,400–3,100/m²). Hlinec granite formatted slabs, suitable as pavement or lining, 3 cm thick, ranged CZK 1,560–2,200/m² depending on finish again. Prices of cobblestone of light Silesian granite ranged CZK 1,750–3,000/m²) depending on size, margin stone prices of the same material were within the limits CZK 290–320 per linear meter and prices of cut slabs of light Silesian granite ranged CZK 1,100–1,800/m². Prices of granite pavement slabs made of Mrakotín type granites range depending on thickness CZK 1,450–2,250/m² with sand blasted finish, CZK 1,580–2,480/m² with scoring finish and CZK 1,900–2,700/m² with polished finish. Prices of granite blocks are very variable, basically they start at CZK 4,200/m².

Prices of sandstone products vary also depending on degree of treatment and specific type of sandstone. Prices of cut sandstone slabs 5 cm thick ranged CZK 1,380–1,930/m², 10 cm thick CZK 2,770–3,410/m², 15 cm thick CZK 4,190–5,180/m² depending on type of sandstone (Hořice, Božanov, godul).

Prices of domestic marble (from Supíkovice, Lipová) vary according to thickness and degree of treatment of products. For example cut marble pavement at 3 cm of thickness has price range CZK 300–1,080/m² (Supíkovice marble) or CZK 300–1,180/m² (Lipová marble). Prices of smoothed marble pavement are little more expensive: CZK 400–1,200/m² (Supíkovice), CZK 400–1,340/m² (Lipová) and prices of polished marble pavement are even more expensive: CZK 440–1,500/m² (Supíkovice) or CZK 440–1,630/m².

5. Mining companies in the Czech Republic as of December 31, 2010

Dimension stone – reserved deposits

LB spol. s r.o., Nová Role
REVLAN s.r.o., Horní Benešov
Slezský kámen, a.s., Jeseník
MEDIGRAN s.r.o., Plzeň
Granit Lipnice s.r.o., Dolní Město
HERLIN s.r.o., Příbram
Bohumil Vejvoda, Krakovany v Čechách
Česká žula s.r.o., Strakonice
Plzeňská žula, Plzeň
Průmysl kamene a.s., Příbram
Pražský kamenoservis s.r.o., Praha 10
RALUX s.r.o., Uhelná
SATES ČECHY, s.r.o., Telč
Obec Studená

Těžba nerostů a.s., Plzeň
GRANIO s.r.o., Chomutov
Ligranit a.s., Liberec
BÖGL a KRÝSL, k.s., Praha
COMING PLUS, a.s., Praha 4
Kamenoprůmyslové závody s.r.o., Šluknov
Malkov Granit Baumann s.r.o., Drahenický Málkov
Kamenolom Nová Červená Voda s.r.o., Praha
Kámen Hudčice s.r.o.
Lom Matula Hlinsko, a.s.
Krákorka a.s., Červený Kostelec
SLEZSKÁ ŽULA spol. s r.o., Javorník
Anna Mrázová, Mukařov
KÁMEN OSTROMĚŘ s.r.o.
Granit Zedníček s.r.o., Kamenná
GRANIT-ZACH, spol. s r.o., Praha
Jindřich Zedníček, Kamenná
Josef Máca, Třešť
M. & H. Granit s.r.o., Plzeň
JIHOKÁMEN, výrobní družstvo, Písek
Mšenské pískovce s.r.o., Mšené - lázně
Mramor Slivenec a.s., Dobřichovice
K - Granit s.r.o., Jeseník
BioGinGo s.r.o., Kostelec nad Orlicí

Dimension stone – non-reserved deposits

RENO Šumava a.s., Prachatice
KOKAM s.r.o., Kocbeře
KAVEX - GRANIT HOLDING a.s., Plzeň 2
Jiří Sršeň - TEKAM, Záměl
K - Granit s.r.o., Jeseník
HERLIN s.r.o., Příbram
Obec Studená
Žula, spol. s r.o., Praha
Lom Horní Dvorce, s.r.o., Strmilov
PROFISTAV Litomyšl, a.s.
Josef Máca, Třešť
Alfonz Dovičovič, Hořice
Kamenolom Javorka s.r.o., Láz. Běláhoř
Lesostavby Frýdek-Místek, a.s.

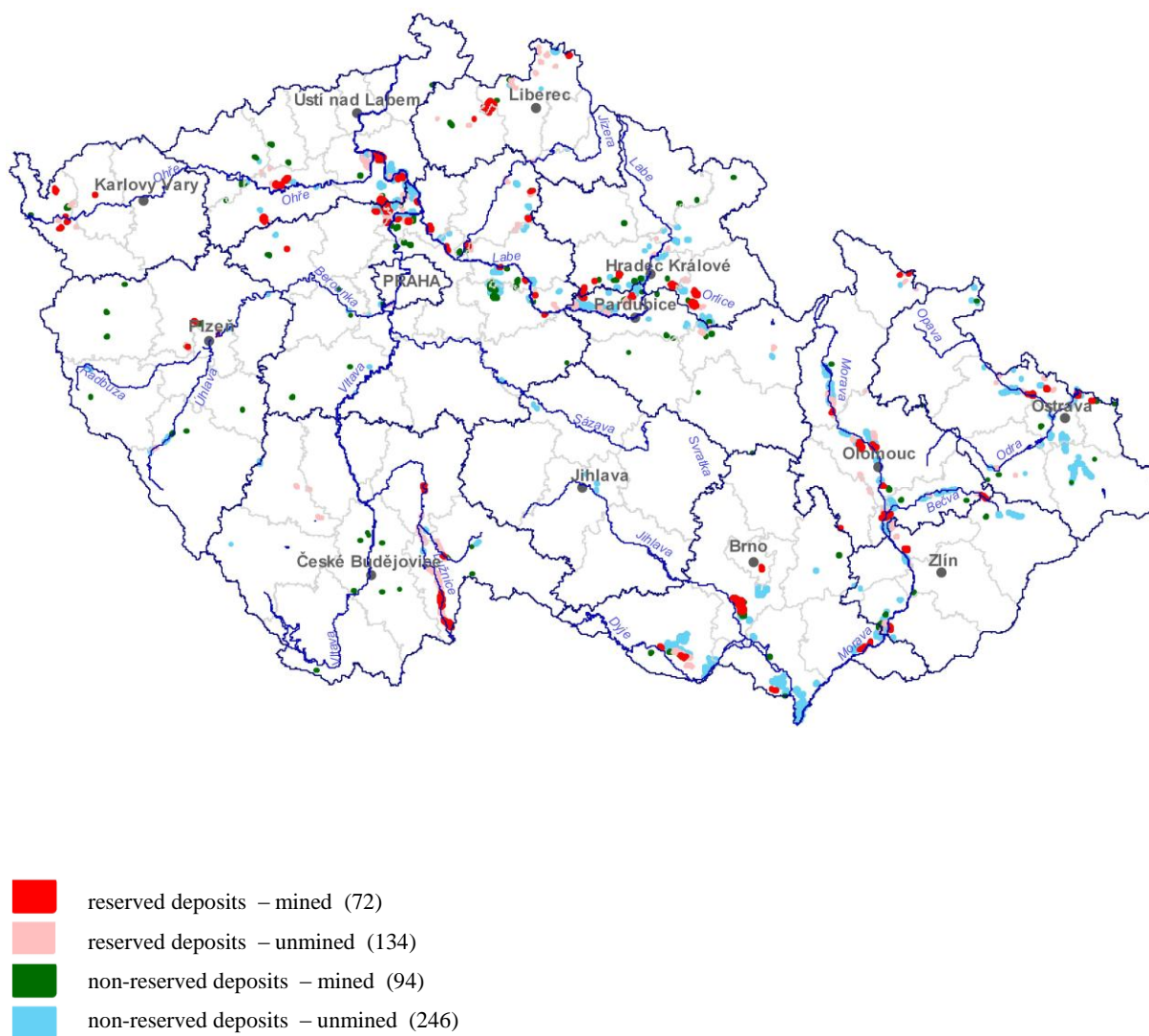
Bohumil Vejvoda, Krakovany v Čechách
KAJA - TRADING spol. s r.o., Praha
Krákorka a.s., Červený Kostelec
RAMES services s.r.o., Pardubice

Sand and gravel

1. Registered deposits and other resources of the Czech Republic

(see map)

Because of their large number, deposits of sand and gravel are not listed.



2. Basic statistical data of the Czech Republic as of December 31

Reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	209	208	208	208	206
exploited	79	78	69	72	72
Total mineral *reserves, ths m ³	2 151 237	2 145 835	2 125 644	2 112 759	2 134 304
economic explored reserves	1 150 463	1 141 041	1 132 411	1 123 164	1 129 913
economic prospected reserves	772 580	777 699	765 844	765 626	782 190
potentially economic reserves	228 194	227 095	227 389	223 969	222 201
Mine production in reserved deposits, ths m ³	9 110	9 185	8 770	7 269	6 187

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , ths m ³	146 177	146 177	146 177	146 177	146 177
P ₂ , ths m ³	1 007 985	1 007 985	1 007 985	1 007 985	1 007 985
P ₃	-	-	-	-	-

Non-reserved deposits: Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	338	338	336	338	340
exploited	104	101	94	96	94
Total mineral *reserves, ths m ³	2 084 865	2 092 389	2 096 378	2 097 034	2 080 639
economic explored reserves	103 767	107 711	109 392	110 585	107 925
economic prospected reserves	1 737 933	1 743 741	1 746 049	1 745 512	1 734 314
potentially economic reserves	243 165	240 937	240 937	240 937	238 400
exploitable reserves	47 006	53 224	50 978	50 331	50 288
Mine production in non-reserved deposits, ths m ³ a)	6 000	6 450	6 350	6 050	4 500

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

a) estimate

3. Foreign trade

250590 - Other sand (natural sand of all kinds, also coloured, except sand containing metals and except silica sand and quartz sand)

		2006	2007	2008	2009	2010
Import	kt	52	50	62	29	11
Export	kt	0.2	2	0.7	0.4	0.6

250590 - Other sand (natural sand of all kinds, also coloured, except sand containing metals and except silica sand and quartz sand)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	608	834	712	1 070	2 721
Average export prices	CZK/t	49 228	8 213	5 220	7 732	7 463

4. Prices of domestic market

Sorted products of gravel-pits are markedly cheaper than washed products. Regional prices of sorted products are very stable and do not show bigger differences (e.g. size fraction 0–4 mm: state average 94 CZK/t, average of South Moravian Region 96 CZK/t, average of Central Bohemian Region 96 CZK/t in 2008). By contrast, prices of washed products differ quite a lot depending on the region. Average price of the mined stone in size fraction 4–8 mm was about 207 CZK/t, size fraction 8–16 mm cost 182 CZK/t in 2010.

5. Mining companies in the Czech Republic as of December 31, 2010

Sand and gravel – registered deposits

Českomoravský štěrk, a.s., Mokrý
Holcim (Česko) a.s., člen koncernu, Prachovice
LB MINERALS, s.r.o., Horní Bříza
KÁMEN Zbraslav, spol. s r.o.
CEMEX Sand, s.r.o., Napajedla
EUROVIA Kamenolomy, a.s., Liberec
KAMENOLOMY ČR s.r.o., Ostrava - Svinov
Družstvo DRUMAPO, Němčičky
Štěrkovny Olomouc a.s.
TVARBET Moravia a.s., Hodonín
Pískovna Hrušovany a.s., Hradčany
TEKAZ s.r.o., Cheb

Lubomír Kruncel, Travčice
Městské lesy Hradec Králové a.s.
Písky - J.Elsnic s.r.o., Postoloprty
MIROS MAJETKOVÁ a.s., Pardubice
Václav Maurer, Lužec nad Vltavou
Budějovické štěrkopísky spol. s r.o., Vrábče
Pískovna Sojovice, s.r.o.
DOBET s.r.o., Ostrožská Nová Ves
Jana Lobová, Pardubice
Těžba štěrkopísku s.r.o., Brodek
Kinský dal Borgo, a.s., Chlumeck nad Cidlinou
Zemědělské obchodní družstvo Zálabí, Ovčáry
BÖGL a KRÝSL, k.s., Praha
Pískovna Černovice, s.r.o., Brno
KM Beta Moravia s.r.o., Hodonín
Kaolin Hlubany, a.s.
ZAPA beton a.s., Praha 4
NZPK s.r.o., Podbořany
Pískovny Hrádek a.s., Hrádek nad Nisou
Oldřich Psotka, Mikulovice u Jeseníka
Zechmeister, spol. s r.o., Valtice
Ladislav Šeda, Turnov
Obec Kostomlátky
Zemědělské obchodní družstvo, Brniště
Písek - Beton a.s., Veltruby-Hradištko
UNIM s.r.o., Všestudy u Veltrus
František Dvořák, Dolní Dunajovice
KARETA s.r.o., Bruntál
Sokolovská uhelná, právní nástupce, a.s., Sokolov

Sand and gravel – non-registered deposits

František Jampílek, Lázně Toušeň
CEMEX Sand, s.r.o., Napajedla
České štěrkopísky spol. s r.o., Praha
Vltavské štěrkopísky s.r.o., Chlumín
Pískovny Hrádek a.s., Hrádek nad Nisou
ROBA štěrkovny Nové Sedlo, s.r.o.
ZEPIKO spol. s r.o., Brno
Písek - Beton a.s., Veltruby-Hradištko
realma-pískovna dolany s.r.o., Zlín

AGRO Brno - Tuřany, a.s.
Písek Žabčice, s.r.o.
Písník Kinský, s.r.o., Kostelec nad Orlicí
Lubomír Kruncel, Travčice
FRISCHBETON s.r.o., Praha
LIKOD s.r.o., Lípa
Agropodnik Humburky, a.s.
TAPAS Borek, s.r.o., Stará Boleslav
Rovina Písek, a.s., Písek u Chlumce nad Cidlinou
ACHP s.r.o., Hradec Králové
Václav Maurer, Lužec nad Vltavou
Luděk Měchura, Kyjov
Obec Osek nad Bečvou
AG Skořenice, a.s.
BEST a.s., Rybnice
ZS Kratonohy a.s.
Plzeňské štěrkopísky s.r.o., Plzeň
SABIA s.r.o., Bohušovice nad Ohří
KÁMEN Zbraslav, spol. s r.o.
Hradecký písek a.s., Brno
SPONGILIT PP, spol. s r.o., Praha
DOBET s.r.o., Ostrožská Nová Ves
Ing.Milan Tichý - Inženýrské stavby VOKA, Zahrádky
Pískovna Klíčany HBH s.r.o.
Štěrkovny Olomouc a.s.
Agrodružstvo Klas, Staré Ždánice
Vratislav Matoušek, Tursko
Silnice Klatovy, a.s.
Ing.Václav Luka, Český Brod
II.severočeská.stavební spol. s r.o., Okounov
MAPO, s.r.o., Písty
Stavoka Kosice a.s.
Sušárna a.s. Kratonohy
INGEA realizace s.r.o., Ostrava-Svinov
RYNOLTICKÁ PÍSKOVNA s.r.o., Liberec
Štěrkopísky Milhostov, s.r.o., Sokolov
ZEPOS a.s., Radovesice
Ing.František Klika, Kladno
Marie Beranová - Pískovna u Beranů, Daleké Dušníky
Písky - Skviřín, s.r.o., Tachov
JF TAKO s.r.o., Tatce

Technické služby města Strakonice s.r.o.
Kobra Údlice s.r.o.
Ilona Hejzlarová, Jetřichov
Václav Merhulík prodej a těžba písku, Lety
Obec Police
Obecní lesy Bludov s.r.o.
Správa a údržba silnic Jihočeského kraje, České Budějovice
Václav Mašek, Hýskov
Mgr.Milan Roček, Moravany
Jiří Zach, Markvartice
Unigeo a.s., Ostrava - Hrabová
MORAS a.s., Moravany
Ladislav Šeda, Turnov
Zemědělské družstvo Kokory
Městys Polešovice
STAVOKA Hradec Králové, a.s.
Pražské vodovody a kanalizace a.s.
META Servis s.r.o., Černošice
Jiří Bartoš, Dolní Újezd
Obec Rabštejnská Lhota
Recyklace-štěrkovna Frýdlant s.r.o.
ZD v Pňovicích
Lesy České republiky, s.p., Hradec Králové
STAKUS - písek s.r.o., Tachov
AGROSPOL HRÁDEK, spol. s r.o.
Obec Vrčeň
Městské lesy Jaroměř s.r.o., Proruby
Městys Senomaty
Technické služby města Úpice

MINERALS CURRENTLY UNMINED IN THE CZECH REPUBLIC

MINERALS MINED IN THE PAST WITH RESOURCES AND RESERVES

ENERGY MINERALS

Lignite

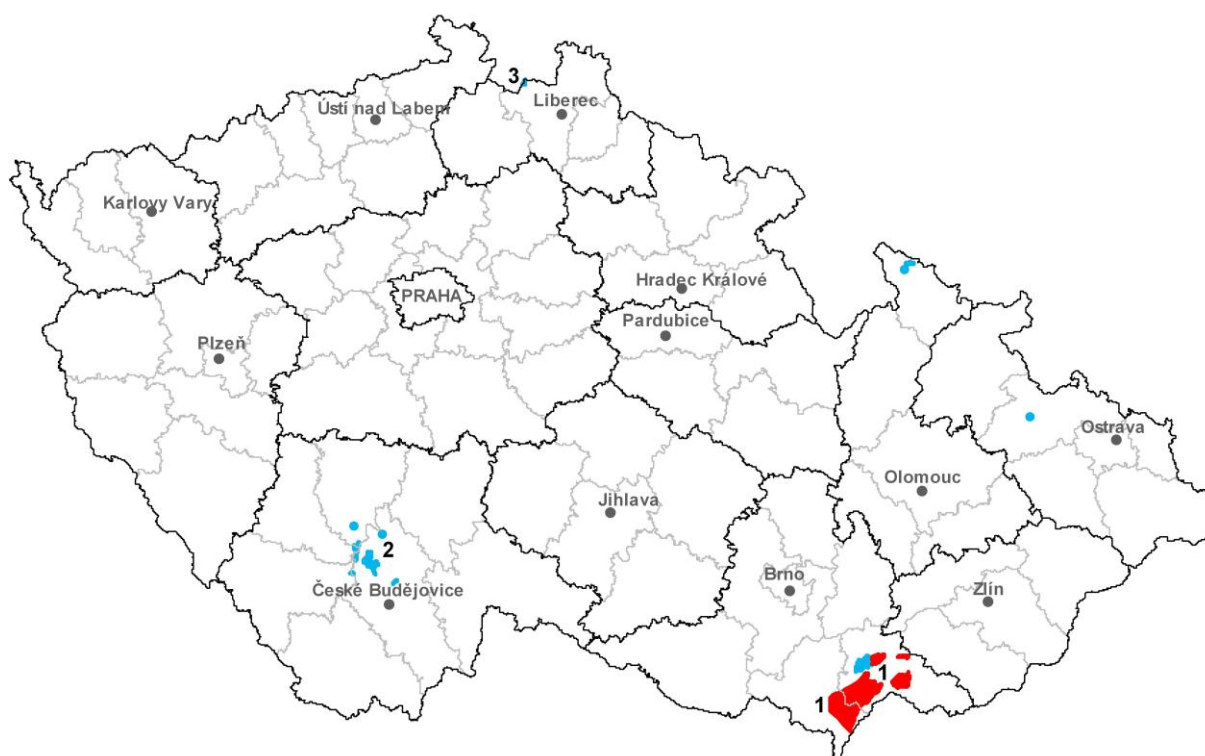
Registered deposits and other resources of the Czech Republic

(see map)

Principal areas of deposits presence:

(Names of regions with mined deposits are indicated in **bold type**)

- 1 Vienna Basin 2 České Budějovice Basin 3 Czech part of the Zittau (Žitava) Basin



reserved registered deposits



exhausted deposits and other resources

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	9	9	9	9	9
exploited	1	1	1	1	0
Total mineral reserves*, kt	976 985	976 367	975 702	975 261	975 261
economic explored reserves	205 030	204 412	204 221	203 780	203 780
economic prospected reserves	615 273	615 273	615 273	615 273	615 273
potentially economic reserves	156 682	156 682	156 208	156 208	156 208
exploitable (recoverable)	2 544	2 107	2 165	1 903	1 903
Mine production, kt	459	437	416	262	0

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	232 867	232 867	232 867	232 867	232 867
P ₂	-	-	-	-	-
P ₃	-	-	-	-	-

Foreign trade

No separate tariff item exists for lignite.

INDUSTRIAL MINERALS

Barite

Registered deposits and other resources of the Czech Republic

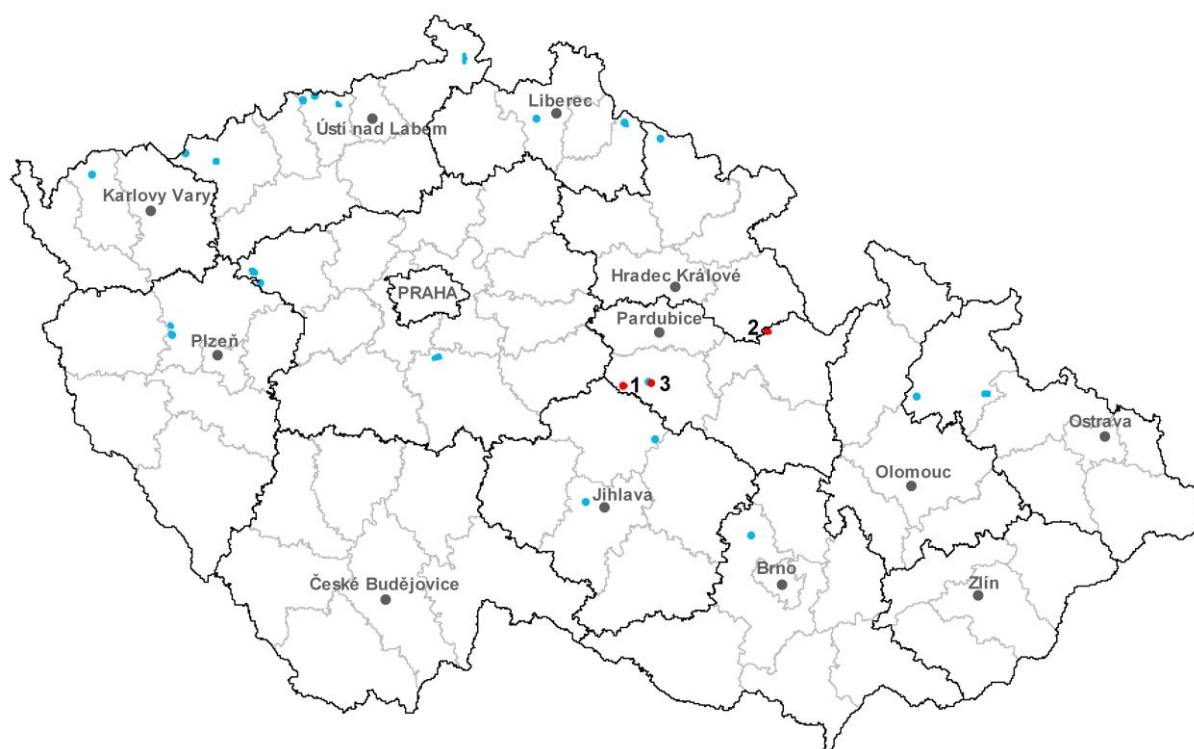
(see map)

Registered deposits and other resources are not mined

1 Běstvina

2 Bohousová

3 Křižanovice



reserved registered deposits



exhausted deposits and other resources

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	3	3	3	3	3
exploited	0	0	0	0	0
Total mineral *reserves, kt	569	569	569	569	569
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	569	569	569	569	569
Mine production, kt	0	0	0	0	0

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

^{a)} Deposits with registered barite reserves

Foreign trade

251110 - Natural barium sulphate (barite)

		2006	2007	2008	2009	2010
Import	t	7 536	6 616	7 194	4 797	7 079
Export	t	277	284	237	142	239

251110 - Natural barium sulphate (barite)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	5 649	5 832	5 579	6 807	6 497
Average export prices	CZK/t	18 776	18 143	11 813	11 868	12 340

251120 - Natural barium carbonate (witherite)

		2006	2007	2008	2009	2010
Import	t	0	0	134	0.4	113
Export	t	0	0	0	0	0

251120 - Natural barium carbonate (witherite)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	-	-	7 112	11 111	8 849
Average export prices	CZK/t	-	-	-	-	-

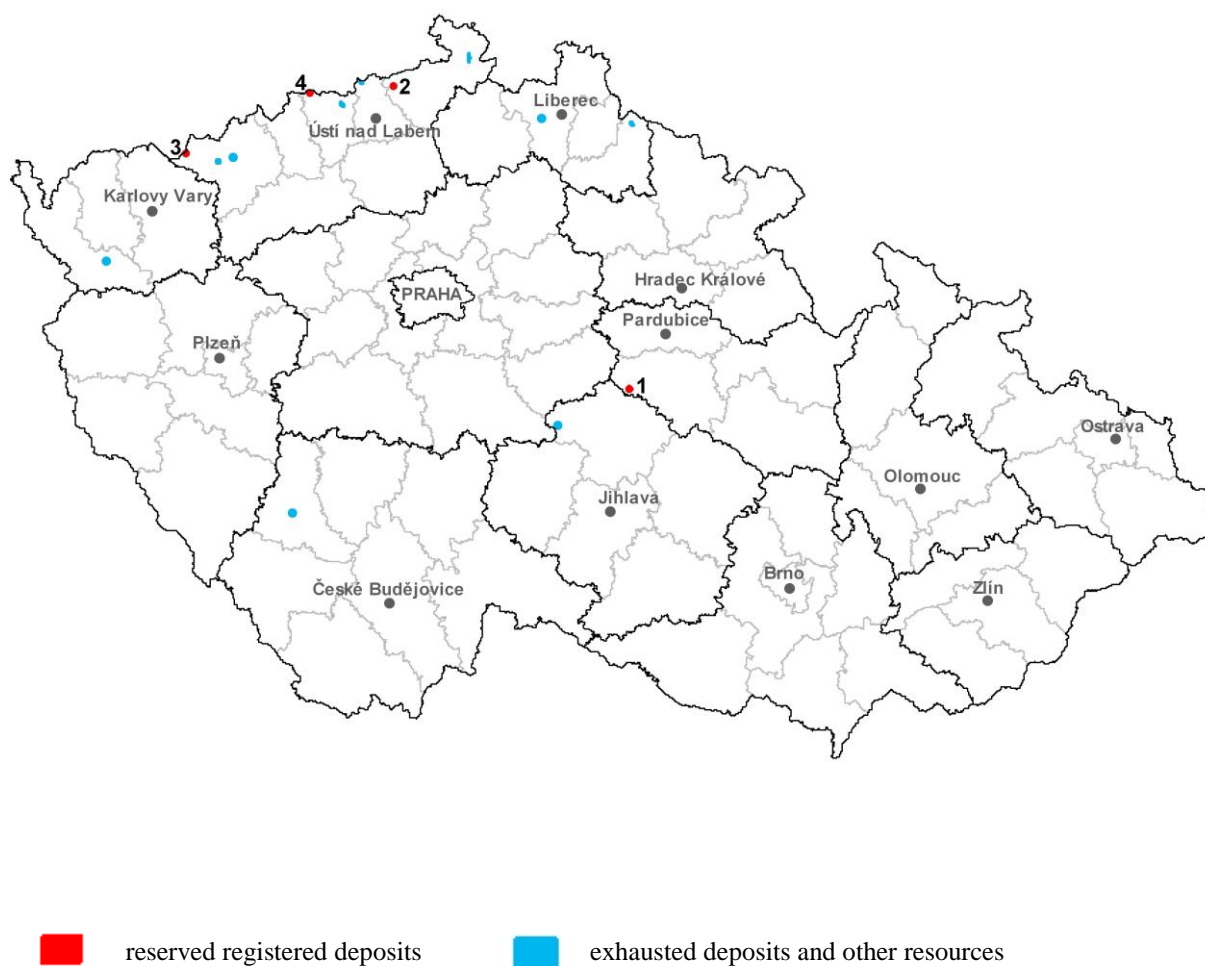
Fluorspar

Registered deposits and other resources of the Czech Republic

(see map)

Registered deposits and other resources are not mined

- | | |
|-------------------|------------|
| 1 Běstvina | 3 Kovářská |
| 2 Jílové u Děčína | 4 Moldava |



Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	4	4	4	4	4
exploited	0	0	0	0	0
Total mineral *reserves, kt	2 033	2 033	2 033	2 033	2 033
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	2 033	2 033	2 033	2 033	2 033
Mine production, kt	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Deposits with registered fluorspar reserves

Foreign trade

252921 - Fluorspar, containing 97 wt % or less of calcium fluoride

		2006	2007	2008	2009	2010
Import	t	8 879	11 700	1 873	4 247	5 752
Export	t	1 578	3 936	1 963	4 707	5 584

252921 - Fluorspar, containing 97 wt % or less of calcium fluoride

		2006	2007	2008	2009	2010
Average import prices	CZK/t	4 173	4 347	4 584	4 358	4 969
Average export prices	CZK/t	6 311	7 122	7 554	8 634	7 842

252922 - Fluorspar, containing more than 97 wt % of calcium fluoride

		2006	2007	2008	2009	2010
Import	t	15 759	11 532	1 567	4 379	8 743
Export	t	8 566	6 210	2 544	1 431	5 003

252922 - Fluorspar, containing more than 97 wt % of calcium fluoride

		2006	2007	2008	2009	2010
Average import prices	CZK/t	5 017	4 870	5 045	6 030	5 252
Average export prices	CZK/t	7 398	8 030	8 595	9 030	8 650

Graphite

Registered deposits and other resources of the Czech Republic

(see map)

Registered deposits and other resources are not mined

Amorphous graphite:

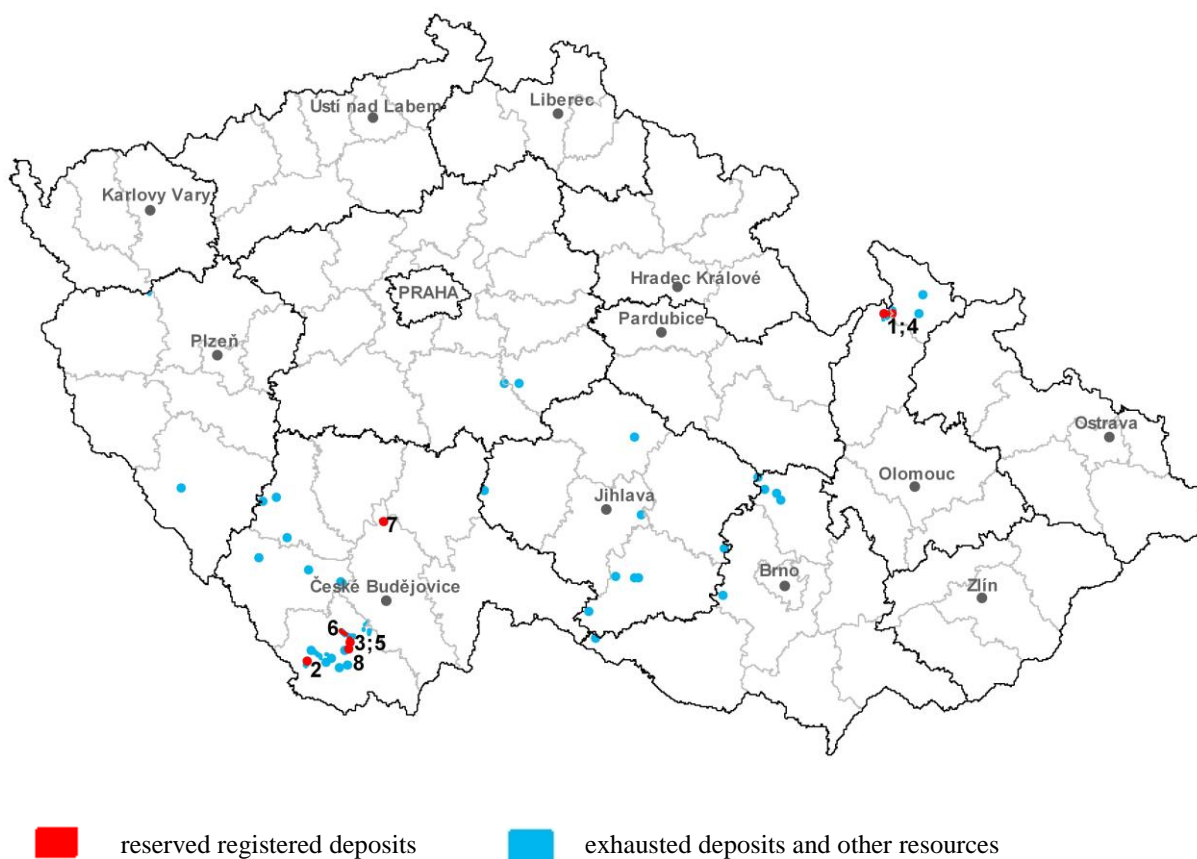
- 1 Velké Vrbno-Konstantin
- 2 Bližná-Černá v Pošumaví
- 3 Český Krumlov-Rvbářská ulice
- 4 Velké Vrbno-Luční hora 2

Crystalline graphite:

- 5 Český Krumlov-Městský vrch
- 6 Lazec-Křenov
- 7 Koloděje nad Lužnicí-Hostv

Mixed (from amorphous to crvstalline) graphite:

- 8 Snolí



Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	8	8	8	8	8
exploited	1	1	1	1	1
Total mineral *reserves, kt ^{a)}	14 165	14 162	14 159	14 159	14 159
economic explored reserves	1 327	1 324	1 321	1 321	1 321
economic prospected reserves	4 041	4 041	4 041	4 041	4 041
potentially economic reserves	8 797	8 797	8 797	8 797	8 797
Mine production, kt ^{a)}	5	3	3	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Reserves and mine production are given for crude graphite (graphite “ore”); average graphite contents in the raw material range between 15 and 20 % (crystalline grade) and 25–35 % (amorphous grade), respectively

Approved prognostic resources P₁, P₂, P₃

Year	2006	2007	2008	2009	2010
P ₁ , kt	3 878	3 878	3 878	3 878	3 878
P ₂ , kt	5 279	5 279	5 279	5 279	5 279
P ₃ , kt	1 505	1 505	1 505	1 505	1 505

Foreign trade

2504 - Natural graphite

		2006	2007	2008	2009	2010
Import	t	3 601	5 353	6 235	2 679	3 634
Export	t	3 518	4 031	4 076	2 151	3 155

2504 - Natural graphite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	36 198	23 628	20 619	22 657	21 381
Average export prices	CZK/t	28 638	26 661	27 088	28 905	25 880

3801 - Artificial graphite; colloidal or semi-colloidal graphite; preparations based on graphite

		2006	2007	2008	2009	2010
Import	t	2 780	4 402	7 376	5 500	3 583
Export	t	369	565	999	1 178	1 656

3801 - Artificial graphite; colloidal or semi-colloidal graphite; preparations based on graphite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	68 661	36 897	24 636	27 187	35 737
Average export prices	CZK/t	20 845	20 362	20 398	23 760	25 841

6903 - Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods)

		2006	2007	2008	2009	2010
Import	t	7 744	11 211	10 596	4 606	5 598
Export	t	14 062	16 385	16 579	10 564	11 419

6903 - Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	114 739	85 925	72 687	98 596	99 956
Average export prices	CZK/t	148 226	136 916	113 331	117 344	127 577

METALLIC ORES

Copper

Registered deposits and other resources of the Czech Republic

(see map)

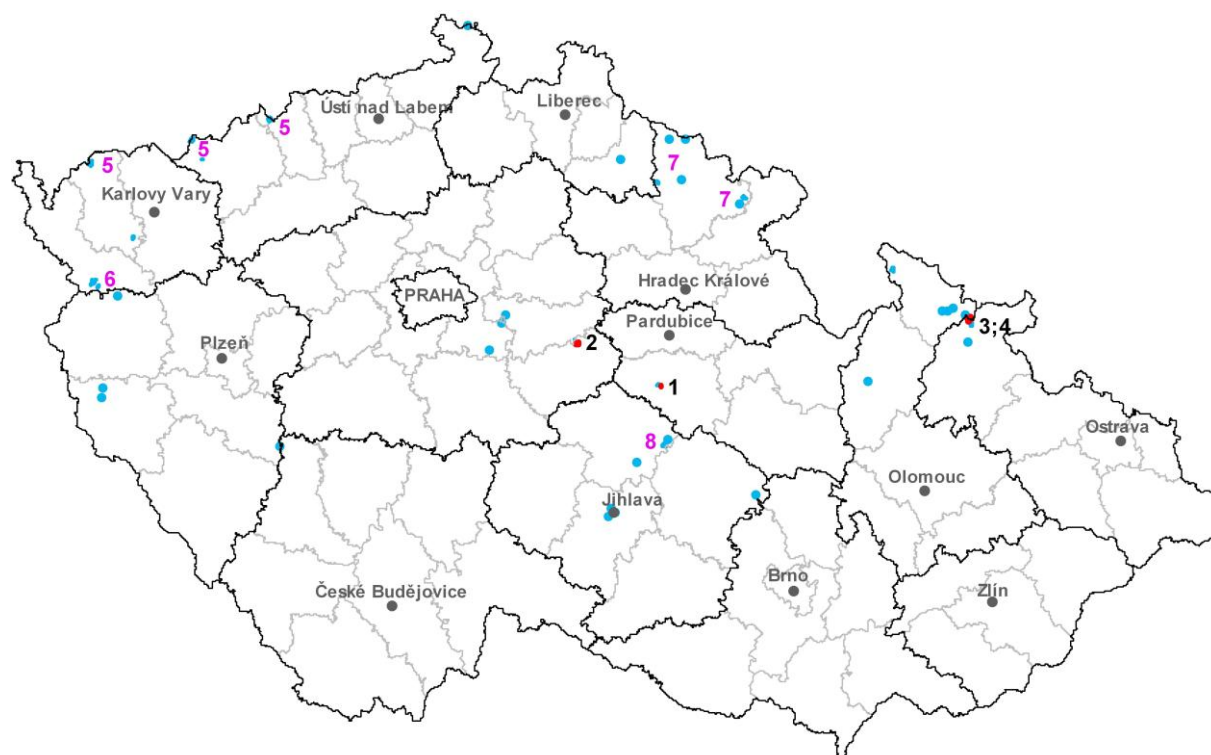
Registered deposits and other resources are not mined

Reserved registered deposits:

- | | |
|---------------|-----------------------------|
| 1 Křižanovice | 3 Zlaté Hory-Hornické Skály |
| 2 Kutná Hora | 4 Zlaté Hory-východ |

Exhausted deposits and other resources:

- | | |
|--|--|
| 5 in Krušné hory Mts. (Erzgebirge Mts.) and Tisová | 7 in Krkonoše Mts. Piedmont Basin and Intrasedimentary Basin |
| 6 Tři Sekery and surroundings | 8 Staré Ransko |



reserved registered deposits



exhausted deposits and other resources

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	5	4	4	4	4
exploited	0	0	0	0	0
Total mineral *reserves, kt Cu	51	49	49	49	49
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	51	49	49	49	49
Mine production, kt Cu	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} deposits with registered Cu content

Foreign trade

2603 - Copper ores and concentrates

		2006	2007	2008	2009	2010
Import	t	2	0	1	1	0
Export	t	3	0	0	0	0

2603 - Copper ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	129 935	-	178 400	258 114	-
Average export prices	CZK/t	17 308	-	-	-	-

7402 - Unrefined copper

		2006	2007	2008	2009	2010
Import	t	677	2 234	1 633	116	91
Export	t	0.01	0.004	1	24	7

7402 - Unrefined copper

		2006	2007	2008	2009	2010
Average import prices	CZK/t	157 904	149 985 12 500	130 807	79 605	174 269
Average export prices	CZK/t	9 923 077	000	658 015	97 858	185 656

7403 - Refined copper and copper alloys

		2006	2007	2008	2009	2010
Import	t	7 594	16 625	14 063	24 320	10 506
Export	t	12 659	10 002	8 200	14 606	14 627

7403 - Refined copper and copper alloys

		2006	2007	2008	2009	2010
Average import prices	CZK/t	107 189	128 196	131 292	68 492	144 568
Average export prices	CZK/t	120 032	118 858	129 425	108 761	135 058

7404 - Copper waste and scrap

		2006	2007	2008	2009	2010
Import	t	8 372	8 980	8 826	9 666	12 297
Export	t	57 417	59 548	59 693	105 562	124 927

7404 - Copper waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	100 977	106 826	90 446	77 378	113 233
Average export prices	CZK/t	97 067	101 869	86 415	76 924	98 614

740311 - Copper cathodes and sections of cathodes unwrought

		2006	2007	2008	2009	2010
Import	t	4 237	12 429	8 583	20 696	5 298
Export	t	9 483	6 466	3 869	10 628	11 082

740311 - Copper cathodes and sections of cathodes unwrought

		2006	2007	2008	2009	2010
Average import prices	CZK/t	138 886	149 878	133 158	58 097	148 406
Average export prices	CZK/t	144 661	161 575	135 173	105 370	137 459

740321 - Copper-zinc base alloys, unwrought

		2006	2007	2008	2009	2010
Import	t	135	3 251	3 560	2 925	3 330
Export	t	409	3 426	4 185	2 802	3 313

740321 - Copper-zinc base alloys, unwrought

		2006	2007	2008	2009	2010
Average import prices	CZK/t	173 779	37 394	126 210	130 401	129 518
Average export prices	CZK/t	97 061	37 896	122 189	127 860	126 691

740322 - Copper-tin base alloys, unwrought

		2006	2007	2008	2009	2010
Import	t	95	108	229	97	277
Export	t	89	67	19	1 082	102

740322 - Copper-tin base alloys, unwrought

		2006	2007	2008	2009	2010
Average import prices	CZK/t	233 643	300 139	218 550	183 113	123 581
Average export prices	CZK/t	113 971	113 122	510 587	93 775	118 481

Germanium

Registered deposits and other resources of the Czech Republic

(see map)

The registered deposit is not exploited

1 Lomnice u Sokolova



reserved registered deposits

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	1	1	1	1	1
Exploited	0	0	0	0	0
Total * reserves, t Ge	480	479	479	479	479
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	480	479	479	479	479
Mine production, t Ge	0	0	0	0	0

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic and its evolutionary comparison with international classifications* of this yearbook

Foreign trade

81129295 - Unwrought germanium, germanium powders; excluding waste and scrap

		2006	2007	2008	2009	2010
Import	kg	0	0	3	2	7
Export	kg	0	0	0	0	0

81129295 - Unwrought germanium, germanium powders; excluding waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	3 667	11 000	14 286
Average export prices	CZK/kg	-	-	-	-	-

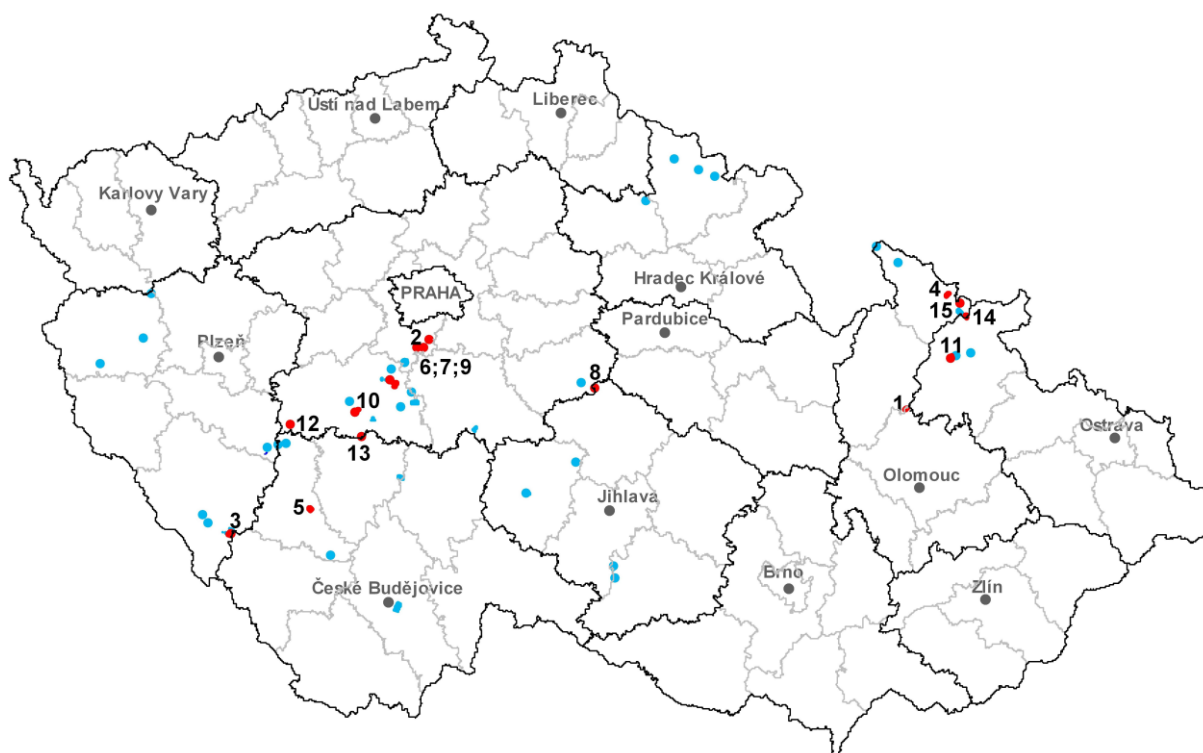
Gold

Registered deposits and other resources of the Czech Republic

(see map)

Registered deposits and other resources are not mined

- | | | |
|-------------------------|----------------------------|---------------------------|
| 1 Břevenec | 6 Mokrsko | 11 Suchá Rudná-střed |
| 2 Jílové u Prahy | 7 Mokrsko-východ | 12 Vacíkov |
| 3 Kašperské Hory | 8 Podmoky | 13 Voltýřov |
| 4 Mikulovice u Jeseníka | 9 Prostřední Lhota-Čelina | 14 Zlaté Hory-východ |
| 5 Modlešovice | 10 Smolotely-Horní Lišnice | 15 Zlaté Hory-Zlatý potok |



reserved registered deposits



exhausted deposits and other resources

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	19	15	15	15	15
exploited	0	0	0	0	0
Total mineral *reserves, kg Au	239 518	238 900	238 900	238 900	238 900
economic explored reserves	48 740	48 740	48 740	48 740	48 740
economic prospected reserves	34 618	28 644	28 644	28 644	28 644
potentially economic reserves	156 160	161 516	161 516	161 516	161 516
Mine production, kg Au	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Approved prognostic resources P₁, P₂, P₃

Au metal in ores

Year		2006	2007	2008	2009	2010
P ₁ ,	kg	23 161	23 161	23 161	23 161	23 161
P ₂ ,	kg	52 246	52 246	52 246	52 246	52 246
P ₃		-	-	-	-	-

Au ore

Year		2006	2007	2008	2009	2010
P ₁ ,	kt	4 144	4 144	4 144	4 144	4 144
P ₂ ,	kt	10 800	10 800	10 800	10 800	10 800
P ₃ ,	kt	2 850	2 850	2 850	2 850	2 850

Foreign trade

7108 - Gold in unwrought or semi-manufactured form, gold powder

		2006	2007	2008	2009	2010
Import	kg	12 636	1 926	2 593	2 915	3 693
Export	kg	220	4 632	5 153	10 649	477

7108 - Gold in unwrought or semi-manufactured form, gold powder

		2006	2007	2008	2009	2010
Average import prices	CZK/g	34	248	331	416	566
Average export prices	CZK/g	1 148	80	102	71	3 187

Lead

Registered deposits and other resources of the Czech Republic

(see map)

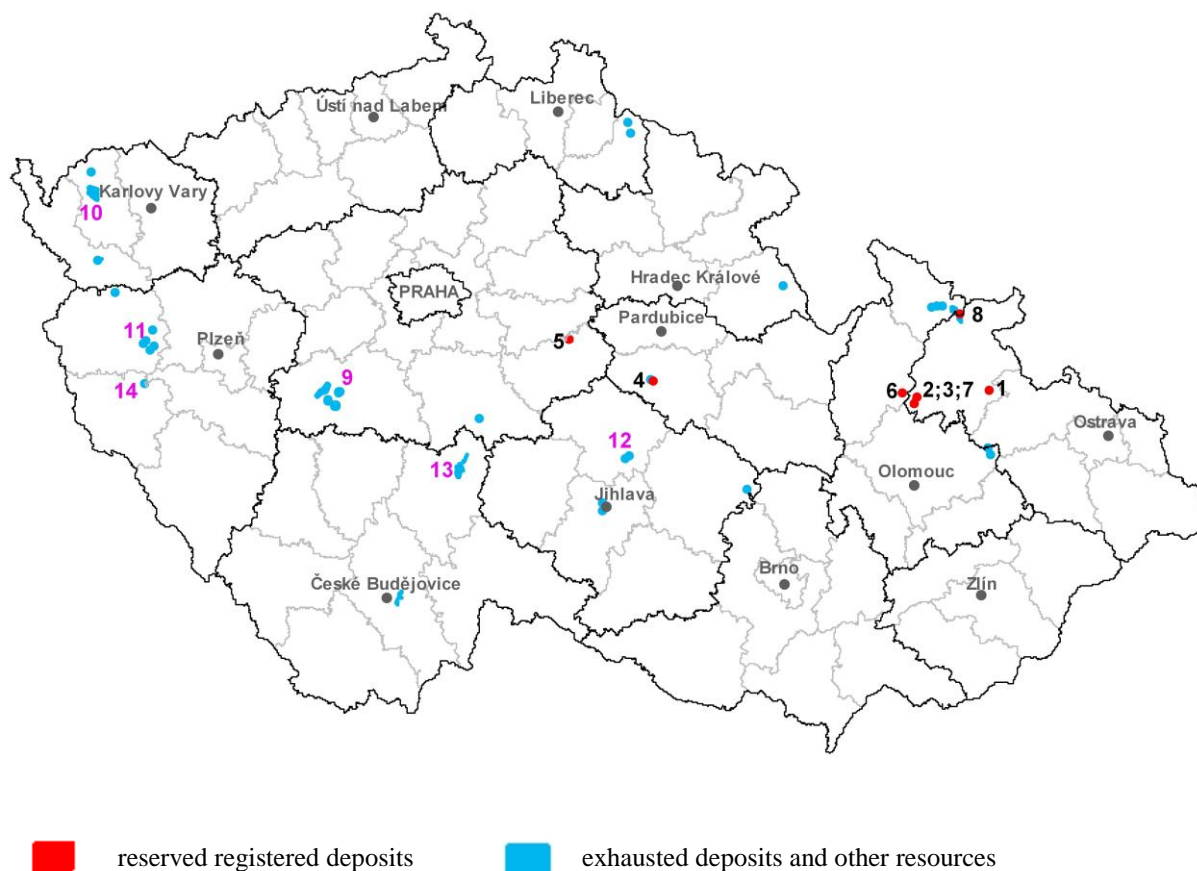
Registered deposits and other resources are not mined

Reserved registered deposits:

- | | | |
|------------------------|---------------|-------------------------|
| 1 Horní Benešov | 4 Křižanovice | 7 Ruda u Rýmařova-sever |
| 2 Horní Město | 5 Kutná Hora | 8 Zlaté Hory-východ |
| 3 Horní Město-Šibenice | 6 Oskava | |

Exhausted deposits and other resources:

- | | | |
|----------------------------------|--|-----------------------------------|
| 9 Březové Hory + Příbram-Bohutín | 11 Stříbro | 13 Ratibořské Hory + Stará Vožice |
| 10 Oloví | 12 Havlíčkův Brod (Dlouhá Ves + Bartoušov + Stříbrné Hory) | 14 Černovice |



Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	8	8	8	8	8
exploited	0	0	0	0	0
Total mineral *reserves, kt Pb	152	152	152	152	152
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	152	152	152	152	152
Mine production, kt Pb	0	0	0	0	0

* See **NOTE** in the chapter *Introduction* above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter *Mineral reserve and resource classification in the Czech Republic* of this yearbook

^{a)} Deposits with registered Pb content

Approved prognostic resources P₁, P₂, P₃

Polymetallic (Pb – Zn ± Cu) ores

Year	2006	2007	2008	2009	2010
P ₁ , kt	786	786	786	786	786
P ₂ , kt	5 340	5 340	5 340	5 340	5 340
P ₃	-	-	-	-	-

Foreign trade

2607 - Lead ores and concentrates

		2006	2007	2008	2009	2010
Import	t	1 741	0	0	238	0
Export	t	0	0	0	0	0

2607 - Lead ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	11 816	168 421	214 286	15 653	500 000
			1 600	1 109		
Average export prices	CZK/t	791 667	000	375	152 174	541 176

7801 - Unwrought lead

		2006	2007	2008	2009	2010
Import	t	67 924	68 661	59 358	65 846	82 402
Export	t	10 430	19 625	18 714	70 071	32 863

7801 - Unwrought lead

		2006	2007	2008	2009	2010
Average import prices	CZK/t	30 936	48 451	39 860	34 426	43 444
Average export prices	CZK/t	34 421	43 480	44 525	7 804	35 682

7802 - Lead waste and scrap

		2006	2007	2008	2009	2010
Import	t	4 411	6 502	4 773	4 199	2 901
Export	t	6 648	6 894	8 161	4 832	2 116

7802 - Lead waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	24 028	44 658	34 373	25 175	32 004
Average export prices	CZK/t	23 470	27 716	26 308	26 561	33 899

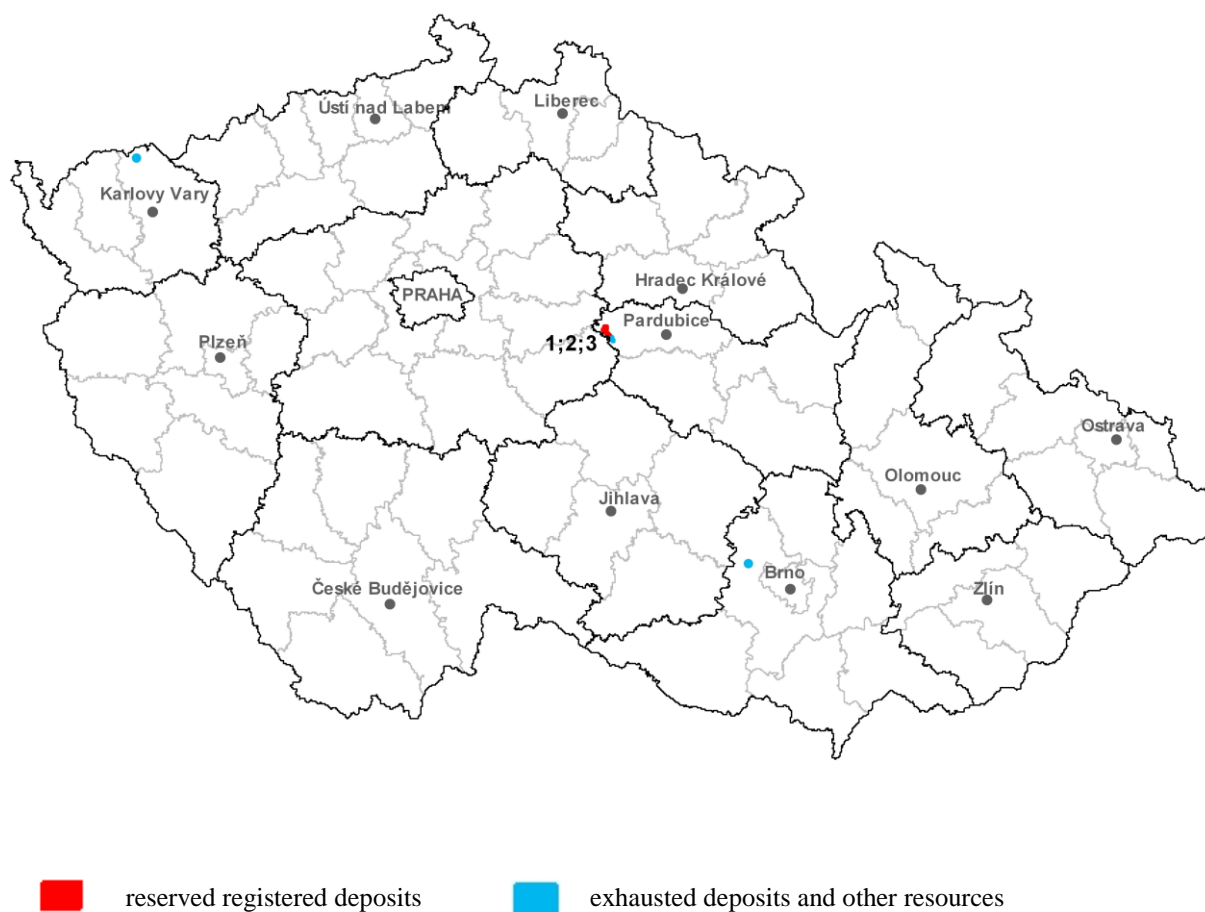
Manganese

Registered deposits and other resources of the Czech Republic

(see map)

Registered deposits and other resources are not mined

- 1 Chvaletice 2 Chvaletice-tailing ponds Nos 1 & 2 3 Řečany-tailing pond No 3



Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	3	3	3	3	3
exploited	0	0	0	0	0
Total mineral *reserves, kt ores	138 801	138 801	138 801	138 801	138 801
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	138 801	138 801	138 801	138 801	138 801
Mine production, kt Mn	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

Foreign trade

2602 - Manganese ores and concentrates

		2006	2007	2008	2009	2010
Import	t	14 375	15 902	15 714	16 089	25 546
Export	t	45	43	101	0	0.3

2602 - Manganese ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	4 960	4 640	10 112	8 112	9 409
Average export prices	CZK/t	10 630	14 503	15 388	-	14 545

720211; 720219 - Ferro-manganese

		2006	2007	2008	2009	2010
Import	t	32 371	35 668	34 663	23 642	26 259
Export	t	4 113	2 996	3 348	5 257	2 617

720211; 720219 - Ferro-manganese

		2006	2007	2008	2009	2010
Average import prices	CZK/t	18 661	25 433	44 117	26 432	29 897
Average export prices	CZK/t	16 157	28 417	45 045	23 525	30 899

720230 - Ferrosilicomanganese

		2006	2007	2008	2009	2010
Import	t	57 855	52 199	50 565	34 425	39 793
Export	t	9 122	2 803	5 658	1 892	4 560

720230 - Ferrosilicomanganese

		2006	2007	2008	2009	2010
Average import prices	CZK/t	16 798	22 723	33 871	23 992	26 142
Average export prices	CZK/t	16 054	22 407	32 427	22 137	25 774

8111 - Manganese and articles thereof, including waste and scrap

		2006	2007	2008	2009	2010
Import	t	674	804	2 542	2 229	1 014
Export	t	5	135	108	177	6

8111 - Manganese and articles thereof, including waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	41 275	61 014	66 260	47 027	60 893
Average export prices	CZK/t	36 898	43 521	60 424	52 096	58 599

2820 - Manganese oxides

		2006	2007	2008	2009	2010
Import	t	1 316	1 058	1 476	1 347	2 146
Export	t	413	668	728	331	44

2820 - Manganese oxides

		2006	2007	2008	2009	2010
Average import prices	CZK/t	16 534	18 758	19 783	22 542	22 605
Average export prices	CZK/t	19 257	19 852	23 638	22 294	21 721

Silver

Registered deposits and other resources of the Czech Republic

(see map)

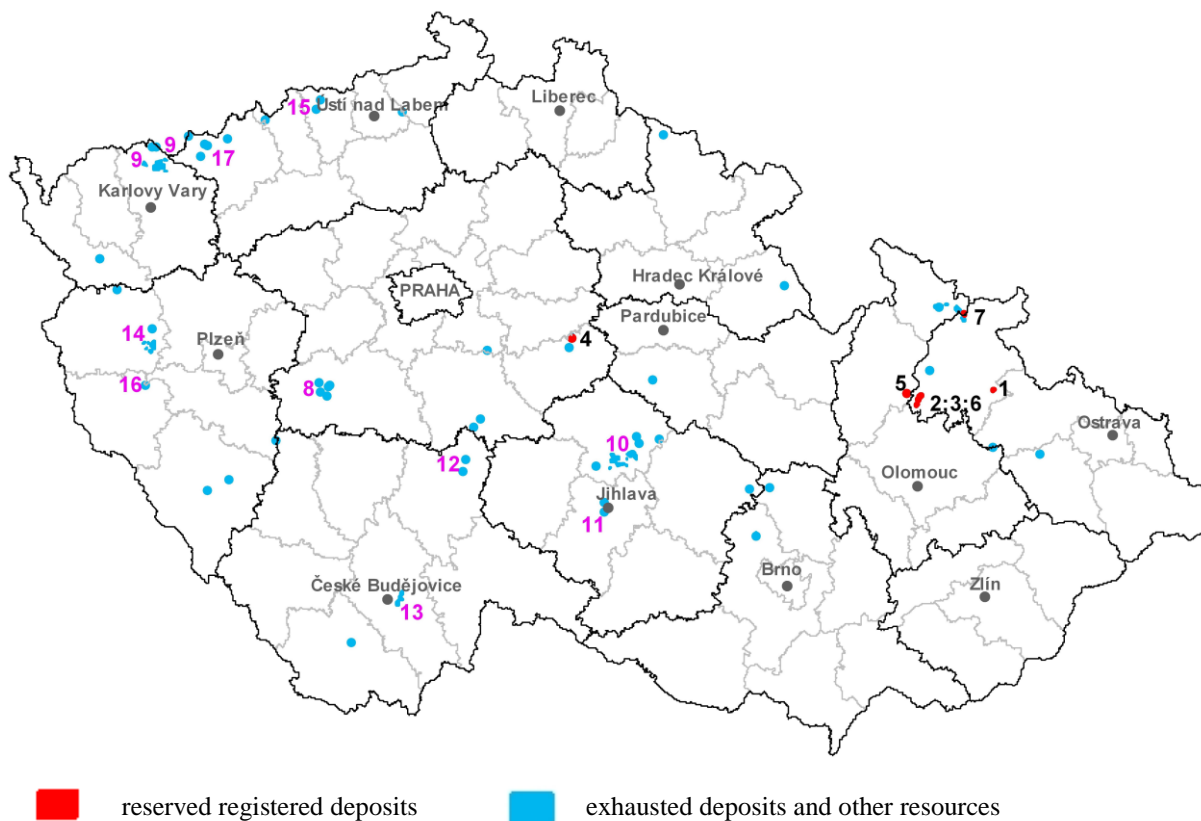
Registered deposits and other resources are not mined

Reserved registered deposits:

- | | | |
|------------------------|--------------|-------------------------|
| 1 Horní Benešov | 4 Kutná Hora | 6 Ruda u Rýmařova-sever |
| 2 Horní Město | 5 Oskava | 7 Zlaté Hory-východ |
| 3 Horní Město-Šibenice | | |

Exhausted deposits and other resources:

- | | | |
|-----------------------------------|--------------------------------------|--------------------------------|
| 8 Příbram surroundings | 12 Ratibořské hory
+ Stará Vožice | 15 Hrob + Mikulov |
| 9 Jáchymov surroundings | 13 Rudolfov | 16 Nalžovské hory |
| 10 Havlíčkův Brod
surroundings | 14 Stříbro | 17 Vejprty + Hora sv. Kateřiny |
| 11 Jihlava surroundings | | |



Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	8	7	7	7	7
exploited	0	0	0	0	0
Total mineral *reserves, t Ag	533	532	532	532	532
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	533	532	532	532	532
Mine production, t Ag	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Deposits with registered Ag content

Approved prognostic resources P₁, P₂, P₃

Ag metal in ores

Year	2006	2007	2008	2009	2010
P ₁ , t	33	33	33	33	33
P ₂ , t	4	4	4	4	4
P ₃	-	-	-	-	-

Foreign trade

261610 - Silver ores and concentrates

		2006	2007	2008	2009	2010
Import	kg	0	0	0	5 660	990 207
Export	kg	0	0	0	2	990 205

261610 - Silver ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	64	347
Average export prices	CZK/kg	-	-	-	6 000	357

7106 - Silver, unwrought or in semi-manufactured or powder form

		2006	2007	2008	2009	2010
Import	kg	151 212	206 463	321 139	162 166	136 257
Export	kg	98 073	102 045	117 335	78 127	75 352

7106 - Silver, unwrought or in semi-manufactured or powder form

		2006	2007	2008	2009	2010
Average import prices	CZK/g	7.08	5.98	3.82	4.52	7.57
Average export prices	CZK/g	10.79	10.52	9.37	9.88	13.05

Tin

Registered deposits and other resources of the Czech Republic

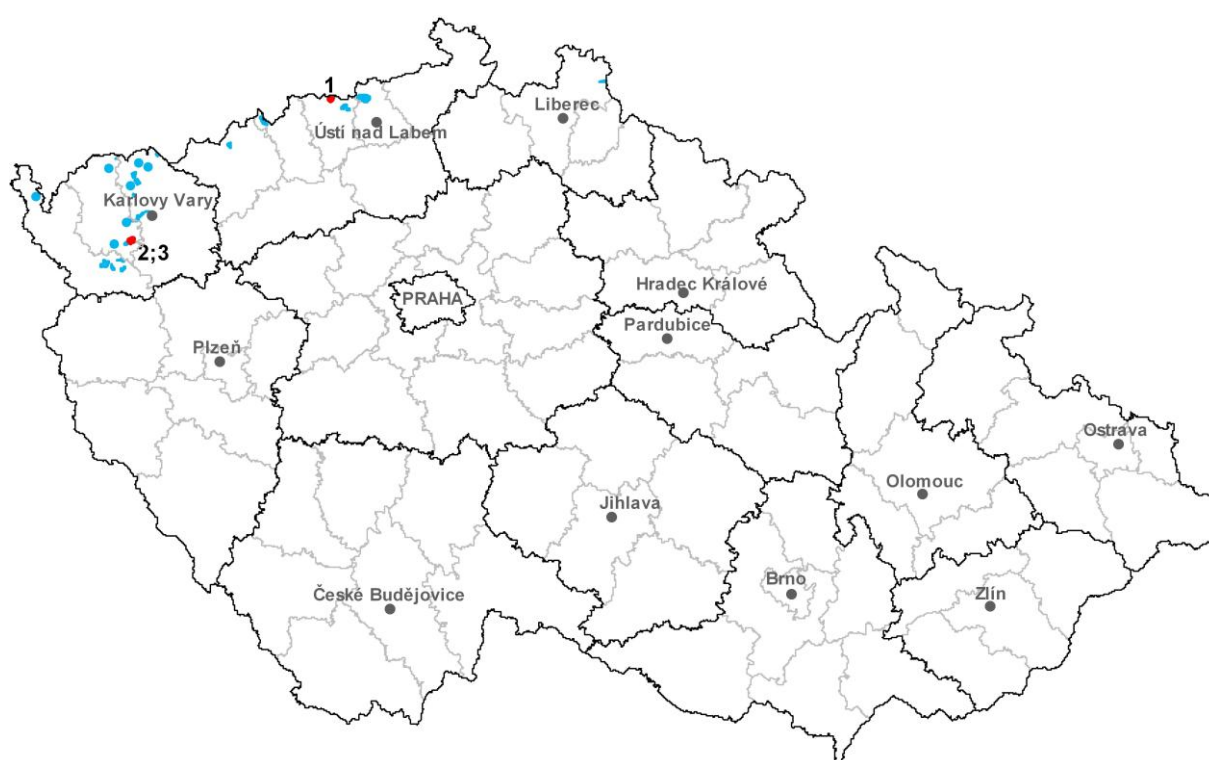
(see map)

Registered deposits and other resources are not mined

1 Cínovec-jih

2 Krásno

3 Krásno-Horní Slavkov



reserved registered deposits



exhausted deposits and other resources

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	3	3	3	3	3
exploited	0	0	0	0	0
Total mineral *reserves, t Sn	163 809	163 809	163 809	163 809	163 809
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	163 809	163 809	163 809	163 809	163 809
Mine production, t Sn	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Sn-W ore deposits

Approved prognostic resources P₁, P₂, P₃

Sn - W ores

Year	2006	2007	2008	2009	2010
P ₁ , kt	2 195	2 195	2 195	2 195	2 195
P ₂	-	-	-	-	-
P ₃	-	-	-	-	-

Foreign trade

2609 - Tin ores and concentrates

		2006	2007	2008	2009	2010
Import	t	1	2	1	0	101
Export	t	0,001	0	0	0	0,001

2609 - Tin ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	532 468	358 960	181 463	-	841 2 000
Average export prices	CZK/t	0	-	-	-	000

8001 - Unwrought tin

		2006	2007	2008	2009	2010
Import	t	665	1 070	855	569	449
Export	t	74	256	85	81	275

8001 - Unwrought tin

		2006	2007	2008	2009	2010
Average import prices	CZK/t	194 782	219 516	206 324	286 726	343 332
Average export prices	CZK/t	125 946	253 238	264 034	256 503	376 223

8002 - Tin waste and scrap

		2006	2007	2008	2009	2010
Import	t	75	13	44	90	4
Export	t	249	988	87	118	44

8002 - Tin waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	115 963	104 517	112 233	67 536	92 672
Average export prices	CZK/t	56 871	12 263	126 181	93 951	166 868

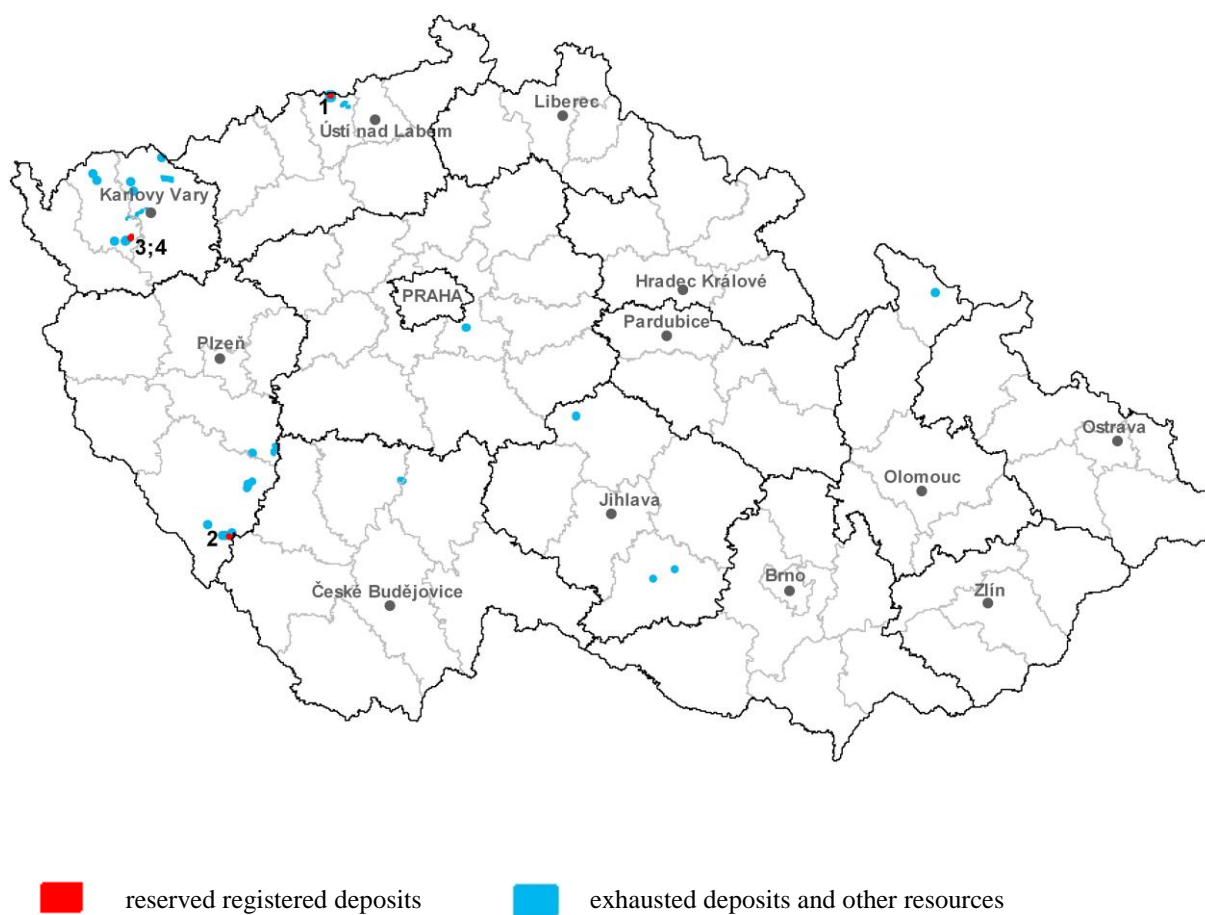
Tungsten

Registered deposits and other resources of the Czech Republic

(see map)

Registered deposits and other resources are not mined

- | | |
|------------------|------------------------|
| 1 Cínovec-jih | 3 Krásno-Horní Slavkov |
| 2 Kašperské Hory | 4 Krásno-Horní Slavkov |



Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	4	4	4	4	4
exploited	0	0	0	0	0
Total mineral *reserves, t W	70 253	70 253	70 253	70 253	70 253
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	70 253	70 253	70 253	70 253	70 253
Mine production, t W	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Sn-W and W ore deposits

Approved prognostic resources P₁, P₂, P₃

W metal in ores

Year	2006	2007	2008	2009	2010
P ₁ , t	3 252	3 252	3 252	3 252	3 252
P ₂ , t	10 703	10 703	10 703	10 703	10 703
P ₃	-	-	-	-	-

Foreign trade

2611 - Tungsten ores and concentrates

		2006	2007	2008	2009	2010
Import	kg	100	320	170	0	73 660
Export	kg	0	561	0	0	0

2611 - Tungsten ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	270	269	235	-	9
Average export prices	CZK/t	-	303	-	-	-

8101 - Tungsten and its products, including waste and scrap

		2006	2007	2008	2009	2010
Import	kg	54 921	75 659	51 746	13 458	259 357
Export	kg	147 738	94 273	82 968	25 106	208 928

8101 - Tungsten and its products, including waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	974	880	1 041	2 624	534
Average export prices	CZK/kg	604	723	762	919	507

720280 - Ferro-tungsten and ferrosilicotungsten

		2006	2007	2008	2009	2010
Import	kg	34 199	35 005	20 273	34 092	42 732
Export	kg	450	1 587	3 675	8 550	7 412

720280 - Ferro-tungsten and ferrosilicotungsten

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	564	580	465	406	491
Average export prices	CZK/kg	629	565	500	479	525

810196 - Tungsten wires

		2006	2007	2008	2009	2010
Import	kg	144 190	764 809	154 135	4 172 737	419 343
Export	kg	8 836	10 035	9 593	6 430	8 756

810196 - Tungsten wires

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	1 838	284	1 318	36	475
Average export prices	CZK/kg	5 455	5 900	4 972	5 671	5 671

Zinc

Registered deposits and other resources of the Czech Republic

(see map)

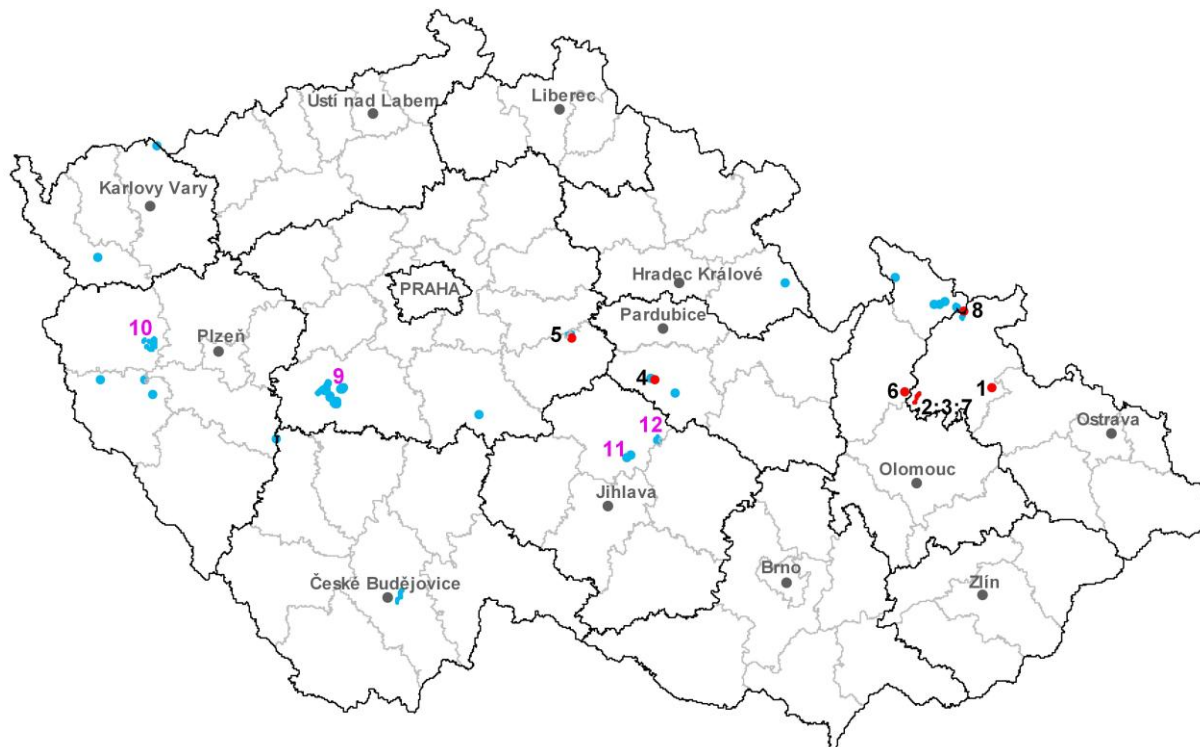
Registered deposits and other resources are not mined

Reserved registered deposits:

- | | | |
|------------------------|---------------|-------------------------|
| 1 Horní Benešov | 4 Křižanovice | 7 Ruda u Rýmařova-sever |
| 2 Horní Město | 5 Kutná Hora | 8 Zlaté Hory-východ |
| 3 Horní Město-Šibenice | 6 Oskava | |

Exhausted deposits and other resources:

- | | |
|------------------------------------|--|
| 9 Březové Hory + Příbram + Bohutín | 11 Havlíčkův Brod (Dlouhá Ves + Bartoušov + Stříbrné Hory) |
| 10 Stříbro | 12 Staré Ransko |



reserved registered deposits



exhausted deposits and other resources

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number ^{a)}	9	8	8	8	8
exploited	0	0	0	0	0
Total mineral *reserves, kt Zn	477	472	472	472	472
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	477	472	472	472	472
Mine production, t Zn	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic** of this yearbook

^{a)} Deposits with registered Zn content

Foreign trade

2608 - Zinc ores and concentrates

		2006	2007	2008	2009	2010
Import	t	17	5	1	1	5
Export	t	0.09	0.06	0.2	0.3	0.3

2608 - Zinc ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	45 274	189 201	504 613	355 799	57 930
Average export prices	CZK/t	411 111	500 000	480 769	122 047	185 185

7901 - Unwrought zinc

		2006	2007	2008	2009	2010
Import	t	40 641	47 755	48 089	32 016	27 961
Export	t	6 382	18 764	17 706	19 987	6 245

7901 - Unwrought zinc

		2006	2007	2008	2009	2010
Average import prices	CZK/t	64 717	75 794	40 861	34 518	44 319
Average export prices	CZK/t	71 185	73 792	39 130	33 777	36 341

7902 - Zinc waste and scrap

		2006	2007	2008	2009	2010
Import	t	334	4 008	2 749	2 434	900
Export	t	3 041	2 934	2 885	2 717	4 800

7902 - Zinc waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	38 454	72 547	35 456	28 439	34 247
Average export prices	CZK/t	43 394	47 537	23 901	19 855	23 258

MINERALS MINED IN THE PAST WITHOUT RESOURCES AND RESERVES

Antimony

Foreign trade

261710 - Antimony ores and concentrates

		2006	2007	2008	2009	2010
Import	kg	31	34	45	37 021	53 035
Export	kg	35 672	0	0	0	0

261710 - Antimony ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	24 129	25 647	16 556	91	112
Average export prices	CZK/kg	10	-	-	-	-

8110 - Antimony and articles thereof, including waste and scrap

		2006	2007	2008	2009	2010
Import	t	89	64	131	54	75
Export	t	0	6	3	12	19

8110 - Antimony and articles thereof, including waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	138 997	117 951	108 477	98 434	141 136
Average export prices	CZK/t	154 303	118 004	116 576	117 657	143 763

Arsenic

Foreign trade

280480 - Arsenic

		2006	2007	2008	2009	2010
Import	kg	11 122	10 166	25 461	232	56
Export	kg	0	0	493	0	0

280480 - Arsenic

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	184	178	107	1 819	11 661
Average export prices	CZK/kg	-	-	290	-	-

Iron**Foreign trade****2601 - Iron ores and concentrates**

		2006	2007	2008	2009	2010
Import	kt	7 985	6 590	7 710	4 810	5 937
Export	kt	0.02	0.05	0.03	0.0001	0.008

2601 - Iron ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 717	1 862	2 360	1 752	2 469
Average export prices	CZK/t	8 821	6 135	3 960	N	N

7201 - Crude iron

		2006	2007	2008	2009	2010
Import	kt	149	109	114	47	55
Export	kt	18	31	30	24	65

7201 - Crude iron

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 146	8 274	10 327	6 836	8 930
Average export prices	CZK/t	8 371	8 669	10 642	6 575	7 216

7204 - Ferrous waste and scrap, remelted scrap ingots or iron or steel

		2006	2007	2008	2009	2010
Import	kt	559	525	510	379	403
Export	kt	1 489	1 680	1 830	1 444	1 824

7204 - Ferrous waste and scrap, remelted scrap ingots or iron or steel

		2006	2007	2008	2009	2010
Average import prices	CZK/t	5 603	6 184	7 612	4 540	6 048
Average export prices	CZK/t	6 458	7 232	8 077	4 870	7 216

MINERALS UNMINED IN THE PAST WITH RESOURCES AND RESERVES

Lithium, rubidium and cesium

Registered deposits and other resources in the Czech Republic

(see map)

The registered deposit is not exploited

1 Cínovec-jih*

Note:

* Deposit of also potentially economic reserves of Sn-W ores and contents of Ta and Nb in experimental concentrates



reserved registered deposits

Basic statistical data of the Czech Republic as of December 31

Number of deposits; reserves; mine production

Year	2006	2007	2008	2009	2010
Deposits – total number	1	1	1	1	1
Exploited	0	0	0	0	0
Total *reserves, t Li	112 775	112 775	112 775	112 775	112 775
economic explored reserves	0	0	0	0	0
economic prospected reserves	0	0	0	0	0
potentially economic reserves	112 775	112 775	112 775	112 775	112 775
Mine production, t Li	0	0	0	0	0

* See **NOTE** in the chapter **Introduction** above on a terminological difference between Czech official application of the term reserves and standard international application of the term. The relationship of domestic and foreign classifications of mineral reserves and resources is described in the separate chapter **Mineral reserve and resource classification in the Czech Republic and its evolutionary comparison with international classifications** of this yearbook

In the Czech Republic, it is possible to consider the entire Krušné hory Mts. as a lithium province. Around 300 million tonnes of ore with elevated lithium contents were identified in Čínovec and its surroundings alone. As for the potentially economic deposit of tin-tungsten ores of Čínovec-jih, 112,775 tonnes of lithium in 53.4 million tonnes of ore with an average lithium content of 0.117 % are recorded in the *Balance of Reserves of Reserved Mineral Deposits of the Czech Republic*. In addition, byproduct amounts of 56 kt of rubidium and 1.8 kt of cesium were also evaluated in this deposit.

Brine reserves with anomalous bromine and lithium contents were calculated at 453.6 million m³ in the mining lease of the Slaný deposit of bituminous coal. These groundwater reserves contain 123 kt of bromine, 15 kt of lithium and more than 18 million tonnes of NaCl.

Foreign trade

280519 - Lithium, potassium, rubidium, cesium

		2006	2007	2008	2009	2010
Import	kg	34 796	60 223	36 101	39 422	21 566
Export	kg	0	0	35	205	0

280519 - Lithium, potassium, rubidium, cesium

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	306	199	167	351	744
Average export prices	CZK/kg	-	-	400	122	-

38369100 - Lithium carbonates

		2006	2007	2008	2009	2010
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

38369100 - Lithium carbonates

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	-	-
Average export prices	CZK/kg	-	-	-	-	-

Molybdenum
**Registered deposits and other resources in the Czech Republic;
basic statistical data of the Czech Republic as of December 31**

In the Czech Republic, 80 million tonnes of prognostic resources (unapproved) of molybdenum ores with an average molybdenum content of 0.176 %, i.e. 14 037 tonnes of molybdenum, were estimated in the Hůrky locality in the Čistá-Jeseník Massif (L. Kopecký 1983).

Foreign trade
81029400 - Unwrought molybdenum, including bars, rods obtained by simple sintering

		2006	2007	2008	2009	2010
Import	kg	21 000	67 941	195 738	15 060	8 555
Export	kg	0	175	18 309	4 443	3 160

81029400 - Unwrought molybdenum, including bars, rods obtained by simple sintering

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	857	966	1 196	557	766
Average export prices	CZK/kg	-	1 366	1 170	649	824

Rare earths

Registered deposits and other resources in the Czech Republic; basic statistical data of the Czech Republic as of December 31

In the Czech Republic, there are descriptions of estimated resources (unapproved) of rare earth oxides from various mineralisations and geological formations. For example, the cerium content in uranium ores of uranium-bearing sandstone of the Stráž block in the Bohemian Cretaceous Basin was evaluated at 4,750 tonnes of cerium. Anomalous rare earth oxide contents are also assumed to occur in the Hůrky locality in the Čistá-Jeseník Massif (along with resources of Mo, Ta, Nb, Zr, and Hf), in alkaline volcanic rocks in the České Středohoří, in volcanic rocks of the Šternberk-Horní Benešov belt in the Nízký Jeseník Mts., in graphitic phyllites of the Železné Hory Mts. Proterozoic, in argillitised tuffs of the Upper Silesian Basin etc.

Foreign trade

28461000 - Cerium compounds

		2006	2007	2008	2009	2010
Import	kg	196 630	174 438	120 490	88 136	94 438
Export	kg	7 507	5 547	3 228	3 099	2 247

28461000 - Cerium compounds

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	304	328	282	367	381
Average export prices	CZK/kg	313	301	437	512	933

28053010 - Rare earth metals, scandium and yttrium, intermixed or interalloyed

		2006	2007	2008	2009	2010
Import	kg	1 460	2 783	100	200	3 597
Export	kg	25	50	0	0	435

28053010 - Rare earth metals, scandium and yttrium, intermixed or interalloyed

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	270	402	250	200	718
Average export prices	CZK/kg	480	240	-	-	423

28053090 - Rare earth metals, scandium and yttrium, not intermixed or interalloyed

		2006	2007	2008	2009	2010
Import	kg	8	37	26	29	11 698
Export	kg	0	0	0	2	1

28053090 - Rare earth metals, scandium and yttrium, not intermixed or interalloyed

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	12 125	5 838	12 385	11 862	577
Average export prices	CZK/kg	-	-	-	159 000	1 000

Selenium, tellurium

Foreign trade

280490 - Selenium

		2006	2007	2008	2009	2010
Import	kg	117 101	11 775	10 679	3 750	5 807
Export	kg	601	30	819	1 200	1 200

280490 - Selenium

2006	2007	2008	2009	2010
------	------	------	------	------

Average import prices	CZK/kg	241	1 244	1 211	905	1 612
Average export prices	CZK/kg	1 947	2 967	1 161	887	1 694

28045090 - Tellurium

		2006	2007	2008	2009	2010
Import	kg	2	39	15	3	25
Export	kg	1	0	0	0	0

28045090 - Tellurium

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	3 000	6 590	14 867	5 000	24 560
Average export prices	CZK/kg	1 000	-	-	-	-

Tantalum, niobium

Registered deposits and other resources in the Czech Republic; basic statistical data of the Czech Republic as of December 31

In the Czech Republic, prognostic resources (unapproved) were evaluated at 3,238 tonnes in uranium deposits and uranium-bearing sandstone of the Stráž block in the Bohemian Cretaceous Basin (along with TR, Zr and Hf), and another 568 tonnes in the Hůrky locality in the Čistá-Jeseník Massif (along with Mo, TR, Zr and Hf), where 57 tonnes of prognostic tantalum resources were also calculated. Recoverable contents of tantalum and niobium are also known to occur in tungsten and tin concentrates, which were recovered experimentally during the exploration of the tin-tungsten ore deposit of Cínovec-jih (along with Li, Rb and Cs).

Foreign trade

26159010 - Tantalum and niobium ores and concentrates

		2006	2007	2008	2009	2010
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

26159010 - Tantalum and niobium ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	-	-
Average export prices	CZK/kg	-	-	-	-	-

810320 - Unwrought tantalum

		2006	2007	2008	2009	2010
Import	kg	131 256	188 247	217 893	105 657	240 040
Export	kg	43 030	48 728	79 600	50 096	76 647

810320 - Unwrought tantalum

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	9 141	8 237	6 760	7 348	8 426
Average export prices	CZK/kg	10 429	8 025	6 371	6 839	6 642

Zirconium, hafnium

**Registered deposits and other resources in the Czech Republic;
basic statistical data of the Czech Republic as of December 31**

In the Czech Republic, prognostic resources of zirconium and hafnium in uranium ores in uranium deposits of uranium-bearing sandstone of the Stráž block in the Bohemian Cretaceous Basin (along with TR, Ta, Nb) were estimated at 71,800 tonnes of zirconium and 2,520 tonnes of hafnium. Another 122,370 tonnes of zirconium and 2,446 tonnes of hafnium are assumed to occur in fenites in the Hůrky locality in the Čistá-Jeseník Massif (along with Mo, TR, Ta, Nb). All the resources are unapproved.

Foreign trade

26151000 - Zirconium ores and concentrates

		2006	2007	2008	2009	2010
Import	kg	1 498 388	1 534 397	750 512	268 062	308 098
Export	kg	4 500	4 000	4 000	2	0

26151000 - Zirconium ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	29	26	23	28	38
Average export prices	CZK/kg	28	33	27	0	-

81129210 - Unwrought hafnium, hafnium waste and scrap, hafnium powders

		2006	2007	2008	2009	2010
Import	kg	0	0	1	450	8
Export	kg	0	12	0	0	0

81129210 - Unwrought hafnium, hafnium waste and scrap, hafnium powders

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	4 000	109	12 875
Average export prices	CZK/kg	-	1 583	-	-	-

MINERALS UNMINED IN THE PAST WITHOUT RESOURCES AND RESERVES

INDUSTRIAL MINERALS

Andalusite, kyanite, sillimanite, mullite

Foreign trade

250850 - Andalusite, kyanite and sillimanite

		2006	2007	2008	2009	2010
Import	kt	5	5	6	4	4
Export	kt	0	0	0	0.001	0.002

250850 - Andalusite, kyanite and sillimanite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	8 346	9 031	8 363	10 451	10 114
Average export prices	CZK/t	-	-	-	14 286	19 512

250860 - Mullite

		2006	2007	2008	2009	2010
Import	kt	2	1	1	1	1
Export	kt	0.6	0.1	0.003	0.007	0.004

250860 - Mullite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	10 583	17 498	21 702	29 097	23 495
Average export prices	CZK/t	9 100	8 691	25 714	22 069	40 000

Asbestos

Foreign trade

2524 - Asbestos

		2006	2007	2008	2009	2010
Import	t	0	1	1	0	3
Export	t	0	0	0	0	0

2524 - Asbestos

		2006	2007	2008	2009	2010
Average import prices	CZK/t	-	48 864	53 750	868 853	10 333
Average export prices	CZK/t	-	-	-	-	-

Magnesite

Foreign trade

251910 - Natural magnesium carbonate (magnesite)

		2006	2007	2008	2009	2010
Import	t	5 440	9 935	4 193	3 460	7 108
Export	t	48	39	29	10	8

251910 - Natural magnesium carbonate (magnesite)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	2 642	4 921	5 357	4 498	5 426
Average export prices	CZK/t	20 562	44 996	55 414	189 740	200 870

251990 - Magnesia, fused, dead-burned, other magnesium oxides

		2006	2007	2008	2009	2010
Import	t	51 974	52 631	54 301	38 046	38 891
Export	t	4 067	3 930	1 107	3 718	3 803

251990 - Magnesia, fused, dead-burned, other magnesium oxides

		2006	2007	2008	2009	2010
Average import prices	CZK/t	6 575	6 678	7 405	8 434	8 771
Average export prices	CZK/t	7 742	8 014	10 502	8 131	10 501

Perlite**Foreign trade****25301010 - Perlite**

		2006	2007	2008	2009	2010
Import	t	5 615	7 585	5 782	4 528	0
Export	t	36	83	99	114	0

25301010 - Perlite

		2006	2007	2008	2009	2010
Average import prices	CZK/t	2 371	3 471	4 227	3 966	-
Average export prices	CZK/t	7 389	7 028	40 721	44 716	-

Rock salt**Foreign trade****2501 - Salt (inclusive table and denaturated salt), and pure sodium chloride;
also in water solution**

		2006	2007	2008	2009	2010
Import	t	1 152 750	563 061	610 959	711 503	960 330
Export	t	30 656	19 324	15 674	40 055	51 290

**2501 - Salt (inclusive table and denaturated salt), and pure sodium chloride;
also in water solution**

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 275	1 421	1 336	1 459	1 480
Average export prices	CZK/t	2 747	3 345	3 879	3 133	2 900

Sulphur

Foreign trade

2503 - Sulphur of all kinds, other than sublimed, precipitated and colloidal

		2006	2007	2008	2009	2010
Import	t	40 143	55 066	46 371	20 986	14 761
Export	t	11 719	5 579	16 670	20 153	12 227

2503 - Sulphur of all kinds, other than sublimed, precipitated and colloidal

		2006	2007	2008	2009	2010
Average import prices	CZK/t	4 098	3 479	5 587	5 703	9 314
Average export prices	CZK/t	1 020	1 028	2 752	765	977

2802 - Sulphur, sublimed or precipitated; colloidal sulphur

		2006	2007	2008	2009	2010
Import	t	70 555	57 411	65 242	71 032	82 355
Export	t	113	132	658	83	429

2802 - Sulphur, sublimed or precipitated; colloidal sulphur

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 026	912	1 917	602	1 136
Average export prices	CZK/t	64 399	56 139	11 846	51 361	11 813

2807 - Sulphuric acid

		2006	2007	2008	2009	2010
Import	t	54 426	47 271	57 751	33 519	34 206
Export	t	62 666	59 839	69 071	56 145	43 778

2807 - Sulphuric acid

		2006	2007	2008	2009	2010
Average import prices	CZK/t	973	1 356	1 658	1 055	1 379
Average export prices	CZK/t	1 110	1 188	2 203	1 091	1 743

Talc**Foreign trade****2526 - Natural steatite; talc**

		2006	2007	2008	2009	2010
Import	t	10 898	13 061	10 986	9 406	9 570
Export	t	201	340	386	182	169

2526 - Natural steatite; talc

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 169	6 705	6 907	7 089	6 639
Average export prices	CZK/t	7 523	8 363	7 322	14 726	16 148

Other raw materials used in industrial fertilizers production**Foreign trade**

3102 - Nitrogenous fertilizers

		2006	2007	2008	2009	2010
Import	t	522 851	175 393	211 841	429 687	556 146
Export	t	537 115	168 684	160 970	540 846	579 923

3102 - Nitrogenous fertilizers

		2006	2007	2008	2009	2010
Average import prices	CZK/t	N	N	N	4 426	4 388
Average export prices	CZK/t	N	N	N	4 678	4 010

2510 - Natural phosphates

		2006	2007	2008	2009	2010
Import	t	28 141	33 954	20 928	559	15 021
Export	t	726	732	1 023	817	1

2510 - Natural phosphates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 028	2 443	6 032	7 242	4 802
Average export prices	CZK/t	32 030	32 360	33 871	27 807	N

2809 - Phosphoric oxides and acids

		2006	2007	2008	2009	2010
Import	t	12 899	7 534	2 270	3 328	3 091
Export	t	43 382	21 623	20 781	34 028	46 290

2809 - Phosphoric oxides and acids

		2006	2007	2008	2009	2010
Average import prices	CZK/t	N	N	N	20 132	20 068
Average export prices	CZK/t	N	N	N	17 621	14 054

3103 - Phosphatic fertilizers

2006	2007	2008	2009	2010
------	------	------	------	------

Import	t	13 575	7 004	8 036	10 848	17 269
Export	t	2 113	778	1 136	895	1 098

3103 - Phosphatic fertilizers

		2006	2007	2008	2009	2010
Average import prices	CZK/t	N	N	N	6 375	6 419
Average export prices	CZK/t	N	N	N	5 735	8 948

3104 - Potassic fertilizers

		2006	2007	2008	2009	2010
Import	t	N	N	81 060	41 560	87 735
Export	t	N	N	1 665	7 027	4 234

3104 - Potassic fertilizers

		2006	2007	2008	2009	2010
Average import prices	CZK/t	N	N	N	14 129	7 949
Average export prices	CZK/t	N	N	N	15 532	19 122

3105 - Fertilizers containing several elements

		2006	2007	2008	2009	2010
Import	t	118 939	159 934	154 615	53 757	100 466
Export	t	24 111	36 671	18 995	17 494	18 031

3105 - Fertilizers containing several elements

		2006	2007	2008	2009	2010
Average import prices	CZK/t	5 998	6 903	11 954	9 446	8 713
Average export prices	CZK/t	6 752	7 243	11 578	9 445	8 214

METALLIC ORES

Aluminium

Foreign trade

2606 - Aluminium ores and concentrates

		2006	2007	2008	2009	2010
Import	kt	25	27	18	10	34
Export	kt	0.0	0.6	0.5	0.6	0.0

2606 - Aluminium ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 161	3 461	5 427	4 971	3 386
Average export prices	CZK/t	6 200	7 410	8 617	14 321	31 915

281820 - Aluminium oxide (other than synthetic corundum)

		2006	2007	2008	2009	2010
Import	kt	24	29	28	6	7
Export	kt	0.3	0.1	0.2	3.0	4.0

281820 - Aluminium oxide (other than synthetic corundum)

		2006	2007	2008	2009	2010
Average import prices	CZK/t	13 097	12 850	11 552	21 717	21 361
Average export prices	CZK/t	10 120	38 616	24 076	6 385	6 464

281830 - Aluminium hydroxide

		2006	2007	2008	2009	2010
Import	kt	10	8	7	6	10
Export	kt	0.1	0.1	0.1	0.1	0.1

281830 - Aluminium hydroxide

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 209	7 906	8 676	9 328	7 034
Average export prices	CZK/t	20 255	21 920	18 480	13 036	15 120

7601 - Raw (unwrought) aluminium

		2006	2007	2008	2009	2010
Import	kt	180 599	204 104	194 021	171 249	222 566
Export	kt	46	54	54	60	51

7601 - Raw (unwrought) aluminium

		2006	2007	2008	2009	2010
Average import prices	CZK/t	61 244	59 422	49 285	37 064	43 649
Average export prices	CZK/t	150 753	219 009	148 602	152 127	131 969

7602 - Aluminium waste and scrap

		2006	2007	2008	2009	2010
Import	kt	49 358	63 959	58 647	50 381	61 804
Export	kt	54	61	58	49	72

7602 - Aluminium waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	43 478	40 045	30 822	20 709	31 521
Average export prices	CZK/t	65 167	61 006	53 998	28 766	38 804

Beryllium

Foreign trade

811212 - Unwrought beryllium, beryllium powders

		2006	2007	2008	2009	2010
Import	kg	600	0	9	0	1
Export	kg	0	0	0	0	0

811212 - Unwrought beryllium, beryllium powders

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	155	-	37 778	-	2 000
Average export prices	CZK/kg	-	-	-	-	-

Bismuth**Foreign trade****81060010 - Unwrought bismuth, including waste and scrap, powders**

		2006	2007	2008	2009	2010
Import	kg	67 028	63 999	59 569	50 557	94 522
Export	kg	0	1	437	51	17 945

81060010 - Unwrought bismuth, including waste and scrap, powders

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	254	707	460	315	375
Average export prices	CZK/kg	-	1 000	412	686	277

81060090 - Wrought bismuth, articles of bismuth, excluding unwrought bismuth, waste, scrap and powders

		2006	2007	2008	2009	2010
Import	kg	10 046	13 392	18 073	2 142	11 452
Export	kg	1 659	4 804	5 245	604	1 456

81060090 - Wrought bismuth, articles of bismuth, excluding unwrought bismuth, waste, scrap and powders

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	462	953	780	699	506
Average export prices	CZK/kg	3 428	1 848	1 820	1 484	1 339

Cadmium

Foreign trade

810720 - Unwrought cadmium, cadmium powders

		2006	2007	2008	2009	2010
Import	kt	692	1	24 133	43	67
Export	kt	0	0	0	0	0

810720 - Unwrought cadmium, cadmium powders

		2006	2007	2008	2009	2010
Average import prices	CZK/t	176	1 000	6	2 674	3 015
Average export prices	CZK/t	-	-	-	-	-

Chromium

Foreign trade

2610 - Chromium ores and concentrates

		2006	2007	2008	2009	2010
Import	t	13 130	14 045	13 039	8 244	7 975

Export	t	690	800	508	369	764
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2610 - Chromium ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	7 731	7 926	11 336	9 191	9 164
Average export prices	CZK/t	8 885	9 225	12 009	5 912	4 336

811881 - Unwrought chromium

		2006	2007	2008	2009	2010
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

811881 - Unwrought chromium

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	-	-
Average export prices	CZK/kg	-	-	-	-	-

Cobalt

Foreign trade

2605 - Cobalt ores and concentrates

		2006	2007	2008	2009	2010
Import	kg	778	591	1 110	426	3 428
Export	kg	0	23 687	11 319	7 000	0

2605 - Cobalt ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	1 044	1 010	1 052	937	357

Average export prices	CZK/kg	-	26	33	43	-
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8105 - Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap

		2006	2007	2008	2009	2010
Import	t	85	127	201	220	60
Export	t	7	5	11	10	9

8105 - Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	1 168 779	886 025	511 596	167 820	939 289
Average export prices	CZK/t	415 566	1 315 493	1 227 362	706 335	694 102

Gallium

Foreign trade

81129289 - Unwrought gallium, gallium powders

		2006	2007	2008	2009	2010
Import	kg	0	1	4	9	4
Export	kg	0	0	0	1	0

81129289 - Unwrought gallium, gallium powders

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	1 800	3 175	1 267	2 200
Average export prices	CZK/kg	-	-	-	2 300	-

Indium

Foreign trade

81129281 - Unwrought indium, indium powders

		2006	2007	2008	2009	2010
Import	kg	56	2	25	2	9
Export	kg	0	0	0	0	0

81129281 - Unwrought indium, indium powders

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	18 125	4 000	11 720	1 500	9 556
Average export prices	CZK/kg	-	-	-	-	-

Magnesium

Foreign trade

810411 - Unwrought magnesium, containing at least 99.8 % by weight of magnesium

		2006	2007	2008	2009	2010
Import	t	1 171	2 168	1 634	892	1 992
Export	t	0	73	138	179	0.2

810411 - Unwrought magnesium, containing at least 99.8 % by weight of magnesium

		2006	2007	2008	2009	2010
Average import prices	CZK/t	43 467	49 393	77 317	55 579	55 849
Average export prices	CZK/t	-	46 527	76 911	72 226	215 569

810419 - Unwrought magnesium, containing less than 99.8 % by weight of magnesium

		2006	2007	2008	2009	2010
Import	t	55	1 336	2 119	545	754
Export	t	9 162	9 709	10 545	5 486	5 914

810419 - Unwrought magnesium, containing less than 99.8 % by weight of magnesium

		2006	2007	2008	2009	2010
Average import prices	CZK/t	71 590	54 932	82 402	95 232	87 246
Average export prices	CZK/t	46 625	45 822	57 221	55 809	47 030

Mercury

Foreign trade

280540 - Mercury

		2006	2007	2008	2009	2010
Import	kg	3 973	6 450	3 565	4 319	2 561
Export	kg	8 894	12 671	6 283	6 521	1 241

280540 - Mercury

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	379	160	170	247	162
Average export prices	CZK/kg	538	477	1 004	993	598

Nickel

Foreign trade

2604 - Nickel ores and concentrates

		2006	2007	2008	2009	2010
Import	t	9	13	10	7	7
Export	t	210	166	135	180	254

2604 - Nickel ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	556 272	616 824	484 370	319 651	400 000
Average export prices	CZK/t	2 567	7 452	N	N	N

7502 - Unwrought nickel

		2006	2007	2008	2009	2010
Import	t	3 584	3 803	3 812	2 165	2 560
Export	t	689	174	776	228	126

7502 - Unwrought nickel

		2006	2007	2008	2009	2010
Average import prices	CZK/t	380 746	717 844	428 321	386 745	450 766
Average export prices	CZK/t	141 581	332 162	278 533	230 220	352 907

Thallium

Foreign trade

811251 - Unwrought thallium

		2006	2007	2008	2009	2010
Import	kg	0	1	0	0	1
Export	kg	0	0	0	0	0

811251 - Unwrought thallium

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	13 000	-	-	4 000
Average export prices	CZK/kg	-	-	-	-	-

Thorium**Foreign trade****28443061 -Thorium bars, rods, angles, shapes, sections, wire, sheets, strips**

		2006	2007	2008	2009	2010
Import	kg	1 490	0	0	41 959	4
Export	kg	2	0	0	360	0

28443061 -Thorium bars, rods, angles, shapes, sections, wire, sheets, strips

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	35	-	-	46	3 250
Average export prices	CZK/kg	6 000	-	-	47	-

28443069 - Thorium other, not crude, waste, scrap, bars, rods, shapes, wire, sheets

		2006	2007	2008	2009	2010
Import	kg	1	1	0	1	0
Export	kg	0	1	0	0	0

28443069 - Thorium other, not crude, waste, scrap, bars, rods, shapes, wire, sheets

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	6 000	4 000	-	5 000	-
Average export prices	CZK/kg	-	1 000	-	-	-

28443099 - Thorium salts

		2006	2007	2008	2009	2010
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

28443099 - Thorium salts

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	-	-
Average export prices	CZK/kg	-	-	-	-	-

Titanium

Foreign trade

2614 - Titanium ores and concentrates

		2006	2007	2008	2009	2010
Import	t	149 924	179 322	198 758	140 394	155 505
Export	t	492	745	641	452	2 378

2614 - Titanium ores and concentrates

		2006	2007	2008	2009	2010
Average import prices	CZK/t	3 053	2 863	3 269	3 395	3 236
Average export prices	CZK/t	18 036	16 267	15 793	20 254	5 935

8108 - Titanium and products of it, including waste and scrap

		2006	2007	2008	2009	2010
Import	t	1 157	1 097	1 124	925	1 030
Export	t	434	148	118	340	359

8108 - Titanium and products of it, including waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/t	721 309	728 262	560 583	564 007	541 650
Average export prices	CZK/t	469 126	407 330	174 542	110 433	90 892

Vanadium**Foreign trade****81129291 - Unwrought vanadium, vanadium powders, excluding waste and scrap**

		2006	2007	2008	2009	2010
Import	kg	0	0	0	0	0
Export	kg	0	628	0	236	0

81129291 - Unwrought vanadium, vanadium powders, excluding waste and scrap

		2006	2007	2008	2009	2010
Average import prices	CZK/kg	-	-	-	-	-
Average export prices	CZK/kg	-	545	-	297	-