

Ministry of the Environment  
of the Czech Republic

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# MINERAL COMMODITY SUMMARIES OF THE CZECH REPUBLIC 2012

## STATISTICAL DATA TO 2011

(Data deadline: August 31, 2012)



**Czech Geological Survey**

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## EXPLANATORY NOTES

### List of abbreviations, symbols and technical units

<b>AOPK ČR</b>	Agency for Nature Conservation and Landscape Protection (Nature Conservation Authority) of the Czech Republic (Agentura ochrany přírody a krajiny České republiky)
<b>a. s.</b>	initials after a Czech company name indicate that it is a joint stock company (akciová společnost)
<b>BP</b>	British Petroleum, British multinational oil and petrochemical company
<b>Coll.</b>	Collection of laws (Sbírka zákonů České republiky) of the Czech Republic
<b>CHKO</b>	protected landscape area (Chráněná krajinná oblast)
<b>CHLÚ</b>	protected deposit area (Chráněné ložiskové území)
<b>ČBÚ</b>	Czech Mining Office (Český báňský úřad)
<b>ČNB</b>	Czech National Bank (Česká národní banka)
<b>ČNR</b>	Czech National Council (Česká národní rada) – former parliament of the Czech (Socialistic) Republic
<b>ČR</b>	Czech Republic (Česká republika)
<b>ČSÚ</b>	Czech Statistical Office (Český statistický úřad)
<b>CZK</b>	Czech Koruna (česká koruna)
<b>EIA</b>	1) Environmental Impact Assessment 2) Energy Information Administration, section of the Department of Energy of the USA providing energy statistics, data, analysis
<b>EU</b>	European Union
<b>GDP</b>	Gross domestic product
<b>GVA</b>	Gross value added (GVA) is a widely used indicator of the total economic performance of each branch. It is an indicator corresponding to the GDP in the whole national economy. It is calculated by subtraction of the intermediate consumption (consumption of the raw materials, energy, materials) from the total value of the production (in terms of accounting, this is the difference between the sales and other services of companies and their consumption of materials, energy and services, this is therefore the sum of their book values added)
<b>IEA</b>	International Energy Agency
<b>k. s.</b>	initials after a Czech company name indicate that it is a limited partnership company (komanditní společnost)
<b>kt</b>	kilotonne, 1.000t
<b>MCS</b>	Mineral Commodity Summaries, mineral yearbook of the US Geological Survey
<b>mill</b>	million, 10 <sup>6</sup>
<b>MŽP ČR</b>	Ministry of the Environment of the Czech Republic (Ministerstvo životního prostředí České republiky)

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<b>N</b>	not available or not reliable data
<b>OBÚ</b>	obvodní báňský úřad ((Regional Mining Authority)
<b>NP</b>	natural park (Národní park)
<b>PÚ</b>	exploration area (průzkumné území)
<b>Sb.</b>	Collection of Laws (abbreviated as Coll.) of the Czech Republic
<b>s. p.</b>	initials after a Czech company name indicate that it is a state public enterprise (státní podnik)
<b>spol. s r. o.</b>	initials after a Czech company name indicate that it is a limited liability company (společnost s ručením omezeným), ditto initials s. r. o.
<b>s. r. o.</b>	initials after a Czech company name indicate that it is a limited liability company (společnost s ručením omezeným), ditto initials spol. s r.o.
<b>t</b>	metric tonne, 1.000 kg, 1.000.000 g
<b>v. o. s.</b>	initials after a Czech company name indicate that it is an unlimited company (general partnership) (veřejná obchodní společnost)
<b>VAT</b>	Value Added Tax
<b>WBD</b>	Welt Bergbau Daten (World Mining Data), mineral yearbook of Austrian Federal Ministry for Economy, Family and Youth
<b>WNA</b>	World Nuclear Association
<b>ZCHÚ</b>	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	2.3
2011	3.1	4.4	2.7	2.4

*Notes:*

- source – IMF. *World Economic Outlook Database. October 2012*
- 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
2011	24.6	17.7	28.3

*Source: Czech National Bank*

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

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### 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.

**C<sub>1</sub>** – 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.

**C<sub>2</sub>** – 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, C<sub>1</sub>, 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+C<sub>1</sub>, which are therefore reserves eligible for industrial utilisation. That is why, in practice, the economic reserves of categories A, B, C<sub>1</sub>, or their total A+B+C<sub>1</sub> 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 D<sub>1</sub>, D<sub>2</sub>, D<sub>3</sub>. They are defined as follows:

**D<sub>1</sub>** – 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.

**D<sub>2</sub>** – 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.

**D<sub>3</sub>** – 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub> were as follows:



**P<sub>1</sub>** – assumed due to the continuation of an already investigated deposit beyond the reserve outline of category C<sub>2</sub> 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 C<sub>2</sub>. 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.

**P<sub>2</sub>** – 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.

**P<sub>3</sub>** – 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 P<sub>3</sub> 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 + C<sub>1</sub> (also called industrial), prospected reserves = reserves of category C<sub>2</sub>.

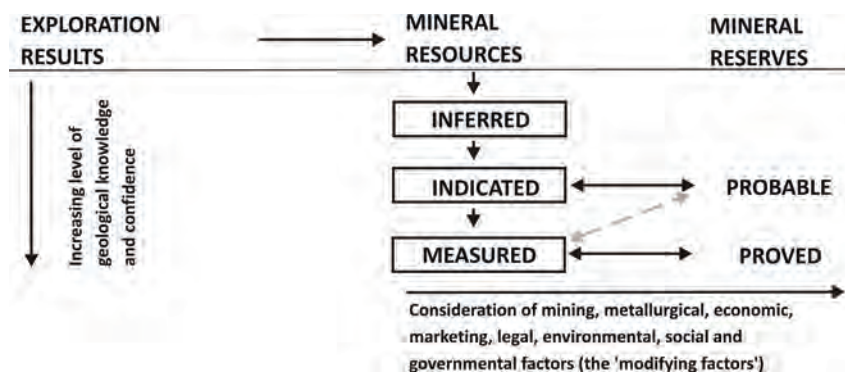
### International classifications

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:

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

### Relations between mineral reserves and resources, their definitions

#### Chart of the relations [1]



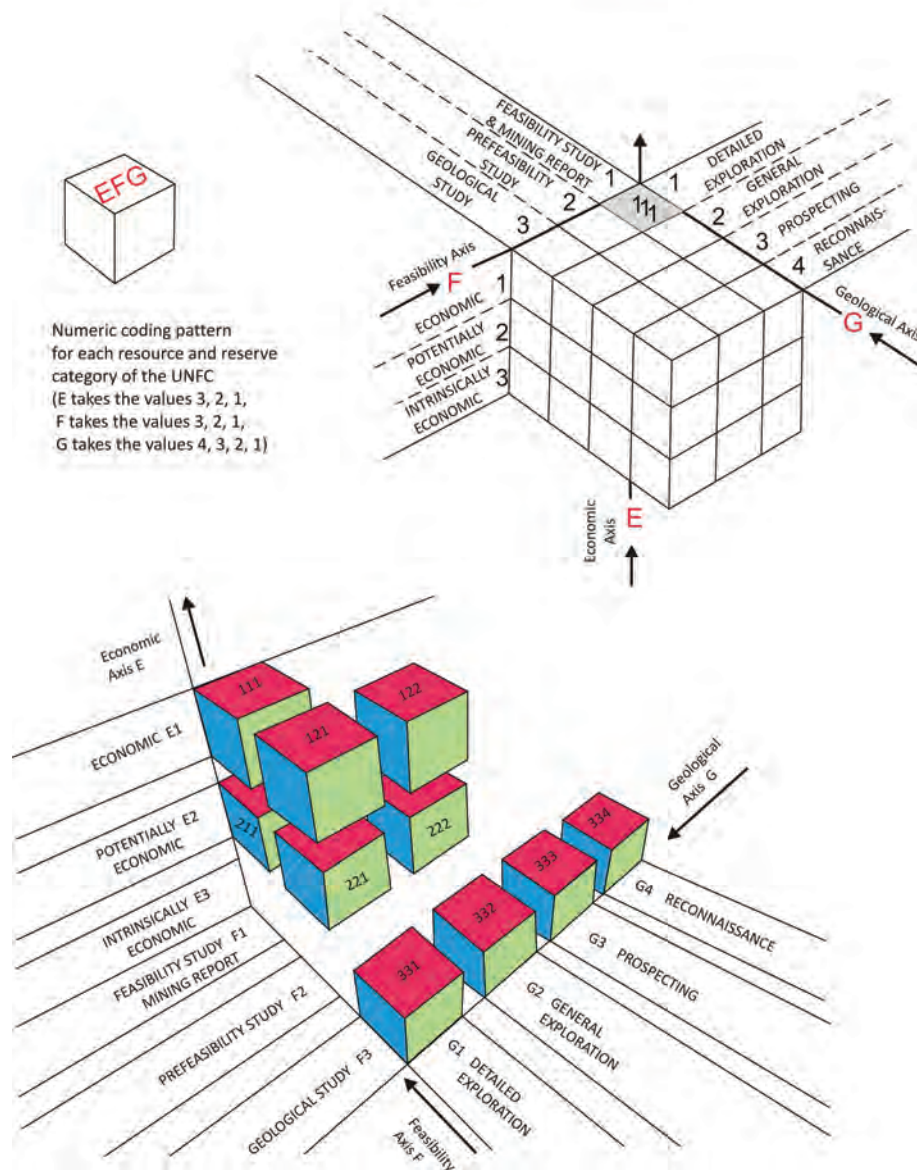
according to economic feasibility (quantity and quality of the mineral in situ) in one direction into 3 groups. For the division according to the level of geological knowledge it does not use one direction, one criterion (verification according to technical work carried out), as is common, but two directions, 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



**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 <sub>2</sub> potentially economic reserves; potentially economic prospected reserves
A+B potentially economic reserves, part of potentially economic explored reserves	D <sub>1</sub> , P <sub>1</sub>
C <sub>1</sub> economic reserves, part of economic explored reserves	D <sub>2</sub> , P <sub>2</sub>
C <sub>1</sub> potentially economic reserves, part of potentially economic explored reserves	D <sub>3</sub> , P <sub>3</sub>
C <sub>2</sub> economic reserves, economic prospected reserves	

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

	RESERVES				PROGNOSTIC RESOURCES		
	EXPLORED		PROSPECTED		P <sub>1</sub> *	P <sub>2</sub> *	P <sub>3</sub> *
	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 C<sub>2</sub> (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, C<sub>1</sub> = so-called industrial categories of reserves (before 1991)
- reserve of categories A + B + C<sub>1</sub> = so-called industrial reserves (before 1991), also - in the limited interpretation - economic explored reserves

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.

It 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 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 <sub>1</sub>	economic reserves – part of exploitable part* of A + B + C <sub>1</sub>	economic reserves – part of exploitable part* of A + B + C <sub>1</sub>	part of exploitable part* of explored economic reserves
123		Inferred Mineral Resource	economic reserves – C <sub>2</sub>	economic reserves – C <sub>2</sub>	economic reserves – C <sub>2</sub>	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 <sub>1</sub>	potentially economic reserves – C <sub>1</sub>	potentially economic reserves – C <sub>1</sub>	part of explored potentially economic reserves
223		Inferred Mineral Resource	potentially economic reserves – C <sub>2</sub>	potentially economic reserves – C <sub>2</sub>	potentially economic reserves – C <sub>2</sub>	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 <sub>1</sub>	potentially economic reserves – C <sub>1</sub>	potentially economic reserves – C <sub>1</sub>	part of explored potentially economic reserves
333	Inferred Mineral Resource	Inferred Mineral Resource	potentially economic reserves – C <sub>2</sub> + part of prognostic reserves	potentially economic reserves + part of D <sub>1</sub>	potentially economic reserves + part of P <sub>1</sub>	prospected potentially economic reserves + part of P <sub>1</sub>
334	Reconnaissance Mineral Resource	not available	part of prognostic reserves	D <sub>2</sub> + D <sub>3</sub> + part of D <sub>1</sub>	P <sub>2</sub> + P <sub>3</sub> + part of P <sub>1</sub>	P <sub>2</sub> + P <sub>3</sub> + part of P <sub>1</sub>

\* geological reserves reduced by amount of prospective mining losses

## 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 C<sub>1</sub> and C<sub>2</sub>. That enabled their permanent verification. On the other hand, many mining organisations mined the reserves of category C<sub>2</sub> which however could have been ranked factually higher; they were over-explored.

## Literature

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- [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.
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- [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*

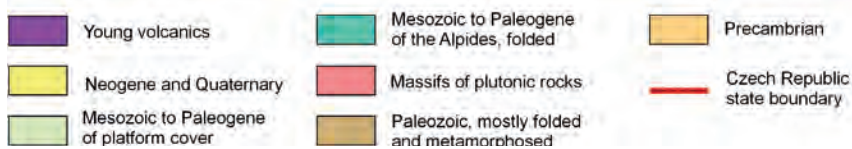
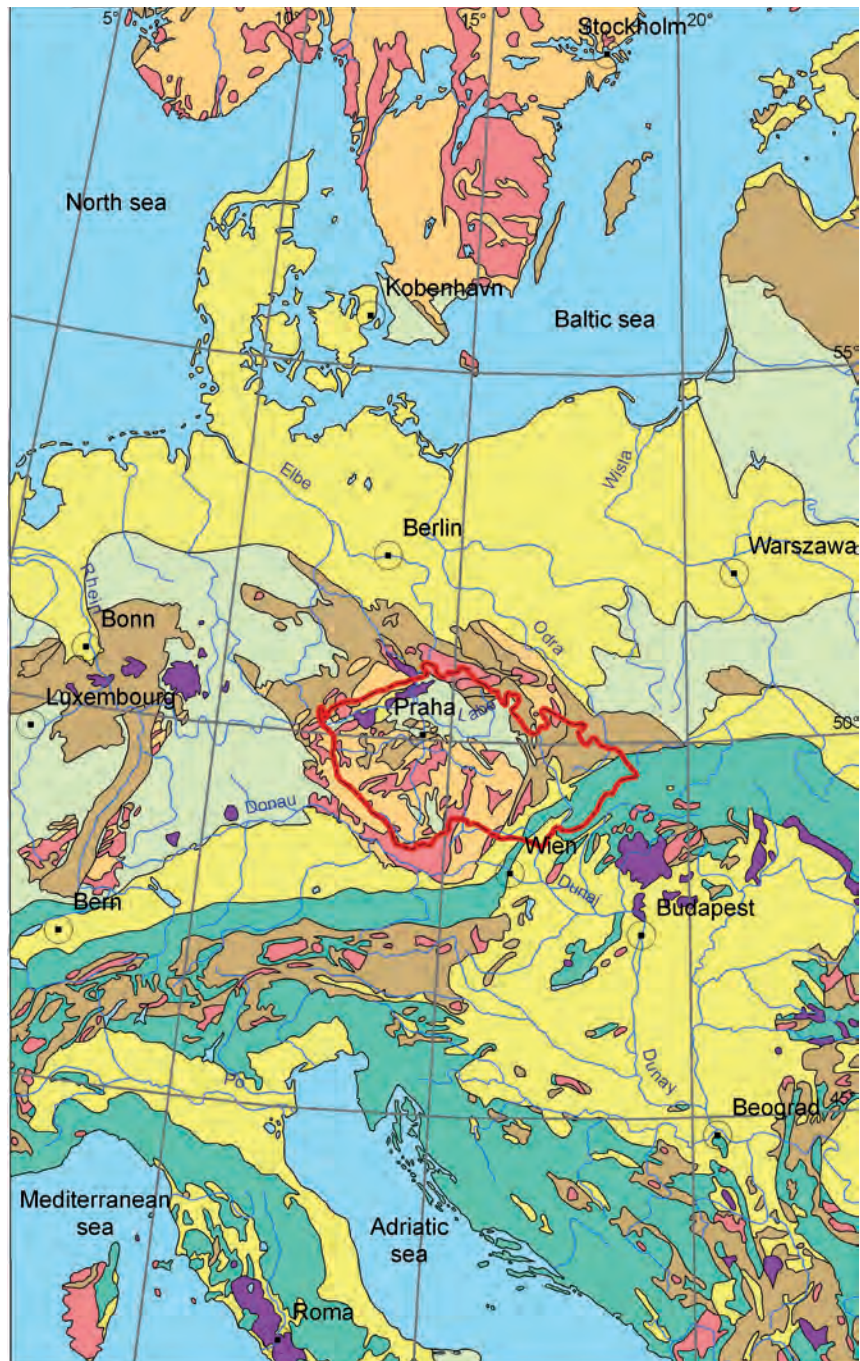
\*\* *Directive no. 3/1981 of the Czech Geological Office for evaluation and registration of geological prognoses and prognostic reserves of minerals*

\*\*\* *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 twentieth time in its history. It was published and distributed on behalf of the Ministry of Economy until 1996, and on behalf of the Ministry of the Environment from 1997 to 2010. The year 2010 marked the first time that the Ministry of the Environment did not commission the Czech Geological Survey – Geofond to compile and distribute the yearbook, and the necessary financial resources for this work were therefore unavailable.

In order to meet the present as well as future needs of the interested public at home and abroad, the Czech Geological Survey – Geofond nonetheless decided to publish the publication albeit with a minimum content and extent in both language versions (Czech and English), however only in electronic format on the Internet on its website. Its Czech and English editions (including publications since 1993) are available to the public at <http://www.geology.cz/extranet/publikace/online/surovinove-zdroje>. After the dissolution of the state-funded organization Czech Geological Survey – Geofond on 31 December 2011, the semi-budgetary organization Czech Geological Survey was charged with compiling the publication *Mineral Commodity Summaries of the Czech Republic*. This year, the Ministry of the Environment again commissioned the compilation and distribution of the publication, by increasing the budget of the Czech Geological Survey, under which Geofond Department 600 continues to compile the yearbook. This enabled the continuation of the unique research (and its publication) regarding the economic situation of domestic mining companies and regarding the expenses of rectifying negative impacts of mining in the Czech Republic.

### **The yearbook is published and distributed mainly in electronic format.**

The publication continues to provide information for those interested in the research, exploration and mining of mineral deposits in the Czech Republic and in the environmental impact of mining in the Czech Republic. It of course 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub> 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, 2011** – 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.

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 2011

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## **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 km<sup>2</sup> or km<sup>2</sup> piece of exploration area, which increases annually by CZK 1,000 per km<sup>2</sup> 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

$$U = \frac{Nd}{Nc} \cdot T \cdot \frac{S}{100},$$

whereby

Nd = costs of mineral extraction (ths CZK)

Nc = 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	2007	2008	2009	2010	2011
registered geological works – number	2 941	3 450	3248	2 902	2 900
protected deposit areas – number	1 048	1 057	1069	1 077	1 075
mining leases – total number	988	979	971	967	964
number of exploited reserved deposits	512	508	507	505	496
number of exploited non-reserved deposits	220	222	227	211	220
mine production of reserved deposits, mill t <sup>a)</sup>	151	138	125	118	124
mine production of non-reserved deposits, mill t <sup>a)</sup>	16	17	15	12	13
organizations managing reserved deposits	338	315	319	315	321
organizations mining reserved deposits	205	200	200	188	185
organizations mining non-reserved deposits	188	160	172	153	166

Note:

<sup>a)</sup> conversions: natural gas 1 mill m<sup>3</sup> = 1 kt, dimension and crushed stones, 1,000 m<sup>3</sup> = 2.7 kt, sand and gravel and brick clays and related minerals 1,000 m<sup>3</sup> = 1.8 kt.

## 3. Significance of mining in the Czech economy

Ratio/Year	2007	2008	2009	2010	2011
Annual GDP* growth	5.7	3.1	-4.5	2.5	1.9
Share of mining and quarrying in GDP, % of current prices	1.3	1.4	1.3	1.3	1.3
Share of mining and quarrying GVA in GVA of industrial production**, % of current prices	4.4	4.8	4.4	4.4	4.5

Source: Czech Statistical Office

Note:

\* GDP determined by production approach, volume indices, stable period of previous year = 100

\*\* Industrial production = mining and quarrying + manufacturing + electricity, gas, steam and air conditioning supply

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

Totals in mill t (if not otherwise stated)

Statistical data/Year	2007	2008	2009	2010	2011
Metallic ores <sup>a)</sup>	26	26	26	26	26
Energy minerals <sup>b)</sup>	2 778	2 813	2 879	2 724	2 939
of which: uranium (U) (kt)	2	2	1	1	1
crude oil	15	16	15	15	20
natural gas <sup>b)</sup>	2	2	3	4	6
Industrial minerals	2 779	2 726	2 669	2 732	2 718
Construction minerals <sup>c)</sup>	5 200	5 170	5 200	5 200	5 200

Note:

<sup>a)</sup> metals in ores total, since 2004 only Au ores (25 642 kt)

<sup>b)</sup> natural gas – conversion into kt: 1 mill m<sup>3</sup> = 1 kt

<sup>c)</sup> at reserved mineral deposits including dimension stone, conversion into kt – dimension and crushed stones 1,000 m<sup>3</sup> = 2.7 kt, sand and gravel and brick clays and related minerals 1,000 m<sup>3</sup> = 1.8 kt

#### 5. Summary of exploration licences valid in 2011 and newly issued in 2011 (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 2011	Start of validity in 2011
Bituminous coal	1	0	0	0
Crude oil and natural gas	34	0	0	0
Polymetallic (Pb-Zn-Ag) and Sn-W ores	3	0	1	0
Gemstones	2	0	2	2
Kaolin	5	2	0	0
Clays	5	0	2	2
Bentonite	11	2	1	0
Feldspar and feldspar substitutes	10	0	5	5
Silica raw materials	1	0	1	1
Dimension stone	0	0	0	0
Crushed stone	0	0	0	0
Sand and gravel	1	1	1	1
Underground placement site	13	0	3	3
<b>Total</b>	<b>86</b>	<b>5</b>	<b>16</b>	<b>14</b>

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 finish revaluation of silica minerals reserves, to verify feldspar resource prognoses and technological characteristics of sodium feldspars and furthermore to studies of occurrences of the EU declared critical minerals in the Czech Republic.

### 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
2011	CZK 4.0 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 2001:

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
2011	CZK 22.8 mill

## 7. Summary of selected legal regulations on mineral prospecting and exploration in force as of June 30, 2012

### 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., No. 85/2012 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., No. 85/2012 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

### The economic situation of domestic mining companies

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**Tab. 1: Mining total**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		153	232	204	196	192
Number of employees		85 309	80 103	58 304	54 213	52 397
Sales	mill. CZK	218 203	225 280	131 443	140 459	144 583
Value added	mill. CZK	76 348	81 843	54 507	58 663	66 153
Sales per employee	ths. CZK/ employee	2 558	2 812	2 254	2 591	2 759
Labour produktivity based value added	CZK/ employee	894 966	1 021 727	934 866	1 082 090	1 262 534
Hourly labour produktivity	CZK/ working hour	530	596	560	639	743
Average salary	CZK/ employee	25 034	27 540	26 544	28 881	29 951
(Value added - salaries) per employee	CZK/ employee	869 932	994 187	908 322	1 053 209	1 232 582

Indexes	11/07	07/08	09/08	10/09	11/10
Number of enterprises	25%	52%	-12%	-4%	-2%
Number of employees	-39%	-6%	-27%	-7%	-3%
Sales	-34%	3%	-42%	7%	3%
Value added	-13%	7%	-33%	8%	13%
Sales per employee	8%	10%	-20%	15%	7%
Labour produktivity based value added	41%	14%	-9%	16%	17%
Hourly labour produktivity	40%	12%	-6%	14%	16%
Average salary	20%	10%	-4%	9%	4%
(Value added - salaries) per employee	42%	14%	-9%	16%	17%

*Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data*

There are four specific characteristics regarding the data for mining companies (Tab. 1: Mining total) discussed in this yearbook:

1. It is impossible to distinguish pure mining from other activities. All data are for the company as a whole, such as, for example, the manufacture of bricks and trade activity are combined.
2. The companies belong not only to the group CZ-NACE<sup>1</sup> B Mining and quarrying, but also to CZ-NACE 23 Manufacture of other non-metallic mineral products, specifically companies of the glass, ceramics and building material industries (glass and construction minerals), and several companies from other CZ-NACE groups (mining is one of the activities). Companies that produce several minerals pose a problem. They are therefore listed for each mineral. That is why the total of sales, value added and the number of employees is higher in “our” Mining total than what is listed for CZ-NACE B Mining and quarrying.
3. It is possible to collect many data (e.g. from annual reports) for large companies, but in the case of small ones data are not available. This affects the selection of indexes. In comparison with past yearbooks, there are fewer indices due to a modification in the data monitoring method of the Czech Statistical Office (ČSÚ).

<sup>1</sup> *Translator's note:* CZ NACE – Czech adoption of the General Industrial Classification of Economic Activities within the European Communities (Nomenclature générale des Activités économiques dans les Communautés Européennes)

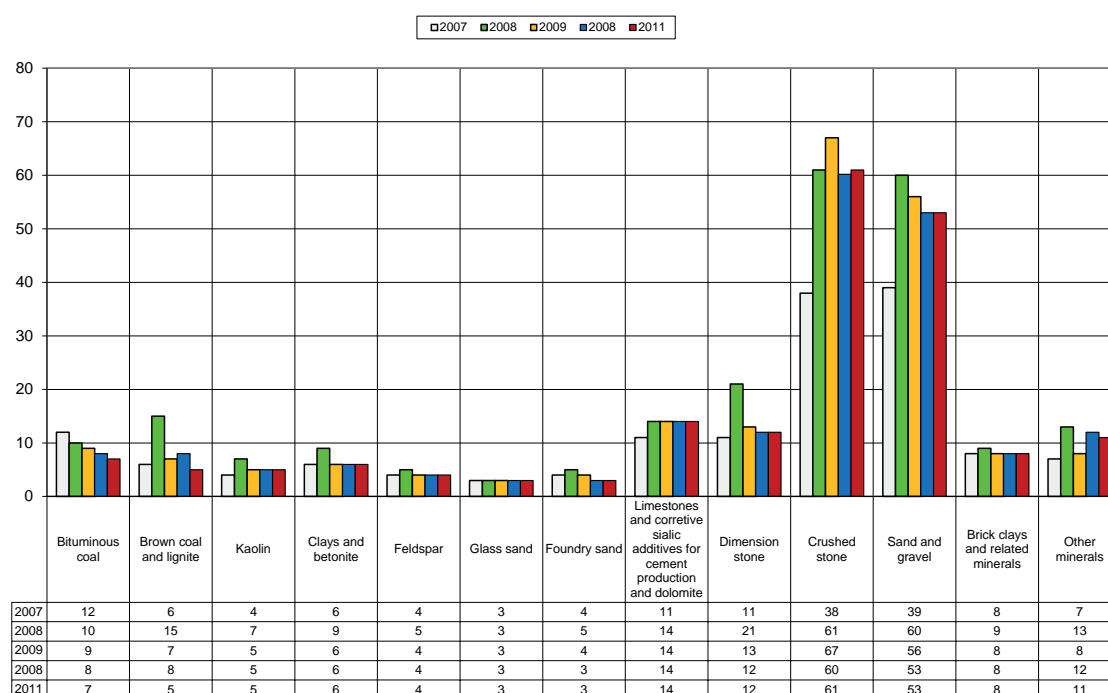
4. In view of confidential individual data, it was necessary to combine the mining companies into larger groups.

The selection of indicators in the tables is as follows:

- Number of companies
- Registered average number of employees
- Sales (sales of goods and sales of own goods and services)
- Book value added (VA) (= sales + change of stocks of own production + capitalization (production of a company for own consumption) – purchased goods – intermediate consumption (consumption of supplies and raw materials, energy and services))
- Sales per employee (labour productivity based on sales, i.e. sales per registered employee)
- Book value added per employee (labour productivity based on book value added, i.e. book value added per registered employee)
- Hourly labour productivity (book value added per working hour)
- Average salary
- (Book value added – salaries) per employee, i.e. book value added after deduction of salaries to cover other costs and formation of profits.

The period covers the years 2007–2011. Indicators for time series are supplied by chain indices. Comparable indices are compared with values for Mining total that equals 100%.

The number of companies (Fig. 1) fluctuated greatly in 2007 and 2008. It was generally stable in 2009-2011. The fluctuations were the result of a change in data collection and calculations in 2008 compared to 2007, which is evident in the case of foundry sand, dimension stone, crushed stone, sand and gravel, and brick clays.

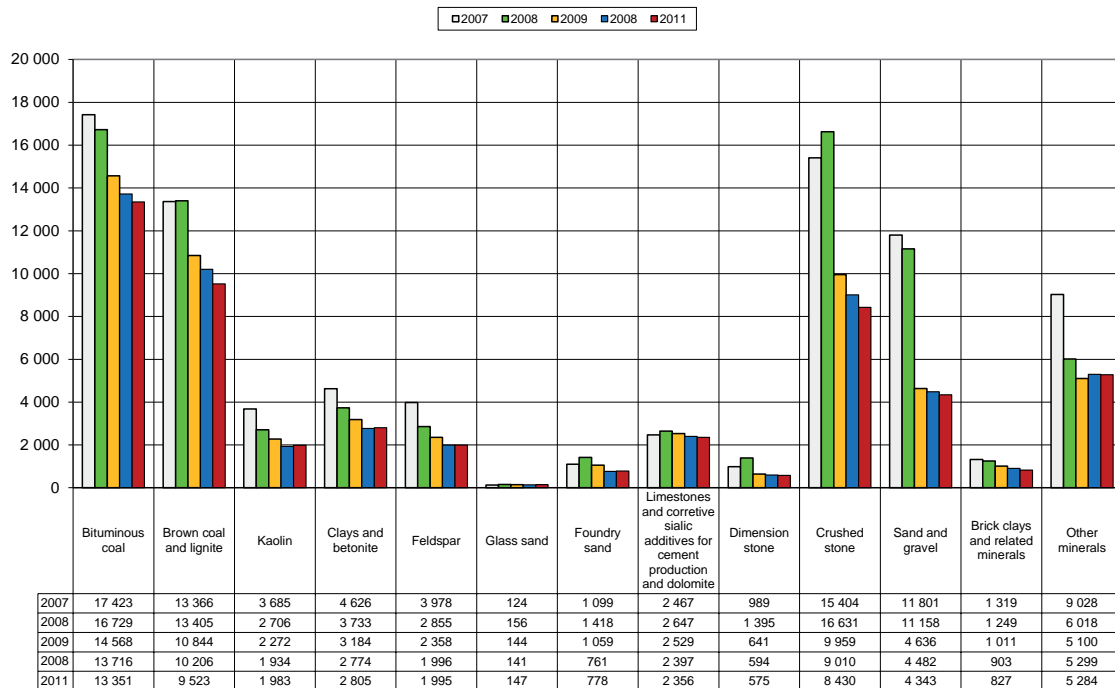


Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data (CSA in this and following figures means "Corrective additives for cement production")

**Fig. 1. Number of companies**

when looking at individual minerals. Changes in the number of companies are connected with mergers of companies (reductions) and with acquisition of data for new companies.

In our sample of minerals, crushed stone and sand and gravel account for the highest number of companies, however it will in reality be significantly higher, because these mineral industries have many small companies, which we have not recorded. On the contrary for



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Fig. 2. Number of employees**

bituminous and brown coal we recorded all companies because there are big companies only in these commodities. The smallest number of companies is recorded for glass sand.

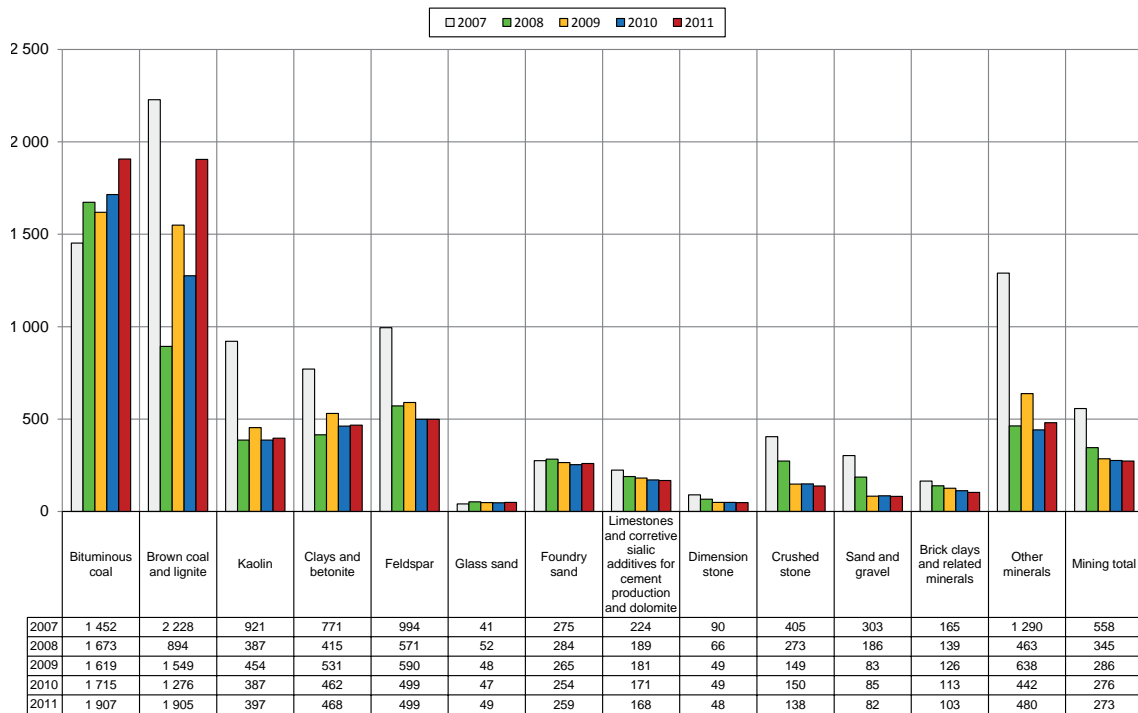
The recalculated number of employees (Fig. 2) in terms of Mining total shows a constant decline in 2007–2011, however 2007 and 2008 were again marked by problems in data collection, specifically in the case of crushed stone and sand and gravel. The decline in the case of coal was due to an inherent decrease in employees and also due to organizational changes, as a portion of employees transferred to trading, management (holding companies – activities of head offices) or other auxiliary companies, which are not involved in mining.

To complicate matters, 2009 was also affected by the financial crisis, which alone resulted in a decline of 16%.

It can be expected that the number of employees working directly in mining will decrease constantly in the future.

Bituminous coal, brown coal, lignite and crushed stone account for the highest number of employees, and foundry sand again for the lowest number.

To provide more detailed information on the number of employees, Figure 3 has been incorporated so as to show the average number of employees of companies for a given mineral. The largest companies are in the bituminous and brown coal mining industries. In 2007, this was also the case of other minerals (influenced by companies producing crude oil



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Fig. 3. Average number of employees**

and natural gas) and companies where mining is integrated with the production of primarily construction materials (kaolin, clays + bentonite and feldspar).

Companies producing foundry sand and crushed stone are smaller and include only mining operations. The smallest companies are those that produce glass sand and dimension stone.

Sales are shown in Figure 4. Sales define the overall productivity of companies producing individual minerals. If sales are non-existent, then the necessary money flow that covers expenses is non-existent as well.

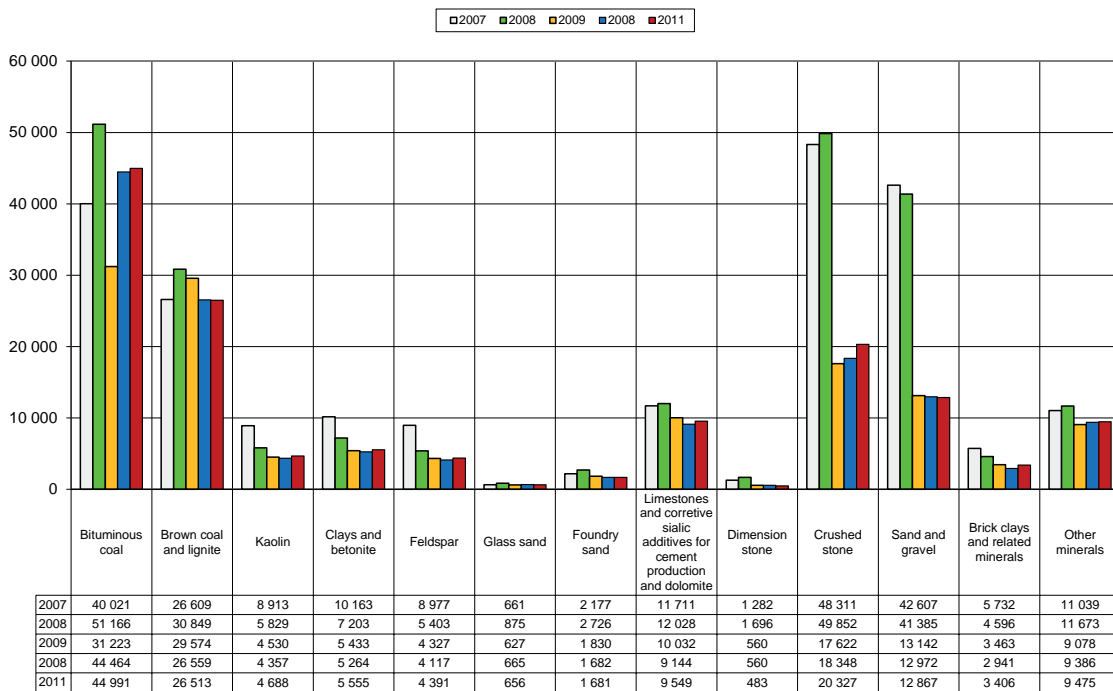
In 2009, the financial crisis hit with full force. However because of the decline in domestic and foreign demand, subsequent manufacturing was already hit by the crisis in the second half of 2008 and that is why a decline in sales was already registered in 2008 by mineral industries with integrated mining and subsequent manufacturing operations.

The crisis (-20%) alone does not however account for the decline in 2009, but other factors as well, such as a transfer of a large part of company sales into other industries and a change in the structure of companies. According to our estimate, the decline due to the crisis is subdivided into a decline in actual mining operations (about one-third of the decline) and in manufacturing (two-thirds of the decline).

In 2007–2008, crushed stone accounted for the largest share of Mining total sales. In 2009 both coal mining industries ranked first.

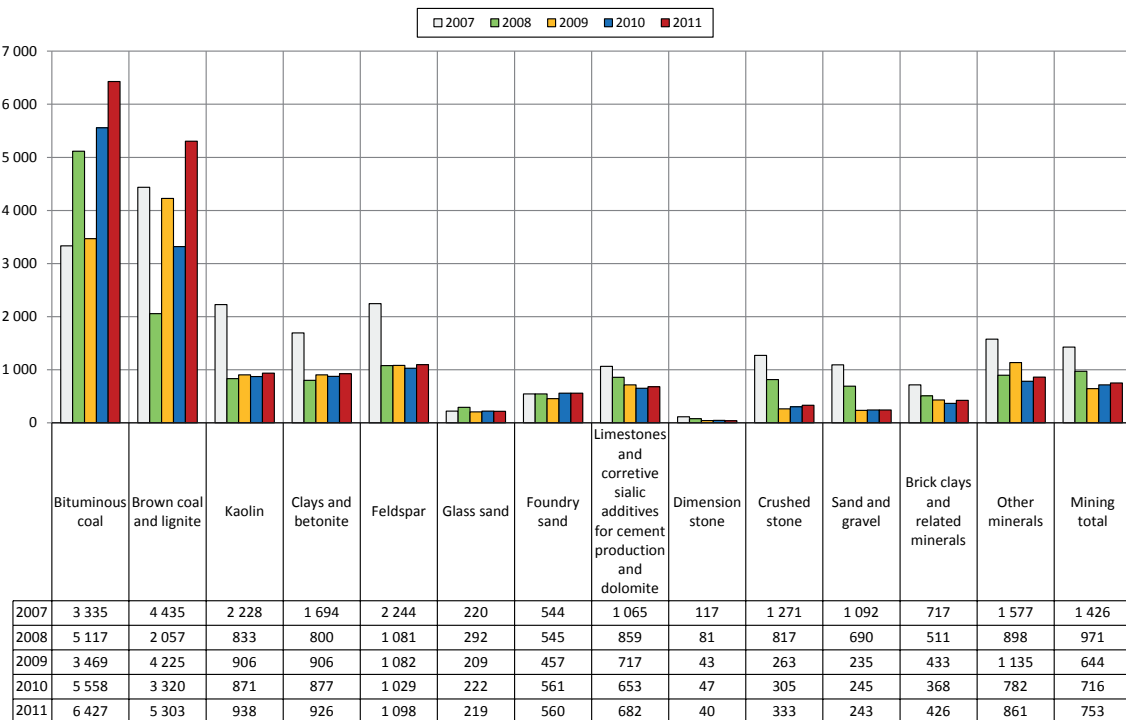
As in the case of the number of employees, average values (Fig. 5) have also been incorporated for sales. Clearly the largest companies in terms of sales are those involved in the production of coal. On the contrary, as may be expected, the smallest companies were those involved in the production of stone, gravel and sand.

There is a relationship between value added (Fig. 6) and GDP. The advantage of value added compared to sales is that it does not change as a result of company break-ups and mergers. From this perspective, indices of value added are more informative than those of sales.



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

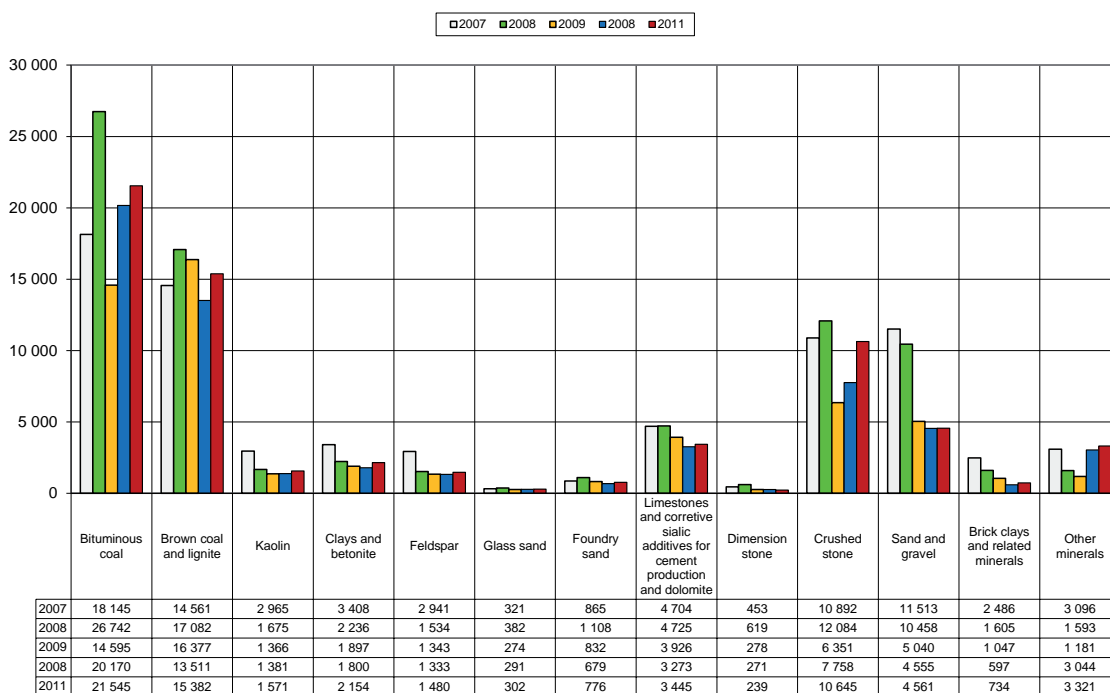
Fig. 4. Sales (CZK million)



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

Fig. 5. Average sales (CZK million)

Mining of bituminous and brown coal clearly accounts for the highest share. If we take into account the structure of the *Other minerals* group, where production of crude oil, natural gas and uranium prevail, than it is possible to state that the share of energy mineral production

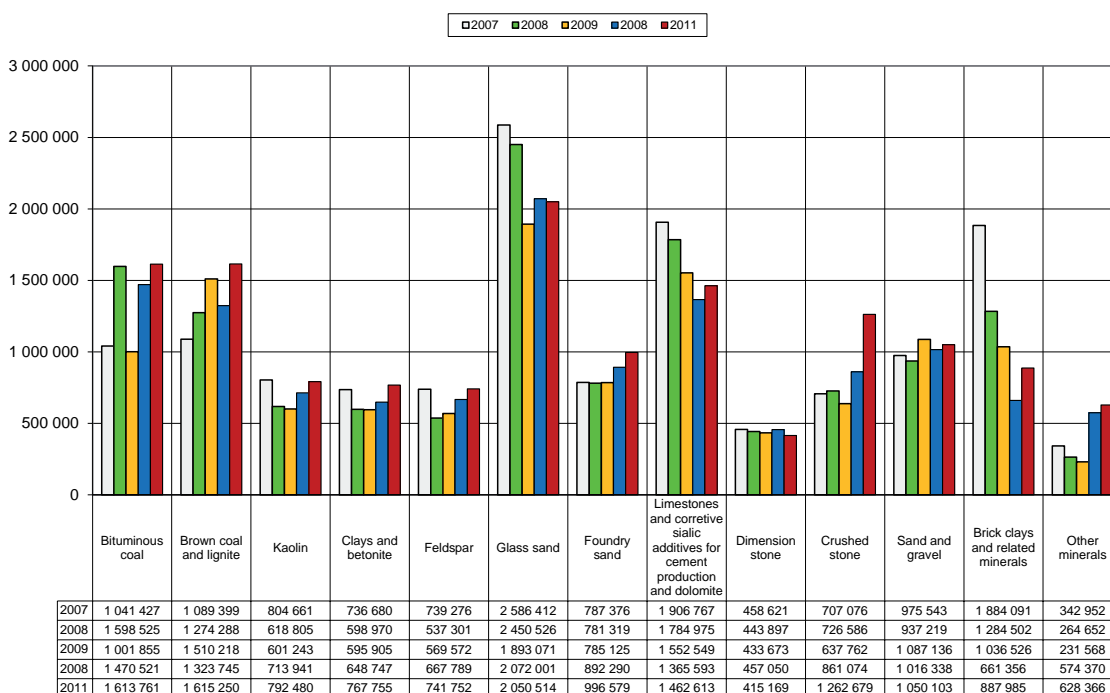


Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

Fig. 6. Book value added (CZK million)

is crucial for GDP formation in mining and quarrying. Crushed stone and sand and gravel also registered high shares of value added.

Of all the chosen indicators, the value added labour productivity is one of the main indicators for evaluating companies. As is evident in Figure 7, great differences exist between



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

Fig. 7. Labour productivity based on value added (CZK/employee)



different minerals. Glass sand, limestone and corrective additives for cement production, dolomites and brick clays seem to be excellent. At the opposite end lies the *Others* group (uranium, crude oil, graphite, gemstones, silica minerals and gypsum), where the indices are probably kept low by uranium mining with its high mining costs, and by dimension stone.

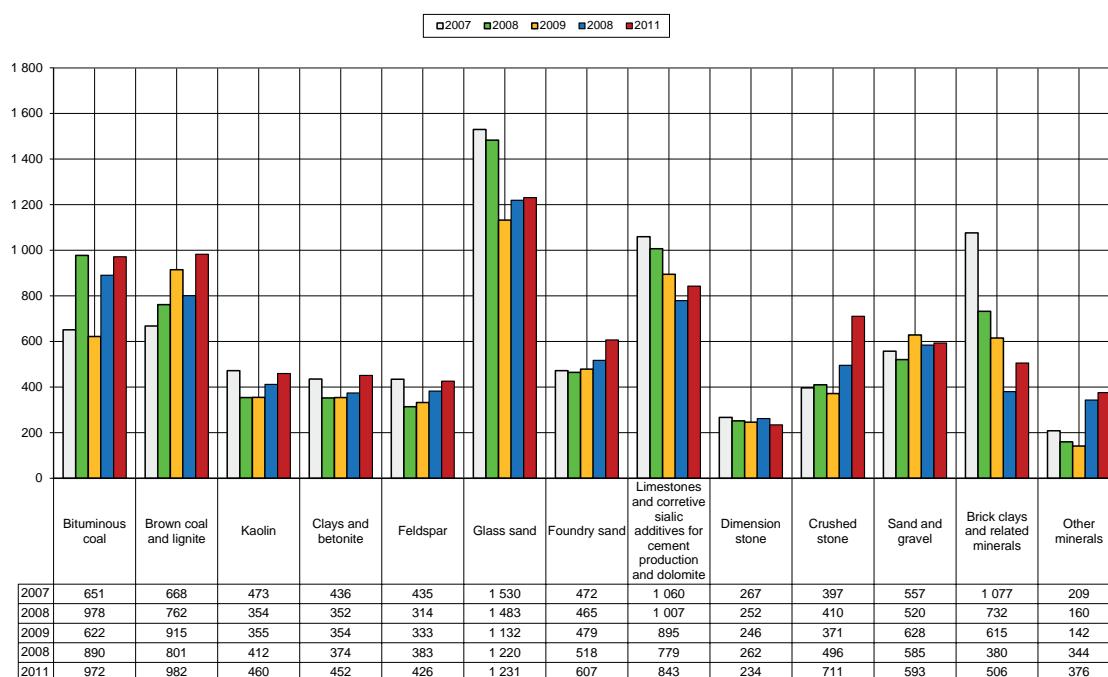
The rapid improvement of bituminous coal, brown coal and lignite, and other minerals in 2008 is interesting, because labour productivity in terms of energy minerals (other minerals include crude oil, natural gas and uranium) improved significantly. On the other hand, after the extreme in 2007, brick clays and related minerals nearly returned to the 2006 level.

Since it is a comparative indicator, a comparison of each mineral with the Mining total is possible as well as a comparison of the Mining total with larger units such as those of the industrial classification of companies (CZ-NACE). In our selection of companies, the labour productivity of the Mining total in 2011 is 5 % lower than mining and quarrying (CZ-NACE B). In comparison with CZ-NACE C Manufacturing industry, its productivity is 68 % higher. It is evident that our selection of companies is partly connected with manufacture (e.g. kaolin and ceramics), which lowers labour productivity.

In industry, in terms of value added labour productivity, mining and quarrying is in second place behind energy. This is due to the fact that consumption of materials in mining is very low – there are no manufactured products from purchased supplies.

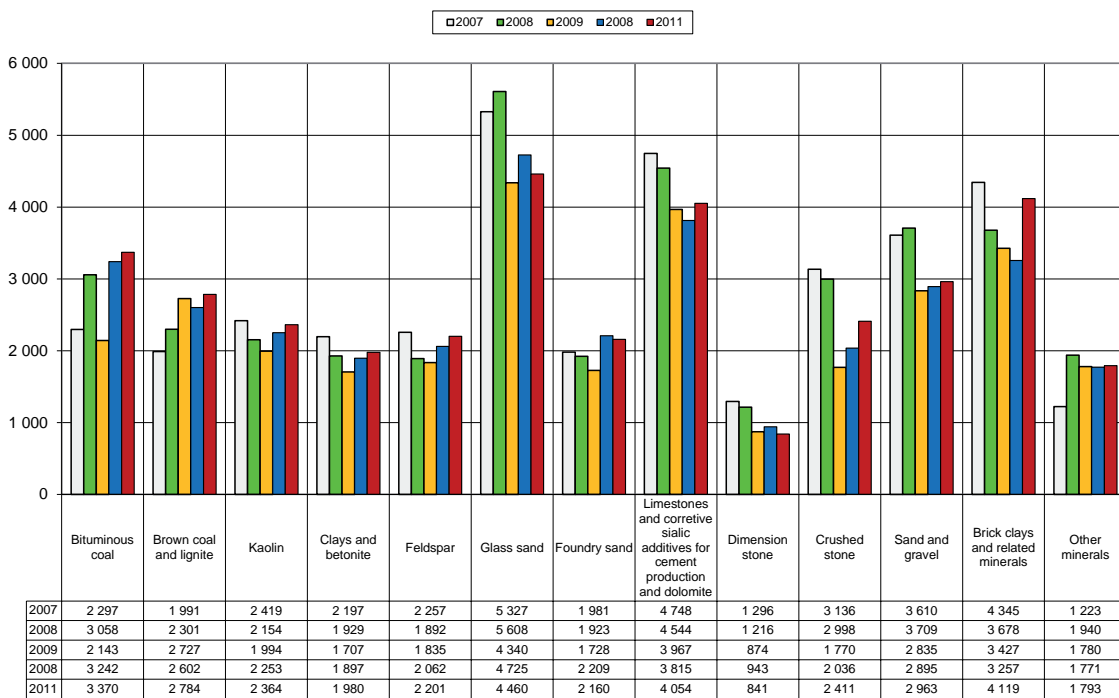
Glass sand and dimension stone register excellent labour productivity values, followed by the production of coal, sand and gravel, and brick clays, and then by other minerals.

When comparing our selection of companies with aggregates, sales per employee (Fig. 9) exhibits rather opposite results compared to value added labour productivity. In 2009, our selection has lower sales per employee than mining (by about 2 %), and considerably lower than the manufacturing industry (by 19 %). From this perspective, our selection corresponds to CZ-NACE B Mining and quarrying. The influence of subsequent manufacturing is not that great.



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Fig. 8. Hourly labour productivity (CZK/working hour)**



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Fig. 9. Sales per employee (CZK thousand/employee)**

Mining is last in sales per employee in comparison with industry and non-financial sphere total aggregates. This can be expected, as e.g. in manufacturing industry, companies supply each other with intermediate products which are then added to sales. This addition does not operate in value added, as stated above.

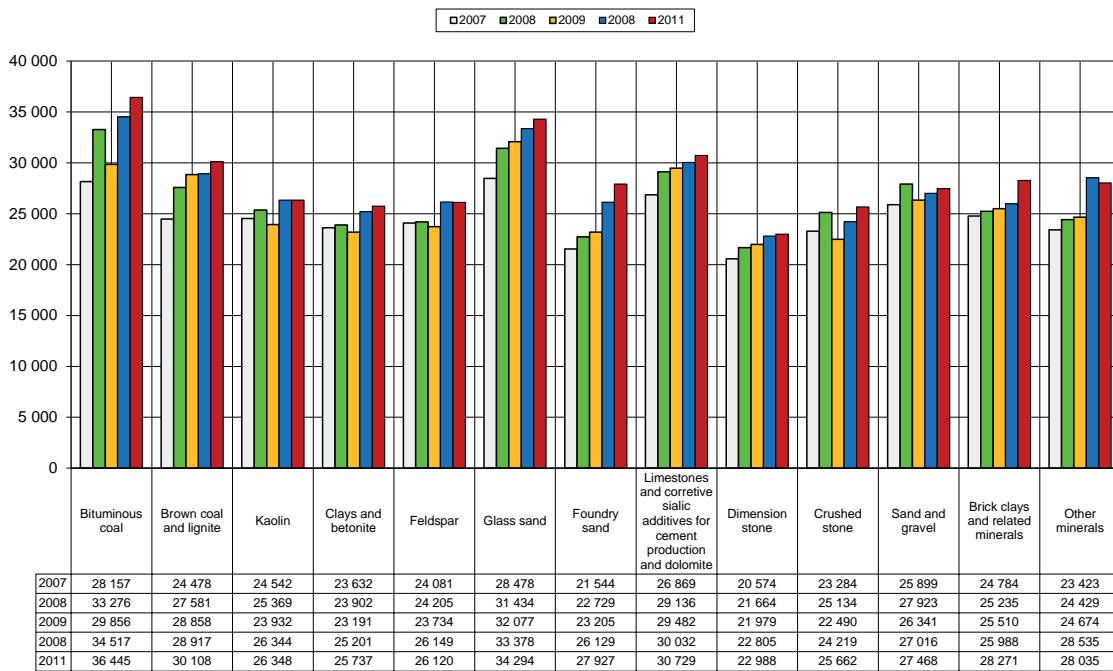
Glass sand, limestones and corrective additives for cement production, and dolomite are again at the top of the list, followed by crushed stone, sand and gravel, and brick clays, i.e. mineral industries that are partially integrated subsequent manufacturing.

The average salary (Fig. 10) is more or less equal despite relatively big differences in labour productivity between individual minerals. Compared to CZ-NACE B Mining and quarrying, the average salary of our selection of companies is 4% lower and, on the other hand, 27% higher in comparison with CZ-NACE C. The Mining total again corresponds to CZ-NACE B.

The difference between value added labour productivity and average salary (Fig. 11) is a deciding indicator for the evaluation of an enterprise's productivity (in our selection of indices). The higher the value, the better, i.e. it leaves more money for covering other costs (depreciation, social taxes, financial costs etc.) and for profit creation. In view of the fact that average salaries are not too variable, the result is due to differences in the book value added labour productivity. For company owners, this is the most important index from our selection of indices. The more an employee produces, the more remains at an owner's disposal to cover costs and for formation of profits.

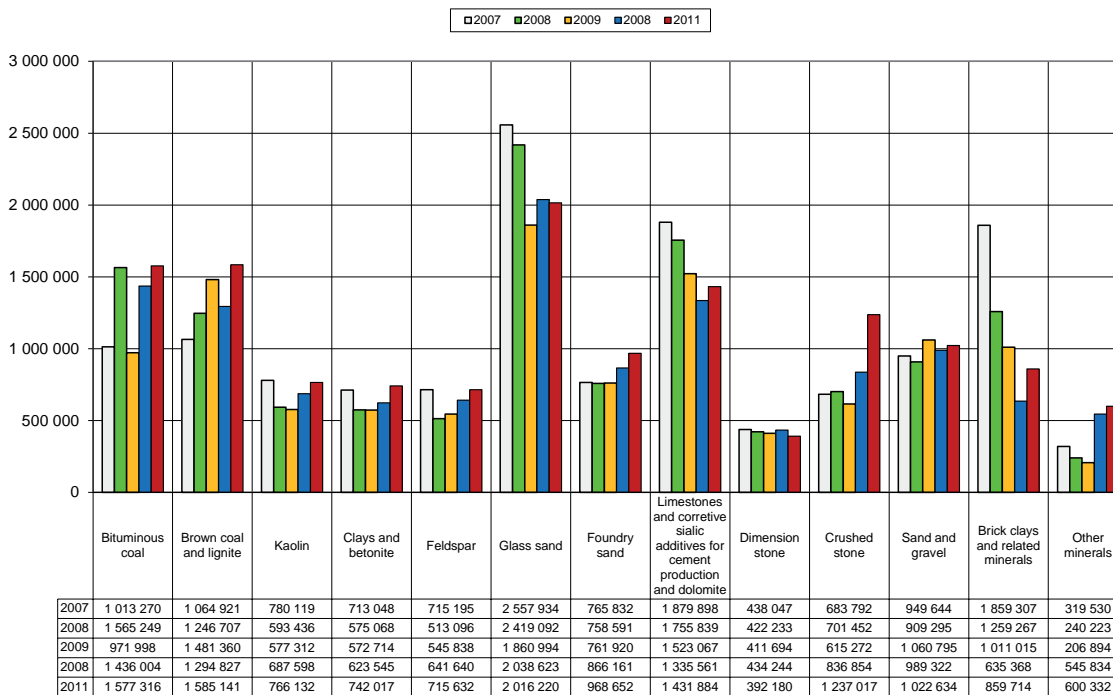
Glass sand is at the top of the list, followed by limestones and corrective additives for cement production, and dolomite. Production of coal and brick clays come in next.

For a better understanding of the index (value added – salaries) per employee, the growth in the value of the 2011/2007 index (Fig. 12) was calculated. A positive aspect is that the



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

Fig. 10. Average salary (CZK/employee)

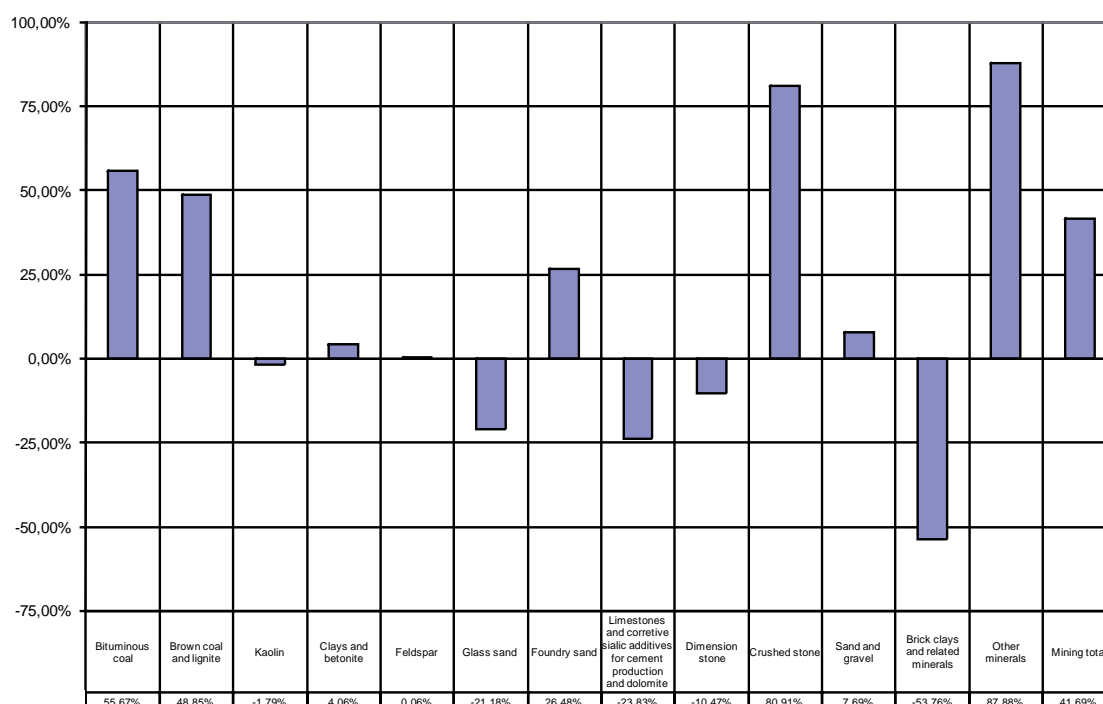


Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

Fig. 11. (Value added – salaries) per employee (CZK/employee)

Mining total registered a growth of 42%. In other words, the mining business was more lucrative in 2011 than in 2007.

The production of other minerals is excellent. Unfortunately due to data protection, we cannot divulge the reasons for this fact. Crushed stone ranked second. Both coal types ranked



Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Fig. 12. Index 2011/2007 (book value added – salaries) per employee**

third. Glass sand, sand and gravel, clays + bentonite and followed closely by feldspar reached positive values as well.

Other minerals are problematic, where brick clays ranked worst for company owners.

A review of individual minerals follows.

There are few companies that produce bituminous coal (Tab. 2) (around 3.6% of the companies in our selection in 2011), however in terms of sales (31.1 %), number of employees (25.5%) and value added (32.6%) they play the most important part in mining. These companies are involved in mining and auxiliary mining operations.

In 2007–2011, the number of employees decreased constantly, and the decline accelerated in 2009. Sales and value added peaked in 2008 and began to drop sharply in 2009. The year of 2008 was a peak year for electricity generation, metallurgy and other consumers of bituminous coal. In 2009, for example, coke production fell by 33% and auxiliary mining operations by 22%. As a result, sales of bituminous coal declined by 39% and value added by 45% (influenced by a slower decline in fixed costs). A positive aspect is that a revival occurred in 2010 and continued in 2011.

Sales per employee were below-average compared to the Mining total only in 2007 and 2009 and otherwise remain constantly above-average. In terms of labour productivity, bituminous coal constantly registers above-average values. The same applies to average salary, which is dictated by the type of work involved – underground mining. A pleasant aspect, primarily for company owners, is also the high above-average value of the index (value added – salaries) per employee.

There are again few companies that produce brown coal and lignite (Tab. 3) (around 2.6% of the companies in our selection in 2011), however in terms of sales (accounting for 18.3%),

**Tab. 2: Bituminous coal**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		12	10	9	8	7
Number of employees		17 423	16 729	14 568	13 716	13 351
Sales	mill. CZK	40 021	51 166	31 223	44 464	44 991
Value added	mill. CZK	18 145	26 742	14 595	20 170	21 545
Sales per employee	ths. CZK/ employee	2 297	3 058	2 143	3 242	3 370
Mining total = 100%	%	90%	109%	95%	125%	122%
Labour produktivity based value added	CZK/ employee	1 041 427	1 598 525	1 001 855	1 470 521	1 613 761
Mining total = 100%	%	116%	156%	107%	136%	128%
Hourly labour produktivity	CZK/ working hour	651	978	622	890	972
Mining total = 100%	%	123%	164%	111%	139%	131%
Average salary	CZK/ employee	28 157	33 276	29 856	34 517	36 445
Mining total = 100%	%	112%	121%	112%	120%	122%
(Value added - salaries) per employee	CZK/ employee	1 013 270	1 565 249	971 998	1 436 004	1 577 316
Mining total = 100%	%	116%	157%	107%	136%	128%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	-42%		-17%	-10%	-11%	-13%
Number of employees	-23%		-4%	-13%	-6%	-3%
Sales	12%		28%	-39%	42%	1%
Value added	19%		47%	-45%	38%	7%
Sales per employee	47%		33%	-30%	51%	4%
Labour produktivity based value added	55%		53%	-37%	47%	10%
Hourly labour produktivity	49%		50%	-36%	43%	9%
Average salary	29%		18%	-10%	16%	6%
(Value added - salaries) per employee	56%		54%	-38%	48%	10%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Tab. 3: Brown coal and lignite**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		6	15	7	8	5
Number of employees		13 366	13 405	10 844	10 206	9 523
Sales	mill. CZK	26 609	30 849	29 574	26 559	26 513
Value added	mill. CZK	14 561	17 082	16 377	13 511	15 382
Sales per employee	ths. CZK/ employee	1 991	2 301	2 727	2 602	2 784
Mining total = 100%	%	78%	82%	121%	100%	101%
Labour produktivity based value added	CZK/ employee	1 089 399	1 274 288	1 510 218	1 323 745	1 615 250
Mining total = 100%	%	122%	125%	162%	122%	128%
Hourly labour produktivity	CZK/ working hour	668	762	915	801	982
Mining total = 100%	%	126%	128%	163%	125%	132%
Average salary	CZK/ employee	24 478	27 581	28 858	28 917	30 108
Mining total = 100%	%	98%	100%	109%	100%	101%
(Value added - salaries) per employee	CZK/ employee	1 064 921	1 246 707	1 481 360	1 294 827	1 585 141
Mining total = 100%	%	122%	125%	163%	123%	129%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	-17%		150%	-53%	14%	-38%
Number of employees	-29%		0%	-19%	-6%	-7%
Sales	0%		16%	-4%	-10%	0%
Value added	6%		17%	-4%	-18%	14%
Sales per employee	40%		16%	19%	-5%	7%
Labour produktivity based value added	48%		17%	19%	-12%	22%
Hourly labour produktivity	47%		14%	20%	-12%	23%
Average salary	23%		13%	5%	0%	4%
(Value added - salaries) per employee	49%		17%	19%	-13%	22%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

number of employees (18.2%) and value added (23.3%) they play the second most important part in mining. These are companies involved in mining and auxiliary mining operations.

The reason for the higher number of companies in 2008 and its subsequent decrease in 2009 was due to organizational changes. In 2007–2011, the number of employees decreased constantly, and the decline accelerated in 2009 due to the crisis and due to the transfer of non-producing employees from CZ-NACE B to CZ-NACE 70 Activities of head offices. Sales and value added peaked in 2008 as well and their decline in 2009 was slight. Brown coal basically remained unaffected by the crisis, however this industry no longer reached the pre-crisis level after the crisis.

The development of relative indices predominantly registered a rise during the monitored period, and did not even decline during the year of the crisis. Labour productivity and average salary also registered above-average values in 2007–2011. A positive aspect for company owners is the development of the index (value added – salaries) per employee, which is on a constant rise with above-average values in the mining sector.

There are very few companies producing kaolin (Tab. 4) (around 2.6% of the companies in our selection in 2009). They are distinguished by the fact that they combine mining and subsequent manufacturing operations, making them unseparable for our purposes. In the case of sales and value added, it is possible to see that the crisis already hit production during 2008 and manifested itself also in 2009 and 2010. A turnaround did not occur until 2011, however the pre-crisis values were by far not reached. This is also corresponds with the steep drops in these indices. Sales (mining and parts of subsequent manufacturing) in 2009 declined by 22% and, at the same time, kaolin production fell by 19%.

The registered values of individual relative indices are below the Mining total average. An interesting fact is the typical delayed development of average salaries in reaction to the

**Tab. 4: Kaolin**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		4	7	5	5	5
Number of employees		3 685	2 706	2 272	1 934	1 983
Sales	mill. CZK	8 913	5 829	4 530	4 357	4 688
Value added	mill. CZK	2 965	1 675	1 366	1 381	1 571
Sales per employee	ths. CZK/ employee	2 419	2 154	1 994	2 253	2 364
<i>Mining total = 100%</i>	%	95%	77%	88%	87%	86%
Labour productivity based value added	CZK/ employee	804 661	618 805	601 243	713 941	792 480
<i>Mining total = 100%</i>	%	90%	61%	64%	66%	63%
Hourly labour productivity	CZK/ working hour	473	354	355	412	460
<i>Mining total = 100%</i>	%	89%	59%	63%	64%	62%
Average salary	CZK/ employee	24 542	25 369	23 932	26 344	26 348
<i>Mining total = 100%</i>	%	98%	92%	90%	91%	88%
(Value added - salaries) per employee	CZK/ employee	780 119	593 436	577 312	687 598	766 132
<i>Mining total = 100%</i>	%	90%	60%	64%	65%	62%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	25%		75%	-29%	0%	0%
Number of employees	-46%		-27%	-16%	-15%	3%
Sales	-47%		-35%	-22%	-4%	8%
Value added	-47%		-44%	-18%	1%	14%
Sales per employee	-2%		-11%	-7%	13%	5%
Labour productivity based value added	-2%		-23%	-3%	19%	11%
Hourly labour productivity	-3%		-25%	0%	16%	12%
Average salary	7%		3%	-6%	10%	0%
(Value added - salaries) per employee	-2%		-24%	-3%	19%	11%



decreasing economic productivity of companies during the crisis. For company owners, the most successful year was in 2007.

In the case of clays and bentonite (Tab. 5), it is again impossible to separate mining from manufacturing. As in the case of kaolin, the crisis manifested itself already in 2008, which is

**Tab. 5: Clays and bentonite**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		6	9	6	6	6
Number of employees		4 626	3 733	3 184	2 774	2 805
Sales	mill. CZK	10 163	7 203	5 433	5 264	5 555
Value added	mill. CZK	3 408	2 236	1 897	1 800	2 154
Sales per employee	ths. CZK/ employee	2 197	1 929	1 707	1 897	1 980
<i>Mining total = 100%</i>	%	86%	69%	76%	73%	72%
Labour produktivity based value added	CZK/ employee	736 680	598 970	595 905	648 747	767 755
<i>Mining total = 100%</i>	%	82%	59%	64%	60%	61%
Hourly labour produktivity	CZK/ working hour	436	352	354	374	452
<i>Mining total = 100%</i>	%	82%	59%	63%	59%	61%
Average salary	CZK/ employee	23 632	23 902	23 191	25 201	25 737
<i>Mining total = 100%</i>	%	94%	87%	87%	87%	86%
(Value added - salaries) per employee	CZK/ employee	713 048	575 068	572 714	623 545	742 017
<i>Mining total = 100%</i>	%	82%	58%	63%	59%	60%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	0%		50%	-33%	0%	0%
Number of employees	-39%		-19%	-15%	-13%	1%
Sales	-45%		-29%	-25%	-3%	6%
Value added	-37%		-34%	-15%	-5%	20%
Sales per employee	-10%		-12%	-12%	11%	4%
Labour produktivity based value added	4%		-19%	-1%	9%	18%
Hourly labour produktivity	4%		-19%	0%	6%	21%
Average salary	9%		1%	-3%	9%	2%
(Value added - salaries) per employee	4%		-19%	0%	9%	19%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

evident in the values of sales, value added and number of employees. Although the registered values improved slightly in 2011, this industry has yet to recover after the crisis.

The development of relative indeces corresponded to the onset of the crisis in that a revival occurred already in 2010. However, the absolute values were constantly below the Mining total average. This is a manifestation of mining integrated with subsequent mineral processing, which does not have such a high productivity.

In the case of feldspar (Tab. 6), the index values also demonstrate the connection with manufacturing and, in connection with this fact, the onset of the crisis occurred already in 2008. This is also the least important mineral industry. In 2009, it accounted for 2.1% of the number of companies, for 3.0% of sales and for 3.8% of the number of employees. These numbers already indicate that its efficiency, measured by productivity, will be below the Mining total average. For company owners, this mineral is significantly below-average in terms of profitability (the values of the index [value added – salaries] per employee fluctuate slightly above half of the total).

The productivity indeces correspond to those of other mineral industries with integrated subsequent manufacturing, i.e. they peaked in 2007 and were affected by the crisis from 2008 to 2009, and a turnaround occurred in 2010.

**Tab. 6: Feldspar**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		4	5	4	4	4
Number of employees		3 978	2 855	2 358	1 996	1 995
Sales	mill. CZK	8 977	5 403	4 327	4 117	4 391
Value added	mill. CZK	2 941	1 534	1 343	1 333	1 480
Sales per employee	ths. CZK/ employee	2 257	1 892	1 835	2 062	2 201
<i>Mining total = 100%</i>	%	88%	67%	81%	80%	80%
Labour produktivity based value added	CZK/ employee	739 276	537 301	569 572	667 789	741 752
<i>Mining total = 100%</i>	%	83%	53%	61%	62%	59%
Hourly labour produktivity	CZK/ working hour	435	314	333	383	426
<i>Mining total = 100%</i>	%	82%	53%	59%	60%	57%
Average salary	CZK/ employee	24 081	24 205	23 734	26 149	26 120
<i>Mining total = 100%</i>	%	96%	88%	89%	91%	87%
(Value added - salaries) per employee	CZK/ employee	715 195	513 096	545 838	641 640	715 632
<i>Mining total = 100%</i>	%	82%	52%	60%	61%	58%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	0%		25%	-20%	0%	0%
Number of employees	-50%		-28%	-17%	-15%	0%
Sales	-51%		-40%	-20%	-5%	7%
Value added	-50%		-48%	-12%	-1%	11%
Sales per employee	-2%		-16%	-3%	12%	7%
Labour produktivity based value added	0%		-27%	6%	17%	11%
Hourly labour produktivity	-2%		-28%	6%	15%	11%
Average salary	8%		1%	-2%	10%	0%
(Value added - salaries) per employee	0%		-28%	6%	18%	12%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Tab. 7: Glass sand**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		3	3	3	3	3
Number of employees		124	156	144	141	147
Sales	mill. CZK	661	875	627	665	656
Value added	mill. CZK	321	382	274	291	302
Sales per employee	ths. CZK/ employee	5 327	5 608	4 340	4 725	4 460
<i>Mining total = 100%</i>	%	208%	199%	193%	182%	162%
Labour produktivity based value added	CZK/ employee	2 586 412	2 450 526	1 893 071	2 072 001	2 050 514
<i>Mining total = 100%</i>	%	289%	240%	202%	191%	162%
Hourly labour produktivity	CZK/ working hour	1 530	1 483	1 132	1 220	1 231
<i>Mining total = 100%</i>	%	289%	249%	202%	191%	166%
Average salary	CZK/ employee	28 478	31 434	32 077	33 378	34 294
<i>Mining total = 100%</i>	%	114%	114%	121%	116%	114%
(Value added - salaries) per employee	CZK/ employee	2 557 934	2 419 092	1 860 994	2 038 623	2 016 220
<i>Mining total = 100%</i>	%	294%	243%	205%	194%	164%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	0%		0%	0%	0%	0%
Number of employees	19%		26%	-7%	-3%	5%
Sales	-1%		32%	-28%	6%	-1%
Value added	-6%		19%	-28%	7%	4%
Sales per employee	-16%		5%	-23%	9%	-6%
Labour produktivity based value added	-21%		-5%	-23%	9%	-1%
Hourly labour produktivity	-20%		-3%	-24%	8%	1%
Average salary	20%		10%	2%	4%	3%
(Value added - salaries) per employee	-21%		-5%	-23%	10%	-1%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Tab. 8: Foundry sand**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		4	5	4	3	3
Number of employees		1 099	1 418	1 059	761	778
Sales	mill. CZK	2 177	2 726	1 830	1 682	1 681
Value added	mill. CZK	865	1 108	832	679	776
Sales per employee	ths. CZK/ employee	1 981	1 923	1 728	2 209	2 160
<i>Mining total = 100%</i>	%	77%	68%	77%	85%	78%
Labour productivity based value added	CZK/ employee	787 376	781 319	785 125	892 290	996 579
<i>Mining total = 100%</i>	%	88%	76%	84%	82%	79%
Hourly labour produktivity	CZK/ working hour	472	465	479	518	607
<i>Mining total = 100%</i>	%	89%	78%	85%	81%	82%
Average salary	CZK/ employee	21 544	22 729	23 205	26 129	27 927
<i>Mining total = 100%</i>	%	86%	83%	87%	90%	93%
(Value added - salaries) per employee	CZK/ employee	765 832	758 591	761 920	866 161	968 652
<i>Mining total = 100%</i>	%	88%	76%	84%	82%	79%

Indexes	11/07	07/08	09/08	10/09	11/10
Number of enterprises	-25%	25%	-20%	-25%	0%
Number of employees	-29%	29%	-25%	-28%	2%
Sales	-23%	25%	-33%	-8%	0%
Value added	-10%	28%	-25%	-18%	14%
Sales per employee	9%	-3%	-10%	28%	-2%
Labour produktivity based value added	27%	-1%	0%	14%	12%
Hourly labour produktivity	29%	-2%	3%	8%	17%
Average salary	30%	5%	2%	13%	7%
(Value added - salaries) per employee	26%	-1%	0%	14%	12%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

Glass sand (Tab. 7) is the least important mineral industry in terms of the number of employees, sales and value added, yet tops the list in terms of labour productivity – its labour productivity based on value added is higher than the total. However the trend is unfavourable. The least important, but the most efficient mineral industry. For company owners, this is an ideal mineral. The mining companies have integrated mining-related services. Here, subsequent manufacturing is not included.

In terms of sales, 2008 was a good year for this mineral. Other years are similar. The situation in terms of value added is slightly different, as the 2007 levels were not reached in 2009–2011.

Foundry sand (Tab. 8) is an insignificant mineral industry, just as in the case of glass sand. However when compared with glass sand, it is a below-average mineral in terms of efficiency. The problem stems from 2008, when the selection of companies was different compared to 2007 and 2009. Visually it seems that a growth was registered in 2008 even in the number of employees, which was probably influenced by the selection of companies. The crisis hit the foundry industry and the entire metallurgy industry primarily in 2009, when some metallurgical companies registered negative value added values in the first half of the year. Strictly speaking, the costs of purchases and services exceeded sales. Value added did not even cover salaries paid out. Such a situation can close down a company. In addition to the selection of companies, the situation was probably also influenced by foreign trade. In comparison with the Mining total, this mineral is below-average in terms of efficiency.

A pleasant aspect for company owners is the development of the index (value added – salaries) per employee, which rose by 26% in 2007–2011.

Limestones and corrective additives for cement production, and dolomite (Tab. 9) are mineral industries which in 2011 accounted for 7.3% the number of companies, for 4.5% of the number of employees, for 6.6% of sales, and for 5.2% of value added. In view of these

**Tab. 9: Limestones and corrective additives for cement production and dolomite**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		11	14	14	14	14
Number of employees		2 467	2 647	2 529	2 397	2 356
Sales	mill. CZK	11 711	12 028	10 032	9 144	9 549
Value added	mill. CZK	4 704	4 725	3 926	3 273	3 445
Sales per employee	ths. CZK/ employee	4 748	4 544	3 967	3 815	4 054
<i>Mining total = 100%</i>	%	186%	162%	176%	147%	147%
Labour produktivity based value added	CZK/ employee	1 906 767	1 784 975	1 552 549	1 365 593	1 462 613
<i>Mining total = 100%</i>	%	213%	175%	166%	126%	116%
Hourly labour produktivity	CZK/ working hour	1 060	1 007	895	779	843
<i>Mining total = 100%</i>	%	200%	169%	160%	122%	114%
Average salary	CZK/ employee	26 869	29 136	29 482	30 032	30 729
<i>Mining total = 100%</i>	%	107%	106%	111%	104%	103%
(Value added - salaries) per employee	CZK/ employee	1 879 898	1 755 839	1 523 067	1 335 561	1 431 884
<i>Mining total = 100%</i>	%	216%	177%	168%	127%	116%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	27%		27%	0%	0%	0%
Number of employees	-5%		7%	-4%	-5%	-2%
Sales	-18%		3%	-17%	-9%	4%
Value added	-27%		0%	-17%	-17%	5%
Sales per employee	-15%		-4%	-13%	-4%	6%
Labour produktivity based value added	-23%		-6%	-13%	-12%	7%
Hourly labour produktivity	-20%		-5%	-11%	-13%	8%
Average salary	14%		8%	1%	2%	2%
(Value added - salaries) per employee	-24%		-7%	-13%	-12%	7%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

**Tab. 10: Dimension stone**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		11	21	13	12	12
Number of employees		989	1 395	641	594	575
Sales	mill. CZK	1 282	1 696	560	560	483
Value added	mill. CZK	453	619	278	271	239
Sales per employee	ths. CZK/ employee	1 296	1 216	874	943	841
<i>Mining total = 100%</i>	%	51%	43%	39%	36%	30%
Labour produktivity based value added	CZK/ employee	458 621	443 897	433 673	457 050	415 169
<i>Mining total = 100%</i>	%	51%	43%	46%	42%	33%
Hourly labour produktivity	CZK/ working hour	267	252	246	262	234
<i>Mining total = 100%</i>	%	50%	42%	44%	41%	32%
Average salary	CZK/ employee	20 574	21 664	21 979	22 805	22 988
<i>Mining total = 100%</i>	%	82%	79%	83%	79%	77%
(Value added - salaries) per employee	CZK/ employee	438 047	422 233	411 694	434 244	392 180
<i>Mining total = 100%</i>	%	50%	42%	45%	41%	32%
Indexes	11/07		07/08	09/08	10/09	11/10
Number of enterprises	9%		91%	-38%	-8%	0%
Number of employees	-42%		41%	-54%	-7%	-3%
Sales	-62%		32%	-67%	0%	-14%
Value added	-47%		37%	-55%	-2%	-12%
Sales per employee	-35%		-6%	-28%	8%	-11%
Labour produktivity based value added	-9%		-3%	-2%	5%	-9%
Hourly labour produktivity	-12%		-6%	-2%	6%	-11%
Average salary	12%		5%	1%	4%	1%
(Value added - salaries) per employee	-10%		-4%	-2%	5%	-10%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

numbers it is evident that these minerals are again at the top of the list in terms of labour productivity, which is around 50% higher than the total. For company owners, these mineral industries are efficient (second best in 2011), however with unfavourable dynamics – see (value added – salaries) per employee.

These minerals are linked primarily to construction output. Construction is constantly declining. The fact is that key subsequent manufacturing operations (e.g. cement) are under foreign control, and parent companies are probably modifying production not only according to Czech demand.

A bad sign for these minerals is the limited number of state-funded construction projects in 2010 and 2011, and probably in future years.

Dimension stone (Tab. 10) is an insignificant mineral industry with very low labour productivity and average salaries, and was affected by the low number of companies in the selection for 2009. There are very many small companies in this industry that we have not recorded.

The calculated decline in sales in 2009 concerns rather larger companies in this mineral industry and is, unfortunately, also influenced by the availability of data in 2009. When looking at the annual production index of dimension and crushed stone in tonnes, it may be concluded that the trend for smaller companies will be considerably better.

The crushed stone (Tab. 11) industry accounts for the highest number of companies (32.8% of the total), and for the highest share of sales in 2007. The mineral was second in sales in 2008, but dropped to third in 2009. Sales in 2009 fell sharply by 65%.

This is again a mineral industry with a high number of small companies. Our selection includes larger companies. We do not have data for small companies. The question remains if such a steep decline was also registered by smaller companies. Judging from the development

**Tab. 11: Crushed stone**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		38	61	67	60	61
Number of employees		15 404	16 631	9 959	9 010	8 430
Sales	mill. CZK	48 311	49 852	17 622	18 348	20 327
Value added	mill. CZK	10 892	12 084	6 351	7 758	10 645
Sales per employee	ths. CZK/ employee	3 136	2 998	1 770	2 036	2 411
Mining total = 100%	%	123%	107%	78%	79%	87%
Labour produktivity based value added	CZK/ employee	707 076	726 586	637 762	861 074	1 262 679
Mining total = 100%	%	79%	71%	68%	80%	100%
Hourly labour produktivity	CZK/ working hour	397	410	371	496	711
Mining total = 100%	%	75%	69%	66%	78%	96%
Average salary	CZK/ employee	23 284	25 134	22 490	24 219	25 662
Mining total = 100%	%	93%	91%	85%	84%	86%
(Value added - salaries) per employee	CZK/ employee	683 792	701 452	615 272	836 854	1 237 017
Mining total = 100%	%	79%	71%	68%	79%	100%

Indexes	11/07	07/08	09/08	10/09	11/10
Number of enterprises	61%	61%	10%	-10%	1%
Number of employees	-45%	8%	-40%	-10%	-6%
Sales	-58%	3%	-65%	4%	11%
Value added	-2%	11%	-47%	22%	37%
Sales per employee	-23%	-4%	-41%	15%	18%
Labour produktivity based value added	79%	3%	-12%	35%	47%
Hourly labour produktivity	79%	3%	-9%	34%	43%
Average salary	10%	8%	-11%	8%	6%
(Value added - salaries) per employee	81%	3%	-12%	36%	48%

**Tab. 12: Sand and gravel**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		39	60	56	53	53
Number of employees		11 801	11 158	4 636	4 482	4 343
Sales	mill. CZK	42 607	41 385	13 142	12 972	12 867
Value added	mill. CZK	11 513	10 458	5 040	4 555	4 561
Sales per employee	ths. CZK/ employee	3 610	3 709	2 835	2 895	2 963
<i>Mining total = 100%</i>	%	141%	132%	126%	112%	107%
Labour productivity based value added	CZK/ employee	975 543	937 219	1 087 136	1 016 338	1 050 103
<i>Mining total = 100%</i>	%	109%	92%	116%	94%	83%
Hourly labour produktivity	CZK/ working hour	557	520	628	585	593
<i>Mining total = 100%</i>	%	105%	87%	112%	91%	80%
Average salary	CZK/ employee	25 899	27 923	26 341	27 016	27 468
<i>Mining total = 100%</i>	%	103%	101%	99%	94%	92%
(Value added - salaries) per employee	CZK/ employee	949 644	909 295	1 060 795	989 322	1 022 634
<i>Mining total = 100%</i>	%	109%	91%	117%	94%	83%

Indexes	11/07	07/08	09/08	10/09	11/10
Number of enterprises	36%	54%	-7%	-5%	0%
Number of employees	-63%	-5%	-58%	-3%	-3%
Sales	-70%	-3%	-68%	-1%	-1%
Value added	-60%	-9%	-52%	-10%	0%
Sales per employee	-18%	3%	-24%	2%	2%
Labour produktivity based value added	8%	-4%	16%	-7%	3%
Hourly labour produktivity	6%	-7%	21%	-7%	1%
Average salary	6%	8%	-6%	3%	2%
(Value added - salaries) per employee	8%	-4%	17%	-7%	3%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

of the production of selected stone in absolute values, the decline in sales of the mineral may be generally estimated at 30%. In this case, the decline in sales of smaller companies would be lower.

For owners of larger companies, a sharply negative development of sales occurred in 2007–2011 (a drop of 58%), however in the case of value added the drop was only 2% and the index (value added – salaries) per employee grew sharply by 81%. The decline in sales and value added was compensated by a decrease in the number of employees (-45%).

Sand and gravel (Tab. 12) is an industry that accounts for the second highest number of companies (27.6% of the total in 2011), for a high share of the number of employees, of sales and of value added. Sales in 2009 fell sharply, similarly to crushed stone, by 68%. This mineral industry again includes many small companies that we have not recorded. For example, pebbles and gravel declined only by 32%. Smaller companies probably did not register such a high decline in sales.

The development was problematic in 2009–2011, as companies did not recover from the shock caused by the crisis. The values of sales and value added continue to decline. The values of relative indices compared to the Mining total are declining as well. This is probably connected with the decline in construction production.

For company owners, the dynamics of the index (value added – salaries) per employee were surprisingly generally good in 2007–2011, when they registered a growth of 8%.

Brick clays and related minerals (Tab. 13) most likely belong among the least important mineral industries (2.4% of sales, etc.). However, this is an industry with integrated mining and subsequent manufacturing operations, making it impossible to separate both items. This is evident when compared to the Mining total, as sales per employee are highly above-average.



**Tab. 13: Brick clays and related minerals**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		8	9	8	8	8
Number of employees		1 319	1 249	1 011	903	827
Sales	mill. CZK	5 732	4 596	3 463	2 941	3 406
Value added	mill. CZK	2 486	1 605	1 047	597	734
Sales per employee	ths. CZK/ employee	4 345	3 678	3 427	3 257	4 119
<i>Mining total = 100%</i>	%	170%	131%	152%	126%	149%
Labour productivity based value added	CZK/ employee	1 884 091	1 284 502	1 036 526	661 356	887 985
<i>Mining total = 100%</i>	%	211%	126%	111%	61%	70%
Hourly labour produktivity	CZK/ working hour	1 077	732	615	380	506
<i>Mining total = 100%</i>	%	203%	123%	110%	60%	68%
Average salary	CZK/ employee	24 784	25 235	25 510	25 988	28 271
<i>Mining total = 100%</i>	%	99%	92%	96%	90%	94%
(Value added - salaries) per employee	CZK/ employee	1 859 307	1 259 267	1 011 015	635 368	859 714
<i>Mining total = 100%</i>	%	214%	127%	111%	60%	70%

Indexes	11/07	07/08	09/08	10/09	11/10
Number of enterprises	0%	13%	-11%	0%	0%
Number of employees	-37%	-5%	-19%	-11%	-8%
Sales	-41%	-20%	-25%	-15%	16%
Value added	-70%	-35%	-35%	-43%	23%
Sales per employee	-5%	-15%	-7%	-5%	26%
Labour produktivity based value added	-53%	-32%	-19%	-36%	34%
Hourly labour produktivity	-53%	-32%	-16%	-38%	33%
Average salary	14%	2%	1%	2%	9%
(Value added - salaries) per employee	-54%	-32%	-20%	-37%	35%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

The development in labour productivity is interesting, as the values of this mineral fell from the highest ranks (compared to the Mining total) to a very below-average range. Once again, the decline in construction production played a large role, and not solely in the Czech Republic

Sales in 2009 (during the peak of the crisis) fell by 25 % (and by 20 % in 2008). This fact is also reflected by a decline of 40 % in the manufacture of burnt clay bricks, i.e. the main product made from these minerals. Due to fixed costs that do not change with the production volume, value added was significantly affected, declining by 35 %. The turnaround in 2011 in this unfavourable trend is positive.

For company owners, these minerals were above the Mining total average in terms of the value of the index (value added – salaries) per employee in 2008–2009. However, it has been below-average since 2010. The 54% drop in the index value for the entire period is very negative. From this perspective, these are the worst results of all the minerals.

Because there were only few companies in the other mineral sectors, it is impossible to publish data on them. Therefore they were aggregated into the *Other minerals* group (Tab. 14). It includes production of uranium, crude oil, natural gas, graphite, gemstones, diatomite, silica minerals and gypsum. To comment on such a diverse group is problematic. It contains very efficient mineral (crude oil, natural gas) industries, but also very problematic ones (uranium) due to near-zero production.

We have tried to compile selected accessible economic data concerning the mining companies in this sector. There are too little data, but in view of their accessibility for small companies, this is the maximum available.

**Tab. 14: Other minerals (uranium + crude oil + graphite + gemstones + silica minerals + gypsum)**

Indicator	Unit	2007	2008	2009	2010	2011
Number of enterprises		7	13	8	12	11
Number of employees		9 028	6 018	5 100	5 299	5 284
Sales	mill. CZK	11 039	11 673	9 078	9 386	9 475
Value added	mill. CZK	3 096	1 593	1 181	3 044	3 321
Sales per employee	ths. CZK/ employee	1 223	1 940	1 780	1 771	1 793
<i>Mining total = 100%</i>	%	48%	69%	79%	68%	65%
Labour produktivity based value added	CZK/ employee	342 952	264 652	231 568	574 370	628 366
<i>Mining total = 100%</i>	%	38%	26%	25%	53%	50%
Hourly labour produktivity	CZK/ working hour	209	160	142	344	376
<i>Mining total = 100%</i>	%	39%	27%	25%	54%	51%
Average salary	CZK/ employee	23 423	24 429	24 674	28 535	28 035
<i>Mining total = 100%</i>	%	94%	89%	93%	99%	94%
(Value added - salaries) per employee	CZK/ employee	319 530	240 223	206 894	545 834	600 332
<i>Mining total = 100%</i>	%	37%	24%	23%	52%	49%

Indexes	11/07	07/08	09/08	10/09	11/10
Number of enterprises	57%	86%	-38%	50%	-8%
Number of employees	-41%	-33%	-15%	4%	0%
Sales	-14%	6%	-22%	3%	1%
Value added	7%	-49%	-26%	158%	9%
Sales per employee	47%	59%	-8%	0%	1%
Labour produktivity based value added	83%	-23%	-13%	148%	9%
Hourly labour produktivity	80%	-23%	-12%	143%	9%
Average salary	20%	4%	1%	16%	-2%
(Value added - salaries) per employee	88%	-25%	-14%	164%	10%

Source: own calculations according to Ministry of Industry and Trade and Czech Statistical Office data

## Outline of domestic mine production

		2007	2008	2009	2010	2011
<b>Energy minerals</b>						
Uranium	t U	322	290	286	259	252
	Concentrate production, t U <sup>(1)</sup>	291	261	243	237	216
Bituminous coal	kt	12 462	12 197	10 621	11 193	10 967
Brown coal	kt <sup>(2)</sup>	49 134	47 456	45 354	43 931	46 848
Lignite	kt	437	416	262	0	0
Crude oil	kt	240	236	217	173	163
Natural gas	mil m <sup>3</sup>	148	168	180	201	187
<b>Industrial minerals</b>						
Graphite	kt	3	3	0	0	0
Pyrope bearing rock	kt	34	24	26	23	17
Moldavite (tectite) bearing rock	ths m <sup>3</sup>	114	99	58	57	65
	kt (1 m <sup>3</sup> = 1.8 kt)	205	177	104	103	117
Kaolin	Raw, kt <sup>(3)</sup>	3 604	3 833	2 886	3 493	3 606
	Beneficiated, kt	682	664	488	636	660
Clays	kt	679	574	377	429	499
Bentonite <sup>(4)</sup>	kt	335	235	177	183	160
Diatomite	kt	19	31	0	32	46
Feldspar	kt	514	488	431	388	407
Feldspar substitutes	kt	25	36	23	19	22
Silica minerals	kt	19	18	16	14	24
Glass sand	kt	942	1 151	990	888	976
Foundry sand	kt	850	702	374	473	395
Limestones and corrective additives for cement production	kt	11 670	11 465	9 488	9 828	11 244
Dolomite	kt	385	449	337	385	369
Gypsum	kt	66	35	13	5	11
<b>Construction minerals</b>						
Dimension stone	Mine production in reserved deposits, ths m <sup>3</sup> <sup>(5)</sup>	242	229	209	262	192
	Mine production in reserved deposits, kt (1 m <sup>3</sup> = 2.7 kt) <sup>(5)</sup>	653	618	564	707	518
	Mine production in non-reserved deposits, ths m <sup>3</sup> <sup>(6)</sup>	50	45	54	43	46
	Mine production in reserved deposits, kt (1 m <sup>3</sup> = 2.7 kt) <sup>(6)</sup>	130	105	146	116	130
Crushed stone	Mine production in reserved deposits, ths m <sup>3</sup> <sup>(5)</sup>	14 655	14 799	13 947	12 350	12 299
	Mine production in reserved deposits, kt (1 m <sup>3</sup> = 2.7 kt) <sup>(5)</sup>	39 569	39 957	37 657	33 350	33 207
	Mine production in non-reserved deposits, ths m <sup>3</sup> <sup>(6)</sup>	1 350	1 600	1 350	1 450	1 300
Sand and gravel	Mine production in non-reserved deposits, kt (1 m <sup>3</sup> = 2.7 kt) <sup>(6)</sup>	3 645	4 320	3 650	3 920	3 510
	Mine production in reserved deposits, ths m <sup>3</sup> <sup>(5)</sup>	9 185	8 770	7 269	6 187	6 902
	Mine production in reserved deposits, kt (1 m <sup>3</sup> = 1.8 kt) <sup>(5)</sup>	16 533	15 786	13 084	11 140	12 424
Brick clays and related minerals	Mine production in non-reserved deposits, ths m <sup>3</sup> <sup>(6)</sup>	6 450	6 350	6 050	4 500	5 000
	Mine production in non-reserved deposits, kt (1 m <sup>3</sup> = 1.8 kt) <sup>(6)</sup>	11 700	11 520	10 890	8 100	9 000
	Mine production in reserved deposits, ths m <sup>3</sup> <sup>(5)</sup>	1 433	1 242	1 028	838	932
Brick clays and related minerals	Mine production in reserved deposits, kt (1 m <sup>3</sup> = 1.8 kt) <sup>(5)</sup>	2 579	2 236	1 850	1 508	1 678
	Mine production in non-reserved deposits, ths m <sup>3</sup> <sup>(6)</sup>	300	270	203	182	147
	Mine production in non-reserved deposits, kt (1 m <sup>3</sup> = 1.8 kt) <sup>(6)</sup>	540	520	365	328	265
<b>Metallic ores (not mined)</b>						

<sup>(1)</sup> corresponds to sales production (without beneficiation losses)

<sup>(2)</sup> 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

<sup>(3)</sup> raw kaolin, total production of all technological grades

<sup>(4)</sup> including mining of montmorillonite clays overburden of kaolins since 2004

<sup>(5)</sup> decrease of mineral reserves by mining production

<sup>(6)</sup> estimate

## Domestic share in the world mine production

		2007	2008	2009	2010	2011
<b>Energy minerals</b>						
Uranium (U)	world: WNA	0.78%	0.66%	0.56%	0.48%	0.46%
Bituminous coal	world: EIA, BP	0.23%	0.22%	0.17%	0.18%	0.17%
Brown coal + Lignite	world: EIA, BP, Vereine der Kohlen-importeure	5.08%	4.90%	5.42%	4.22%	5.55%
Crude oil	world: WBD, BP	0.006%	0.006%	0.005%	0.004%	0.004%
Natural gas	world: BP	0.005%	0.005%	0.006%	0.006%	0.006%
<b>Industrial minerals</b>						
Graphite	world: WBD, MCS	0.27%	0.27%	-	-	-
Gemstones	Pyrope bearing rock	N	N	N	N	N
	Moldavite (tectite) bearing rock	N	N	N	N	N
Kaolin	world: MCS	9.24%	10.68%	9.43%	10.27%	10.83%
Clays		N	N	N	N	N
Bentonite	world: MCS	2.82%	2.01%	1.81%	1.83%	1.42%
Diatomite	world: MCS	0.90%	1.41%	-	1.75%	2.56%
Feldspar	world: MCS	2.84%	2.23%	2.28%	1.94%	1.97%
Feldspar substitutes		N	N	N	N	N
Glass + Foundry sand	world: MCS	1.42%	1.53%	1.22%	1.26%	1.12%
Limestones and corrective additives for cement production	world: MCS *	0.35%	0.33%	0.28%	0.28%	0.28%
Dolomite		N	N	N	N	N
Gypsum	world: MCS	0.04%	0.02%	0.01%	0.003%	0.01%
<b>Construction minerals</b>						
		N	N	N	N	N
<b>Metallic ores (not mined)</b>						

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

## ENVIRONMENT AND MINERALS

### Mining and nature protection

1,497 reserved and 840 non-reserved mineral deposits were registered in the Czech Republic as of December 31, 2011. The number of exploited deposits was markedly lower – 496 reserved and 220 non-reserved. Only 37 reserved and 14 non-reserved deposits were mined in the specially nature protected areas, which represents 7.5 % and 6.4 % 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 (2<sup>nd</sup> to 4<sup>th</sup> 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 till 2008 and after declines 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 and in 14 CHKO in 2011.

#### Specially protected areas of nature (ZCHÚ) in the Czech Republic

Number/Year	2007	2008	2009	2010	2011
Total number	2 221	2 234	2 247	2 267	2 301
national parks (NP)	4	4	4	4	4
protected landscape areas (CHKO)	25	25	25	25	25
others	2 192	2 205	2 218	2 238	2 272

Source: AOPK ČR (2012)

### Structure of ZCHÚ in 2011

Category of specially protected areas	Number	Area (km <sup>2</sup> )	Proportion on the territory of the Czech Republic 78 864 km <sup>2</sup> (%)
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 <sup>st</sup> zones of CHKO where mining is explicitly prohibited)	25	881	1.12
ZCHÚ with mining explicitly prohibited by the Act No. 114/1992 Sb.	29	2 076	2.64
SMALL-EXTENT ZCHÚ:			
national nature monuments (NPP)	112	44	0.06
national nature reserve (NPR)	110	275	0.35
nature monuments (PP)	1 248	235	0.30
nature reserves (PR)	802	387	0.49
NPP, NPR, PP, PR	2 272	941	1.19
– (from them NPP, NPR, PP, PR on the area of NP, CHKO)	731	518	0.66
<b>LARGE-EXTENT AND SMALL-EXTENT ZCHÚ – total</b>	<b>2 301</b>	<b>12 486</b>	<b>15.84</b>

Source: AOPK ČR (2012)

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

mineral	Reserved deposits					Non-reserved deposits				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Gemstones*	21	24	26	23	17	–	–	–	–	–
Crude oil	0	0	0	0.5	0	–	–	–	–	–
Natural gas**	13.8	8.8	6.0	4.4	0	–	–	–	–	–
Quartz sand	0.8	0.6	0.9	0	0	–	–	–	–	–
Feldspar	306	280	230	214	240	–	–	–	–	–
Limestone	3 171	3 301	3 283	3 384	3 033	–	–	–	–	–
Dimension stone**	31	37	46	42	55	3.2	5.2	2.4	1.2	3.0
Crushed stone** . ***	3 604	3 950	3 941	3 027	3 146	32	38	94	67	586
Sand and gravel**	1 735	1 463	1 175	1 133	1 206	51	50	40	45	36
Brick clay**	23	29	0	0	0	3.6	3.6	0	0	0
<b>Total</b>	<b>8 906</b>	<b>9 093</b>	<b>8 708</b>	<b>7 827</b>	<b>7 697</b>	<b>90</b>	<b>97</b>	<b>136</b>	<b>113</b>	<b>625</b>
Index, 1990=100	55	56	54	48	48	–	–	–	–	–
Index, 2000=100	–	–	–	–	–	29	31	44	36	202

\* pyrope bearing rocks

\*\* conversion to kt: natural gas (1,000,000 m<sup>3</sup> = 1 kt), dimension and crushed stone (1,000 m<sup>3</sup> = 2.7 kt), sand and gravel and brick clays (1,000 m<sup>3</sup> = 1.8 kt)

\*\*\* increase in mine production of non-reserved crushed stone deposits in 2011 is caused by increase in production of non-reserved part of Měrunice deposit at the expense of its reserved one



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

Name of CHKO	2007	2008	2009	2010	2011
Beskydy Mts.	46	51	64	71	25
Bílé Karpaty Mts.	31	136	490	260	186
Blaník	0	0	0	0	0
Blanský les	632	729	490	604	516
Broumov region	133	123	145	110	100
České středohoří Mts.	1 736	1 818	1 788	1 142	1 383
<b>Český kras (Bohemian Karst)</b>	<b>3 338</b>	<b>3 421</b>	<b>3 357</b>	<b>3 405</b>	<b>3 016</b>
Český les Mts.	0.2	0.2	0	0	0
Český ráj	0	0	0	0	0
Jeseníky Mts.	162	138	138	103	103
Jizerské hory Mts.	0	0	0	0	0
Kokořín region	4	4	0	0	0
Křivoklát region	402	387	432	355	381
Labské pískovce (Elbe sandstones)	0	0	0	0	0
Litovelské Pomoraví region	92	67	54	7	0
Lužické hory Mts.	10	12	8	9	0
Moravský kras (Moravian Karst)	154	194	168	178	201
Orlické hory Mts.	0	0	0	0	0
Pálava region	0	0	0	0	0
Poodří region	23	29	0	0	0
Slavkovský les region	204	171	129	119	148
Šumava Mts.	51	70	78	70	78
Třeboň region	1 760	1 521	1 241	1 243	1 298
Žďárské vrchy Mts.	91	98	131	130	130
Železné hory Mts.	127	223	130	135	132
<b>Total mine production (rounded)</b>	<b>8 996</b>	<b>9 192</b>	<b>8 843</b>	<b>7 941</b>	<b>7 697</b>

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”).

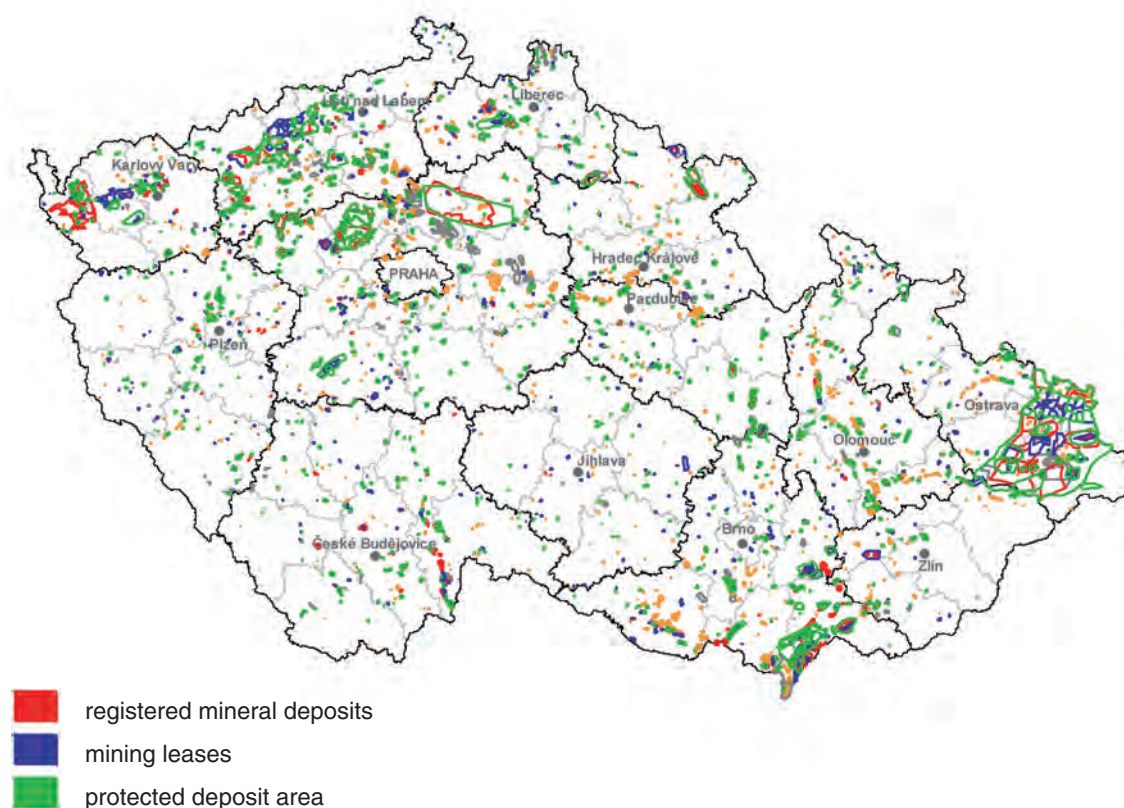
**Impact of mining of reserved deposits in CHKO, t/km<sup>2</sup> in a year  
(areas of CHKO as of December 31)**

Name of CHKO	area km <sup>2</sup> in 2011	2007	2008	2009	2010	2011
Beskydy Mts.	1 160	40	44	55	61	22
Bílé Karpaty Mts.	715	43	190	685	364	260
Blaník	40	0	0	0	0	0
Blanský les	212	2 981	3 439	2 311	2 849	2 434
Broumov region	410	324	300	354	268	244
České středohoří Mts.	1 070	1 622	1 699	1 671	1 067	1 293
<b>Český kras (Bohemian Karst)</b>	<b>132</b>	<b>25 288</b>	<b>25 917</b>	<b>25 432</b>	<b>25 795</b>	<b>22 848</b>
Český les Mts.	473	0	0	0	0	0
Český ráj	182	0	0	0	0	0
Jeseníky Mts.	740	219	186	186	139	139
Jizerské hory Mts.	350	0	0	0	0	0
Kokoříň region	270	15	15	0	0	0
Křivoklát region	630	638	614	686	563	605
Labské písky (Elbe sandstones)	245	0	0	0	0	0
Litovelské Pomoraví	96	958	698	563	73	0
Lužické hory Mts.	270	37	44	30	33	0
Moravský kras (Moravian Karst)	92	1 674	2 109	1 826	1 935	2 185
Orlické hory Mts.	200	0	0	0	0	0
Pálava region	70	0	0	0	0	0
Poodří region	82	280	354	0	0	0
Slavkovský les	640	319	267	202	186	231
Šumava Mts. (CHKO + NP)	1 684	30	42	46	42	46
Třeboň region	700	2 514	2 173	1 773	1 776	1 854
Žďárské vrchy Mts.	715	127	137	183	182	182
Železné hory Mts.	380	334	587	342	355	347
<b>TOTAL (total mining/total area)</b>	<b>11 558</b>	<b>828</b>	<b>846</b>	<b>814</b>	<b>731</b>	<b>666</b>

*Note: an impact exceeding 10,000 t/km<sup>2</sup> 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 2007–2011.

Methods of reclamation used in 2011 are shown in the table “Reclamation after mining of reserved minerals in 2011”

### Development of reclamations after mining

	km <sup>2</sup>	2007	2008	2009	2010	2011
Reserved deposits	Area with manifestation of mining, not yet reclaimed	663	637	642	551	538
	Reclamations in process	113	115	115	105	109
	Reclamations finished since the start of mining	181	195	204	213	209
	Reclamations finished in the given year	8	11	11	11	11
Non-reserved deposits	Area with manifestation of mining, not yet reclaimed	16	16	15	17	13
	Reclamations in process	3	3	2	3	3
	Reclamations finished since the start of mining	2	2	2	3	2
	Reclamations finished in the given year	0.5	0.2	0.5	0.2	0.2

### Reclamation after mining of reserved minerals in 2011

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	3	1
Central Bohemia	203	1	174	14	49	0	57	2	389	35	69	8	157	31	72	16
South Bohemia	12	0	39	3	4	0	5	0	70	59	108	2	317	0	33	1
Plzeň	30	0	39	1	3	0	5	0	45	29	36	48	3	0	22	12
Karlovy Vary	54	137	761	1 214	1	6	56	18	365	1 052	708	1 583	564	26	115	34
Ústí nad Labem	857	921	1 470	1 338	359	31	855	571	1 251	1 291	2 491	2 642	386	193	895	1 468
Liberec	34	3	94	20	0	0	23	0	62	45	201	16	5	0	3	0
Hradec Králové	34	1	22	5	3	0	12	0	80	8	118	4	100	0	21	4
Pardubice	8	0	6	12	56	0	2	0	35	0	10	9	36	0	8	2
Vysočina	0	1	3	0	0	0	2	3	10	3	38	5	0	0	6	4
South Moravia	101	8	31	0	2	3	16	9	435	29	147	7	8	0	9	8
Olomouc	39	3	62	62	105	2	1	0	47	47	7	3	48	0	7	5
Zlín	30	0	1	0	3	0	5	0	78	54	31	0	130	6	98	4
Moravia and Silesia	33	1	520	23	68	2	154	12	865	67	635	34	336	3	307	13
<b>Czech Republic in total</b>	<b>1 435</b>	<b>1 072</b>	<b>3 222</b>	<b>2 692</b>	<b>652</b>	<b>41</b>	<b>1 200</b>	<b>615</b>	<b>3 735</b>	<b>2 721</b>	<b>4 599</b>	<b>4 361</b>	<b>2 090</b>	<b>258</b>	<b>1 599</b>	<b>1 572</b>

[ranked according to regions and way of reclamation; DP = mining lease (in = within, out = outside), areas in hectares (1 km<sup>2</sup> = 100)

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 minière. 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 a single mowing process. The costs incurred by such the process range between a minimum of 0.43 – 0.61 EUR/m<sup>2</sup> (without site preparation) and a maximum of 1.36 – 1.87 EUR/ m<sup>2</sup> (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/ m<sup>2</sup>.“

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 ecological 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.

In 2011, a final report on project VaV SP/2d1/141/07 „Rekultivace a management nepřirodních biotopů v České republice“ (“Reclamation and Management of Non-Natural Biotypes in the Czech Republic“) was published for the entire duration of the project in 2007–2011 carried out by the Institute for Environmental Policy, Public Benefit Corporation, by the Institute of Geology of the Academy of Sciences of the Czech Republic, Public Research Institution, and by the Czech University of Life Sciences Prague. Its findings and recommendations state among other things:

“Areas impacted by mining and by some other human activities such as quarries, sand pits, mining sites of kaolin and brick clays, waste piles/dumps and large waste depots, are by far not really devastated, dead “lunar landscapes“. On the contrary, it is being demonstrated that, in terms of the protection of diverse biotypes, they are a very important refuge, where mushrooms and wild plants and animals are finding optimum living conditions, which they entirely lack in urbanized and industrial areas, and on land used intensively by agriculture. ...

It is absolutely vital that the relevant state administration authorities respond appropriately to the new scientific findings. In the next legislative session, they should in collaboration with experts prepare and put into practice appropriate changes to laws and executive regulations, which regulate mining and other related human activities, primarily remediation and reclamation. The following legal regulations must be amended:

- Act No. 44/1988 Coll., on mineral protection and use (the Mining Act) – subsequently amended
- Regulation of the ČBÚ No. 172/1992 Coll., on mining leases in the wording of the Regulation No. 351/2000 Coll.
- Regulation 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 – subsequently amended
- Act No. 61/1988 Coll., on mining operations, explosives and the state mining – subsequently amended
- Act No. 334/1992 Coll. on protection of agricultural land resources – subsequently amended
- Regulation of the MŽP ČR No. 13/1994 Coll., governing some details of agricultural land resources protection – subsequently amended
- Act No. 289/1995 Coll., on forests, modifying and amending certain acts (the Forest Act);
- Regulation of the Ministry of Agriculture of the Czech Republic No. 77/1996 Coll., on necessary elements of applications for dispossession or curtailment of rights, and on details of protection of lands devoted to forest function performance – subsequently amended
- Act No. 114/1992 Coll., on nature and landscape protection – subsequently amended

These unavoidable changes should eliminate evident discrepancies and deficiencies in the legislation concerning the areas in question and harmonize legal regulations, so that ecological and economic highly effective nature-friendly methods of restoration based on natural or directed ecological succession may be used to a greater extent...”

**Share of Specially Protected Areas of nature in the Czech Republic [zvláště chráněná území přírody České republiky (ZCHÚs)] established in localities with former mining (“after mining”) in all the ZCHÚs in 2009**

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 %
<b>Czech Republic total</b>	<b>2 237</b>	<b>208 680</b>	<b>157</b>	<b>3 992</b>	<b>1.91 %</b>	<b>7.02 %</b>

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

## Eliminating negative consequences of mining in the Czech Republic – main methods and financial resources

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### Introduction

The process of restructuring coal and ore mining, and of eliminating negative environmental consequences of mining in the landscape and erasing these consequences in affected areas of the Czech Republic, is executed in several ways and with various financial resources. It specifically involves:

1. Use of funds from a financial reserve generated by mining companies for remediation, reclamation and mining damages
2. Use of funds from annual royalties paid by mining companies on mining leases and on extracted reserved minerals pursuant to the Mining Act
3. Phase-out programme of mining activities and erasing consequences of coal, ore and uranium mining funded by the state via the Ministry of Industry and Trade
4. Use of proceeds from privatisation of state assets in eliminating old ecological burdens caused by mining, existing prior to privatisation of mining companies
5. A programme which deals with ecological damage caused prior to privatisation of brown coal mining companies in the Ústí nad Labem Region and Karlovy Vary Region, with ecological revitalisation upon termination of mining operations in the Moravian-Silesian Region, with eliminating ecological burdens caused by the exploration for and extraction of crude oil and natural gas in designated areas of the South Moravian Region, and with reducing the impacts caused by the termination of coal mining in the Kladno Region based on Government resolutions in 2002. Funds are provided by proceeds from privatisation of national assets.

### 1. Use of funds from a financial reserve generated by mining companies for remediation, reclamation and mining damages

#### Financial reserve for remediation and reclamation

The most important source for funding the elimination of the consequences of mining operations in the Czech Republic is the financial reserve for remediation and reclamation, generated by mining companies during the exploitation of reserved mineral deposits.

An amendment of Mining Act No. 541/1991 Coll., under article 31 section 6, imposes an obligation on the mining company to generate a financial reserve in order to meet the obligation established under article 31 section 5 of the Mining Act, thus guaranteeing the remediation and reclamation of all plots of land affected by mining (hereinafter “reserves”). The reserves are part of the company’s expenses. Pursuant to article 32 section 2 of the Mining Act, the determination of anticipated expenses for remediation and reclamation is part of the plan for opening, preparation and exploitation of reserved deposits (hereinafter “POPD”), and the POPD must also contain a proposal regarding the amount of, and the method for, generating the required financial reserve. However, the anticipated amount of financial costs for remediation and reclamation must for the first time already be included, pursuant to the provision under article 2, section 3, letter k) item 4 of Decree No. 172/1992 Coll., as amended,

in the application for the grant of a mining lease. An interim provision of Act No. 541/1991 Coll. established that the required reserve amount should be provided in 10 years (i.e. by 20 December 2001) in the case of existing mines. In a subsequent amendment of the Mining Act by Act No. 168/1993 Coll., the time period for generating the reserve was changed to last for the duration of the economic life of the mine, quarry or their sections. However, that did not apply to companies with an announced or approved phase-out programme (ores, coal).

According to the provision under article 37a section 2 of the Mining Act, the generating of reserves is subject to approval by Regional Mining Authorities (OBÚ). Upon the request of a company, these also permit the drawing on funds from the generated reserve upon agreement with the Ministry of the Environment and upon notification by the relevant municipality. In the case of public enterprises, the OBÚ makes a decision regarding the drawing on the reserve upon agreement with the Ministry of Industry and Trade.

The issues mentioned are further regulated by FMF (Federal Ministry of Finance) Measure No. ref. V/20 100/1992 Coll., on the chart of accounts and on accounting procedures, which lays down the rules regarding the generating and use of financial reserves by companies with permitted mining operations. At the end of each accounting period, companies execute closings of books and carry out document inventories, which verify the balancing of books (Act No. 593/1992 Coll. and No. 563/1991 Coll.).

### Generated and drawn reserves for remediation and reclamation (in CZK thousand)

Year	Bituminous coal		Brown coal		Crude oil and natural gas		Ores		Industrial minerals		Radioactive minerals		Total	
	gene-rated	drawn	gene-rated	drawn	gene-rated	drawn	gene-rated	drawn	gene-rated	drawn	gene-rated	drawn	gene-rated	drawn
1993	118 500	0	1 341 769	65 615	12 722	0	0	0	97 438	8 236	0	0	1 570 429	73 851
1994	123 750	18 600	573 242	259 929	6 836	0	0	0	255 155	30 335	0	0	958 983	308 864
1995	85 895	136 064	3 845 935	265 856	22 414	370	0	0	276 724	24 230	0	0	4 230 968	426 520
1996	143 500	97 993	1 436 957	831 817	25 811	113	0	0	270 432	31 829	0	0	1 876 700	961 752
1997	108 000	42 108	1 302 735	1 087 993	62 618	5 569	0	0	484 420	53 262	0	0	1 957 773	1 188 932
1998	51 594	48 033	1 226 036	994 133	22 112	9 541	0	0	466 649	59 913	0	0	1 766 391	1 111 620
1999	132 143	56 236	1 199 633	704 199	26 181	7 473	0	0	318 852	141 530	0	0	1 676 809	909 438
2000	42 747	52 029	1 119 474	683 179	23 487	600	0	0	307 433	140 225	0	0	1 493 141	876 033
2001	876 194	77 458	1 267 431	678 515	23 184	2 750	390	0	215 379	53 893	0	0	2 382 578	812 616
2002	887 250	129 600	1 007 561	653 557	100	250	0	0	157 721	50 604	0	0	2 052 632	834 011
2003	1 800	498	5 199 919	4 844 371	11 782	1 050	0	0	179 763	57 848	0	0	5 393 264	4 903 767
2004	65 002	54 162	1 031 828	720 168	4 770	0	0	0	160 102	73 177	0	0	1 261 702	847 507
2005	66 504	54 204	964 222	547 883	17 524	9 409	0	0	228 713	113 743	0	0	1 276 963	725 239
2006	74 178	113 691	845 008	663 055	17 893	3 300	0	0	144 665	92 489	0	0	1 081 744	872 535
2007	32 696	88 462	718 820	240 060	25 417	17 259	0	0	127 413	82 329	0	0	904 346	428 110
2008	17 660	66 941	626 649	330 397	24 828	16 372	0	0	233 615	99 610	0	0	1 008 637	513 320
2009	21 780	69 711	650 696	394 528	15 454	1 324	0	0	177 681	77 290	0	0	955 897	542 853
2010	22 800	147 848	298 205	133 171	16 302	461	0	0	96 207	94 517	0	0	433 515	375 997
2011	22 500	170 958	625 011	491 068	22 336	986	0	0	82 252	87 681	0	0	752 099	750 693

The last update of the legal regulation of reserves for remediation, reclamation as well as mining damage occurred after Act No. 223/2006 Coll. (amendment of the Reserves Act) and No. 313/2006 Coll. (amendment of the Mining Act) went into effect.

### Financial reserve for mining damages

Pursuant to article 37a section 1 of the Mining Act, a mining company is obliged to generate a financial reserve to ensure settlement of mining damages. The reserve amount generated and charged to expenses must correspond to the needs for settling mining damages in the course of time depending on their creation, or prior to their creation (article 37 section 4).

Generating of reserves is subject to approval by the relevant Regional Mining Authority, which also approves the drawing on these reserves upon agreement with the Ministry of the Environment. Prior to making a decision on the drawing on these reserves, the Regional Mining Authority requests a statement from the relevant municipality. In the case of public enterprises, the OBÚ decides in agreement with the Ministry of Industry and Trade.

A company's request to draw on the financial reserve for mining damages must be furnished with a list of mining damages, an expense estimate for their elimination and a time table of resource expenses for the elimination of mining damages.

### Generated and drawn reserves for mining damages (in CZK thousand)

Year	Bituminous coal		Brown coal		Crude oil and natural gas		Ores		Industrial minerals		Radioactive minerals		Total	
	generated	drawn	generated	drawn	generated	drawn	generated	drawn	generated	drawn	generated	drawn	generated	drawn
1993	400 721	4 093	150 548	42 957	0	0	0	0	28 462	0	0	0	579 731	47 050
1994	105 650	38 813	50 000	32 223	0	0	0	0	9 328	28 852	0	0	164 978	99 888
1995	204 785	86 001	209 207	37 748	0	0	0	0	10 673	9 394	0	0	424 665	133 143
1996	151 643	74 952	259 779	84 258	0	0	0	0	13 100	3 407	0	0	424 522	162 617
1997	77 900	142 512	318 981	127 715	0	0	0	0	5 733	683	0	0	402 614	270 910
1998	185 723	174 640	252 920	112 852	0	0	0	0	16 043	3 638	0	0	457 686	291 130
1999	111 588	174 640	212 722	40 448	0	0	0	0	10 803	6 844	0	0	335 113	221 932
2000	110 088	107 852	240 655	188 685	0	0	0	0	11 414	1 020	0	0	362 157	297 557
2001	145 750	188 073	105 513	217 306	192	0	100	0	35 877	6 628	0	0	287 432	412 007
2002	102 750	168 531	102 700	510 200	0	0	0	0	2 327	2 338	0	0	207 777	681 069
2003	0	0	816 197	999 271	90	0	0	0	12 576	2 263	0	0	828 863	1 001 534
2004	187 700	139 714	164 700	315 321	0	0	0	0	3 007	4 560	0	0	355 407	459 595
2005	191 700	143 974	97 433	279 955	0	0	0	0	6 597	4 273	0	0	295 730	428 202
2006	285 780	251 941	522 908	1 334	150	0	0	0	4 517	6 846	0	0	813 355	260 121
2007	260 850	190 982	193 147	932 392	30	0	0	0	4 298	3 831	0	0	458 325	1 127 205
2008	304 700	308 593	64 601	155 924	0	0	0	0	3 739	2 788	0	0	373 040	467 305
2009	317 625	282 928	30 200	25 800	0	0	0	0	3 447	1 216	0	0	351 272	309 944
2010	283 008	173 686	25 034	15 730	100	0	0	0	2 644	1 514	0	0	310 786	190 930
2011	468 508	196 012	25 663	25 248	100	0	0	0	2 695	2 595	0	0	496 966	223 855



## 2. Use of funds from annual royalties paid by mining companies on mining leases and on extracted reserved minerals pursuant to the Mining Act

### Royalties on mining leases

Act No. 44/1988 Coll., on the protection and use of the mineral resources (the Mining Act), imposes an obligation on mining companies, under article 32a) section 1, to pay to the account of the relevant Regional Mining Authority an annual royalties, on the mining lease. The amount of royalties on the mining lease is set at CZK 100 to CZK 1 000 per hectare, and graded with respect to the environmental protection level of the relevant area, the type of activity conducted in the mining lease and its environmental impact.

The ultimate recipient of the mining lease royalties are the municipalities, in whose territory the mining lease is located. These resources are used, in large measure, as compensation for negative impacts of mining on the municipalities in question. As shown in the following table, a total of CZK 391.2 million was paid out to municipalities in 1993–2011 since the inception of royalties payments on mining leases.

### Royalties from mining lease areas paid out to municipalities pursuant to article 32a) sect. 1 of the Mining Act (in CZK thousand)

Year	Number of municipalities	Total
1993	1 327	25 929
1994	1 194	22 752
1995	1 168	24 114
1996	1 225	24 032
1997	1 191	23 446
1998	1 269	22 885
1999	1 208	23 629
2000	1 178	23 780
2001	1 171	23 728
2002	1 168	22 899
2003	1 158	21 740
2004	1 161	21 511
2005	1 138	21 077
2006	1 127	16 178
2007	1 118	15 512
2008	1 305	15 127
2009	1 239	14 925
2010	938	14 032
2011	885	13 888
<b>Total</b>		<b>391 184</b>

### **Royalties on extracted reserved minerals**

The royalties on extracted minerals established under article 32a) section 2 of Act No. 541/1991 Coll., amounts to 10 % of the market price of extracted minerals at the most and, pursuant to section 4, from the royalties yield, pursuant to section 2, the Regional Mining Authority transfers 50 % to the state budget of the Czech Republic and 50 % to the budget of the municipality in whose territory the mining lease is situated. If the mining lease is located in the territory of several municipalities, the Regional Mining Authority distributes the revenue according to the share in mining, similarly to the royalties on a mining lease.

Amendment No. 10/1993 Coll. of the Mining Act established that 50 % of the royalties transferred to the state budget will be used for the purpose of remediation of environmental damage caused by the mining of reserved deposits.

In 2000 a change occurred and article 32a), section 4 of Act No. 366/2000 Coll. established that, of the royalties pursuant to section 2, the Regional Mining Authority shall transfer only 25 % to the state budget of the Czech Republic, from which these funds will be used for the purpose of remediating environmental damage caused by the mining of reserved as well as non-reserved deposits, and that the Regional Mining Authority shall transfer the remaining 75 % to the municipality's budget. Simultaneously, Government Resolution No. 906/2001 and, again, Government Resolution No. 69/2008 approved to divide the 25% of royalties transferred to the state budget into 12.5 % for use by the Ministry of Industry and Trade in remediation of environmental damage caused by the mining of reserved as well as non-reserved deposits, and into 12.5 % for use by the Ministry of the Environment in liquidation of old mine workings.

At the same time, Government Resolution No. 69/2008 approved the transfer of the yield from royalties on extracted minerals pursuant to article 32a section 4 of Act No. 44/1988 Coll., on the protection and use of mineral resources (Mining Act), as amended, via Regional Mining Authorities directly to the income accounts of the budget of the Ministry of Industry and Trade and the Ministry of the Environment starting in 2008.

The table above clearly shows the payment and use of funds for the 1993–2011 period. In 19 years mining companies paid a total of CZK 10.04 billion., of which municipalities received CZK 6.56 billion, and Regional Mining Authorities transferred to the state budget a total of CZK 3.48 billion for remediation of environmental damage caused by the mining of reserved as well as non-reserved minerals, which was subsequently released from the state budget and of which CZK 2.72 billion went to the Ministry of Industry and Trade and CZK 0.76 billion to the Ministry of the Environment.

**Distribution of royalties on extracted reserved minerals pursuant to article 32a) section 4 of the Mining Act (in CZK thousand)**

Year	50% SR (State budget)		50 % Municipalities	Total
1993	230 400		230 526	460 926
1994	245 762		245 276	496 961
1995	221 909		221 566	458 005
1996	229 703		229 703	460 588
1997	228 874		228 874	473 400
1998	220 885		220 886	442 577
1999	219 938		219 938	429 603
2000	227 778		227 859	463 648
<b>Total</b>	<b>1 825 249</b>		<b>1 824 628</b>	<b>3 649 877</b>
	12.5% MPO (Ministry of Industry and Trade)	12.5% MŽP (Ministry of the Environment)	75% Municipalities	Total
2001	153 166	12 500	302 221	472 492
2002	55 000	59 500	356 724	475 632
2003	61 713	61 800	371 827	495 582
2004	70 000	69 500	393 695	532 750
2005	76 398	76 700	449 135	602 509
2006	76 305	76 400	455 947	608 614
2007	82 716	82 300	494 737	659 288
2008	84 367	84 250	505 782	674 399
2009	80 720	80 720	484 556	645 998
2010	73 023	73 023	435 103	580 137
2011	80 714	80 714	484 284	645 712
<b>Total 2001–2011</b>	<b>894 122</b>	<b>757 407</b>	<b>4 734 011</b>	<b>6 385 540</b>
<b>Total 1993–2011</b>	<b>2 719 371</b>	<b>757 407</b>	<b>5 558 639</b>	<b>10 035 417</b>

### **3. Phase-out of mining activities and erasing consequences of coal, ore and uranium mining funded by the state**

The restructuring of industry in the Czech Republic, specifically of metallurgy and engineering, initiated after 1989, had an immediate impact on the mining sector. Uneconomic ore, coal and uranium mining, and a lower raw material demand were the decisive reasons for the restructuring and subsequent privatisation of mining companies. Part of the restructuring of the mining industry was the announcement of a phase-out of mining activities in uneconomic underground mines and quarries.

The essential method of funding the restructuring of the mining sector is provided by subsidies from the state budget, in accordance with relevant Government resolutions, for the phase-out and to erase the consequences of mining operations.

In the initial phase, the phase-out in individual branches of mining occurred independently, mainly because mining companies reported to various departments.

The phase-out of uranium mining was already decided upon in 1989, as based on documents processed by the Federal Ministry of Fuel and Energy, which was approved by ČSSR (Czechoslovak Socialist Republic) Cabinet Resolution No. 94/1989 on the concept of lowering the unprofitability of uranium mining in the ČSSR in 1990, in the 9th and 10th five-year plans by phasing it out. This Cabinet resolution from 1990 was subsequently amended by the Government of the ČSFR (Czechoslovak Federal Republic) with new Government Resolution No. 894/1990 regarding the modification of the phase-out concept for uranium mining in the ČSFR.

In 1990, ore mining was integrated into the Federal Ministry of Metallurgy, Engineering and Electric Engineering which, for the purpose of dealing with ore mining and the announcement of a phase-out programme for the ore mining industry as of 1 July 1990, processed documents for Government proceedings and Government Resolution No. 440/1990 was adopted.

The phase-out of coal mining was announced at the end of 1992 based on Government Resolution No. 691/1992 concerning the programme for restructuring the coal industry, and documents for Government proceedings were processed by the Ministry of Industry and Trade.

Even though the phase-out of ore mining was not completed, a merger of Rudné doly Příbram state enterprise with DIAMO state enterprise occurred as of 1 January 2001, thereby ending the industry-by-industry monitoring of the phase-out, i.e. ore and uranium mining.

Another modification of the reporting method concerning the drawing on state budget funds occurred in 2003, when, in addition to the proposed state participation in the completion of the restructuring of coal mining, Government Resolution No. 395/2003 authorised the transfer of the Barbora locality from OKD, a. s. company to DIAMO state enterprise, and the localities of Ležáky, Kohinoor and of Kladenské doly to Palivový kombinát Ústí state enterprise.

Since the initiation of the phase-out of mining in 1992, a total of CZK 76.2 billion, i.e. an annual average of CZK 4.0 billion, was released from the state budget for the phase-out of mining and to erase the consequences of mining. As shown in the table above, CZK 44.7 billion were spent on technical work related to the phase-out of mining and on erasing the consequences of mining operations, and CZK 31.5 billion on social health benefits for miners.

#### **Additional funds for eliminating the impacts of mining**

The necessity of providing investment to deal with the impacts of in-situ leaching of uranium at Stráž pod Ralskem, beyond the extent of subsidies provided by the state budget, led the Czech Government to a decision, which was adopted on 25 May 2005 by Government Resolution

### Use of state budget subsidies for the phase-out of mining and to erase consequences of mining and mandatory social health expenses (in CZK million)

Year	Mining in total			Coal mining			Ore mining			Uranium mining											
	TÚ	MSZN	Total	TÚ	MSZN	Total	TÚ	MSZN	Total	TÚ	MSZN	Total									
1992	1 100.3	0	1 100.3	555.7	0	555.7	248.0	0	248.0	296.6	0	296.6									
1993	2 555.1	1 436.3	3 991.4	1 816.1	949.7	2 765.8	43.2	189.0	232.2	695.8	297.6	993.4									
1994	3 940.1	1 528.0	5 468.1	2 333.4	1 011.7	3 345.1	35.1	179.6	214.7	1 571.5	336.7	1 908.2									
1995	3 861.1	1 678.1	5 539.2	1 956.8	1 329.9	3 286.7	198.8	36.4	235.2	1 759.3	346.4	2 105.7									
1996	3 755.5	1 823.2	5 578.7	2 168.3	1 422.7	3 591.0	126.7	33.0	159.7	1 486.9	367.0	1 853.9									
1997	2 305.9	1 811.1	4 117.0	1 364.6	1 362.8	2 727.4	100.1	34.9	135.0	836.6	413.4	1 250.0									
1998	2 571.7	1 862.9	4 434.6	1 690.2	1 403.7	3 093.9	94.8	30.2	125.0	979.7	422.9	1 402.6									
1999	2 073.5	1 955.8	4 029.3	1 206.1	1 475.9	2 682.0	79.2	37.6	116.8	787.9	442.2	1 230.1									
2000	2 064.2	1 986.1	4 050.3	1 193.8	1 475.2	2 669.0	158.0	30.2	188.2	712.3	474.9	1 187.2									
2001	2 296.2	1 955.6	4 251.8	1 118.4	1 451.0	2 569.4	part of uranium mining			1 174.6	500.4	1 675.0									
2002	1 729.9	1 913.8	3 643.7	574.9	1 359.2	1 934.1				1 154.8	553.3	1 708.1									
2003	2 148.5	1 751.1	3 899.6	654.4	1 294.2	1 948.6				1 494.1	455.5	1 949.6									
2004	2 576.1	1 713.2	4 289.3	With the merger of s. p. Rudné doly Příbram with s. p. DIAMO and the takeover of phased out areas of OKD, a. s., monitoring on an industry-by-industry basis was terminated																	
2005	2 110.3	1 669.1	3 779.4																		
2006	2 069.8	1 609.3	3 679.1																		
2007	1 917.9	1 574.1	3 492.0																		
2008	1 971.9	1 465.7	3 437.6																		
2009	1 743.5	1 383.5	3 127.0																		
2010	1 239.1	1 257.6	2 496.7																		
2011	652.4	1 149.6	1 802.0																		
<b>Total</b>	<b>44 693.0</b>	<b>31 524.1</b>	<b>76 217.1</b>										<b>16 632.7</b>	<b>14 536.0</b>	<b>31 168.7</b>	<b>1 083.9</b>	<b>570.9</b>	<b>1 654.8</b>	<b>12 950.1</b>	<b>4 610.3</b>	<b>17 560.4</b>

TÚ – technical work related to phase-out and erasing consequences of mining operations

MSZN – mandatory social health expenses

No. 621, with which the government consented to using financial resources from the National Property Fund of the Czech Republic for payment of investment expenses connected with the liquidation of in-situ leaching of uranium in 2006-2012 in the amount of CZK 1 948 million. A subsequent government resolution increased the overall amount to CZK 3 797 million.

In light of the steady decrease in state budget funds used to erase the consequences of mining in recent years, the deficit in 2008 was dealt with by Government Resolution No. 688 on 9. 6. 2008 by releasing CZK 300 million from the sale of privatised assets and the profit from state participation in enterprises in order to fund activities linked with rectifying environmental damage caused by mineral extraction.

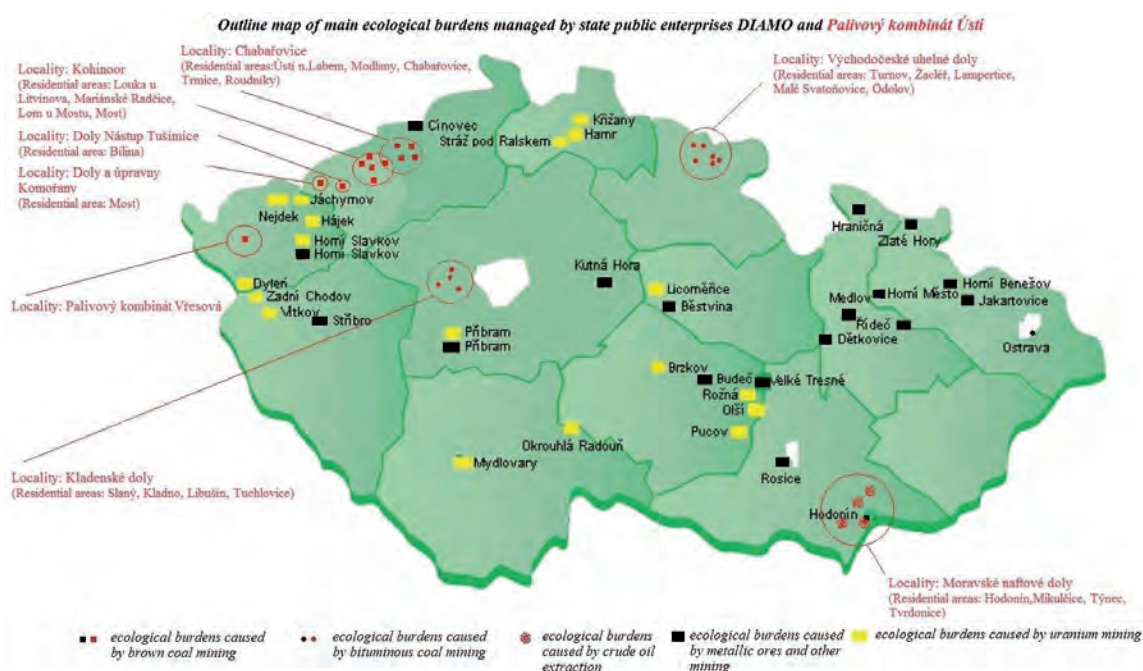
Also, in 2009, the deficit in state budget funds was dealt with, by Czech Government Resolution No. 503 on 20 April 2009, by releasing CZK 300 million from the sale privatised assets and from profit from state participation in enterprises in order to fund activities connected with rectifying environmental damage caused by in-situ leaching of uranium at Stráž pod Ralskem.

The deficit in state budget funds for the liquidation of impacts of mining deepened further in 2010 and 2011 as well, primarily in relation to the elimination of impacts of in-situ leaching of uranium in Stráž pod Ralskem, and this crisis situation had to be dealt with by a new Government Resolution No. 1584 on 21 December 2009 in response to a report on the critical financial situation of state organizations responsible for eliminating the impacts of mining and ecological damage in 2010 and in ensuing years, with which the government approved the use of CZK 1 000 million in 2010 to fund ecological projects performed by DIAMO, state enterprise from resources released by Government Resolution No. 592 on 12 June 2002, in response to the proposed priority projects for the revitalisation of the Moravian-Silesian Region, as amended by Government Resolution No. 119 on 26 January 2009.

In addition, with Government Resolution No. 483 on 21 June 2010, in response to a progress report on the elimination of the effects of mining in 2009 by DIAMO, state enterprise, and Palivový kombinát Ústí, state enterprise, the government approved the release of CZK 1 290 million from the sale of privatised assets and from profit from state participation in enterprises to fund activities connected with rectifying environmental damage caused by in-situ leaching of uranium at Stráž pod Ralskem.

The radical decision was adopted by the government via Government Resolution No. 34 on 11 January 2012, in response to an analyses report on the risks and their impact on the overall cost and expenses of dealing with the effects of in-situ leaching of uranium and related activities in the area of Stráž pod Ralskem and on the method of their funding in 2012–2042. It approved the release of funds, from the sale of privatised assets and from profit from state participation in enterprises to fund activities connected with rectifying environmental damage caused by in-situ leaching of uranium at Stráž pod Ralskem, in the amount of CZK 4 249 million and an additional CZK 400 million to fund ecological activities related to rectifying the effects of mining at other localities of DIAMO, state enterprise.

With these government resolutions, the resources for funding the elimination of mining impacts, primarily however the impacts of in-situ leaching of uranium at Stráž pod Ralskem, were increased beyond the scope of the state budget in 2005–2014 by CZK 10 936 million.





#### 4. Use of proceeds from privatisation of state assets in eliminating old ecological burdens caused by mining prior to privatisation of mining companies

Based on a decision by the Czech Republic Government, the former National Property Fund of the Czech Republic (as of 1 January 2006 the Ministry of Finance, based on Act No. 179/2005 Coll.) pledged, by virtue of “ecological contracts“ entered into with individual assignees of assets from privatisation, to eliminate, with its privatisation proceeds, old ecological burdens created prior to privatisation.

The procedures and process principles for implementing measures leading to remediation of old ecological burdens created prior to privatisation are established in accordance with Government Resolution No. 51 from 10 January 2001.

The process adheres primarily to the following Acts and Resolutions of the Czech Republic Government:

- a) Act No. 92/1991 Coll., on the terms and conditions regarding the transfer of state assets to other persons, as amended;
- b) Act No. 171/1991 Coll., on the responsibility of Czech Republic authorities in cases of transfer of state assets to other persons, and on the National Property Fund of the Czech Republic, as amended;
- c) Government Resolution No. 51 from 10 January 2001, which contains the appendix entitled *Principles for Settlement of Ecological Obligations Arising during Privatisation* (hereinafter Principles), as amended;
- d) Government Resolution No. 212/1997 on the procedure principles during privatisation pursuant to Act No. 92/1991 Coll. and Act No. 171/1991 Coll., which substituted prior Government Resolutions No. 568/1993, No. 393/1994, No. 178/1995, No. 773/1995 and No. 20/1997;
- e) Act No. 137/2006 Coll., on public contracts.

The processing of the programme is always provided by the Ministry of Finance. The Ministry of the Environment provides guaranteed expertise in the process and issues binding opinions on individual process steps. Mutual collaboration of both authorities in this process is regulated by the “Rules for Mutual Collaboration of the Ministry of the Environment and the Ministry of Finance in the Awarding of ‘Ecological Contracts’ to Eliminate Old Ecological Damage”.

The elimination of old ecological damage created prior to privatisation proceeds for the most part according to priorities established by the MŽP ČR (Ministry of the Environment).

#### Overview of entities with which “ecological contracts” were entered into, including guaranteed financial sums and their actual amount drawn (in CZK) – as of 30. 9. 2012

Name of mining company	Amount of guarantee	Drawn from guarantee	Amount available for drawing
DIAMO, státní podnik	4 200 000 000	2 366 335 223.85	1 833 664 776.15
DIAMO, státní podnik	3 797 000 000	3 703 973 378.52	93 026 621.48
OKK Koksovny, a.s.	27 800 000 000	2 620 899 182.33	25 179 100 817.67
Sokolovská uhelná, státní nástupce, a.s.	214 000 000	144 065 634.16	69 934 365.84
Severočeské doly, a.s.	172 265 000	2 146 877.20	170 118 122.80

**5. A programme dealing with ecological damage caused prior to privatisation of brown coal mining companies in the Ústí nad Labem Region and the Karlovy Vary Region, with ecological revitalisation upon termination of mining in the Moravian-Silesian Region, with eliminating ecological burdens caused by the exploration for and extraction of crude oil and natural gas in designated areas of the South Moravian Region, and with reducing impacts caused by the termination of coal mining in the Kladno region based on Government resolutions in 2002 and 2008. Funds are provided by proceeds from privatisation of state assets.**

After the privatisation of mining companies, the financial settlement of related ecological damage was not resolved in an appropriate manner, within the scope of privatisation projects. However within the scope of privatisation, companies took over not only mining localities but also extensive areas from the state, which were designated for revitalisation and for which a required financial reserve was not generated in the past.

Mining companies are only obliged to generate a financial reserve for remediation and reclamation of areas affected by mining since 1994, and that on the basis of Amendment (No. 168/1993 Coll.) of the Mining Act.

In 2002, the Czech Republic Government being aware of this fact began to intervene financially in the ecological and partially economic revitalisation of regions with active or terminated mining operations. The goal was to eliminate environmental damage caused by mining operations prior to implemented legal regulation.

For this purpose it earmarked, from the proceeds from sale of assets designated for privatisation and from the profits of public enterprises, CZK 15 billion to deal with ecological damage created prior to privatisation of brown coal mining companies in the Ústí nad Labem Region and Karlovy Vary Region, CZK 20 billion to deal with ecological damage caused by mineral mining, primarily underground mining of bituminous coal in the Moravia and Silesia Region, CZK 1 billion to eliminate ecological burdens caused by the exploration for and extraction of crude oil and natural gas in the South Moravian Region, and CZK 1.177 billion to deal with reducing the impacts caused by the termination of coal mining in the Kladno region.

The funds from the proceeds from privatisation are released in accordance with Government decisions to cover the expenses of eliminating environmental damage caused by present operations of mining companies, to cover the expenses of and support investment and non-investment activities connected with the remediation of environmental damage caused by mineral mining and to revitalise affected areas, and for financial support of development projects in areas designated for industrial use approved by the Government.

**Dealing with ecological damage created prior to privatisation of brown coal mining companies in the Ústí nad Labem Region and the Karlovy Vary Region**

For more than 150 years, the character of the landscape was affected significantly by intensive opencast and underground mining of brown coal in the Krušné Hory Mts. piedmont area of Northwest Bohemia. Underground mining primarily affected the territory with the deepest seams (up to 450m below the surface) in the central, Most-Bílina area of the basin as well as the Teplice area of the North Bohemian Basin. Opencast mining occurred primarily in areas

of coal seam outcrops southwest of Chomutov, west and east of the City of Most, north of the City of Bilina, northwest of the City of Teplice, southwest and north of the City of Ústí nad Labem.

In 2002, the then National Property Fund of the Czech Republic was bound by resolutions of the Czech Republic Government to eliminate ecological damage caused by the activities of coal mining companies in the Ústí nad Labem Region and the Karlovy Vary Region, and to revitalise affected areas. The process was initiated that same year.

In accordance with a relevant resolution of the Czech Republic Government, the process dealing with ecological damage created prior to privatisation of brown coal mining companies in the Ústí nad Labem Region and the Karlovy Vary Region includes both of the Krušné hory Mts Basin situated in the territory of the Districts of Sokolov, Chomutov, Most, Teplice and of Ústí nad Labem, i.e. the Sokolov Basin and the North Bohemian Basin, or the mining leases of Sokolovská uhelná, a.s., Severočeské doly, a.s., Mostecká uhelná společnost, a.s., Kohinoor, a.s., and Palivový kombinát Ústí, s. p.

The programme mentioned specifies a group of projects aimed primarily at creating and renewing:

- forest stands,
- agricultural land,
- bodies of water,
- landscape vegetation,
- biocorridors and biocentres,
- areas for recreation,
- areas designated for ecology and natural science,
- building sites.

As of 31 December 2009, the funds actually spent on 143 concluded projects amounted to CZK 5.117 billion, and on 66 projects in progress they amounted to CZK 3.530 billion as of the specified date. The remaining financial amount required to secure additional money for the projects in progress amounts to about CZK 1.809 billion according to contracts.

#### **List of companies included in the programme plan**

Sokolovská uhelná, legal successor, a.s. (SU)

Severočeské doly, a.s. (SD)

Mostecká uhelná společnost, a.s. (MUS)

Palivový kombinát Ústí based in Ústí nad Labem (PKÚ)

#### **List of regions (projects of cities and municipalities) included in the programme plan**

Karlovy Vary Region – KK

Ústí nad Labem Region – ÚK

**Projects concluded and projects in progress (in CZK)**

Coal Companies	Projects concluded		Projects in progress		
	Number of projects	Project costs	Number of projects	Project prices	Amount drawn as of 31 Dec 2011
SU	4	379 488 724	21	2 827 642 020	1 912 224 576
SD	19	1 574 653 633	5	419 017 695	171 256 851
MUS	33	409 865 504	19	838 076 899	606 417 575
PKÚ	30	1 890 371 703	11	1 163 175 462	742 957 347
<b>Total 1</b>	<b>86</b>	<b>4 254 379 564</b>	<b>56</b>	<b>5 147 912 076</b>	<b>3 432 856 349</b>

Municipalities Total	Projects concluded		Projects in progress		
	Number of projects	Project costs	Number of projects	Project prices	Amount drawn as of 31 Dec 2011
KK	29	504 056 838	2	27 995 725	13 451 160
ÚK	28	358 628 819	8	162 594 680	83 275 107
<b>Total 2</b>	<b>57</b>	<b>862 685 657</b>	<b>10</b>	<b>190 590 405</b>	<b>96 726 267</b>
<b>Total 1 + 2</b>	<b>143</b>	<b>5 117 065 221</b>	<b>66</b>	<b>5 338 502 481</b>	<b>3 529 582 616</b>

**Revitalisation of the Moravian-Silesian and South Moravian Region**

Currently, the revitalisation of the Moravian-Silesian Region is aimed primarily at eliminating the consequences of ecological burden caused by bituminous coal mining and, in the South Bohemian Region, at eliminating ecological burdens caused by the exploration for and extraction of crude oil and natural gas.

As of 31 December 2011, the funds actually spent on **66** concluded projects amounted to about **CZK 1.096 billion**, and on **60** projects in progress they amounted to about **CZK 2.289 billion** as of the specified date. The remaining financial amount required to secure additional money for the projects in progress amounts to ca **CZK 8.066 billion** according to contracts.

**Categories of priority projects, approved by the Government, which deal with eliminating environmental damage caused by mineral mining in the Moravian-Silesian and South Moravian Region**

1. Reclamation work
2. Reducing thermal activity
3. Comprehensive site development
4. Comprehensive reduction of uncontrolled methane emissions
5. Eliminating old ecological burdens in OKD, a. s.
6. Land development upon termination of mining
7. Eliminating ecological burdens caused by the exploration for and extraction of crude oil and natural gas

**Projects concluded (in CZK)**

<b>Project name</b>	<b>Project costs</b>
<b>1. Reclamation work</b>	
7/03 Reclamation of reservoirs and lands below the Stachanov reservoirs – additional construction work	8 824 451
7/04 Reclamation of the Žofie waste dump	1 950 601
7/06 Drainage of lands south of Kuboň Pond – site A and B	2 377 507
7/10 Remediation of the Václav waste dump – <u>external review AR</u>	36 000
7/15 Development along the Orlovská Stream	6 275 508
7/16 Development along the Sušanky Stream	5 957 512
7/16 Development along the Sušanky Stream – phase II.	2 026 032
7/16 Development along the Sušanky Stream – updated estimate of project documentation	17 850
Final assessment of the “Reclamation of reservoirs and lands below the Stachanov reservoirs – additional construction work” project	42 000
<b>Total 1</b>	<b>27 507 462</b>
<b>2. Reducing thermal activity</b>	
8/01 Survey and monitoring of thermal activity in the Heřmanice waste dump	4 962 696
8/02 Survey and monitoring of thermal activity in the Hedvíka waste dump	6 506 627
8/04 Survey and monitoring of thermal activity in the Heřmanice waste dump – site II	4 224 505
8/05 Survey and monitoring of thermal activity in the Ema waste dump	1 487 696
8/10 Comprehensive remediation of the contaminated area in the Trojice locality – phase I: updated risk assessments of the contaminated area	2 337 570
Examiner’s report: Comprehensive remediation of the contaminated area in the Trojice locality – phase I: updated risk assessments of the contaminated area	46 800
<b>Total 2</b>	<b>19 565 894</b>
<b>3. Comprehensive site development</b>	
9/01 Height measurement in areas with phased out mining operations managed by DIAMO (ODRA) – <u>execution</u>	5 109 270
Height measurement in areas with phased out mining operations	1 094 800
Examiner’s report – Height measurement in areas with phased out mining operations	44 140
Extinguishing of local fire on the Ludvík waste dump in the cadastral area of Radvanice – <u>project</u>	513 600
<b>Total 3</b>	<b>6 761 810</b>
<b>4. Comprehensive reduction of uncontrolled methane emissions</b>	
Comprehensive analysis of the methane problem in connection with old mine workings – study	7 602 000
Examiner’s report on the conceptual solution of the methane problem	35 000
Measures for removing emergency measures regarding methane emissions in the City of Orlová	62 873 211
Reducing verified methane emissions in the City of Orlová – Project Orlová 2 – <u>additional construction work</u>	6 933 219
35/2 Elimination of uncontrolled natural gas emissions from deep exploration boreholes in the area of Trojanovice – <u>survey</u>	18 315 000
35/A Preparing individual methodical procedures of basic activities	1 856 400
Survey of mine gas emissions in areas with phased out coal mining and related health and environmental risks	2 344 300
Reducing verified methane emissions in the City of Orlová – Project Orlová 2	34 503 154

Expert assessment 35/AKT updated project no. 35 – Comprehensive analyses of the methane problem in connection with old mine workings	160 650
35/L1 “Economics of filling underground spaces“	2 261 000
35/L2 Geophysical and borehole survey	1 707 650
35/L3 Scientific-research support for important safety improvements regarding uncontrolled mine gas emissions from old workings, as a result of dealing with residual coal gas capacity and gas bearing capacity of phased out and abandoned mine sections	2 261 000
Reducing verified methane emissions in the City of Orlová from 1.2. to 31.5.2010 – provision of essential safety measures	2 397 600
Reducing verified methane emissions in the City of Orlová from 1.6. to 30.9.2010 – provision of essential safety measures	2 397 600
Reducing verified methane emissions in the City of Orlová from 1.10. 2010 to 31.1.2011 – provision of essential safety measures	2 397 600
Reducing verified methane emissions in the City of Orlová from 1.2. 2010 to 31.5.2011 – provision of essential safety measures	2 397 600
Reducing verified methane emissions in the City of Orlová from 1.6. 2010 to 30.9.2011 – provision of essential safety measures	2 397 600
Methane emissions in locations of plugged shallow boreholes in the cadastral area of Trojanovice – <u>project</u>	780 000
<b>Total 4</b>	<b>153 620 584</b>
<b>5. Eliminating old ecological burdens in OKD, a.s.</b>	
Processing the “Remediation and reclamation of the Kašpárkovice lands“ project	809 200
Processing the “Remediation of the Solca tailing ponds“ project	1 224 510
Processing the “Development of lands including Karvinský Creek in the area of Špluchov – phase 3“ project	1 860 565
Remediation and reclamation of the Křemenec area	113 929 281
Expert assessment of the legitimacy of OKD, a.s. request for approval of Method Changes No. 3 – Křemenec	39 668
Reclamation of waste dump D – reclamation of waste dump D1 and D2	51 126 441
Dolina I land decontamination and reclamation	19 393 615
Louky land reclamation – structure 8	60 525 001
Land development within the scope of revitalising the František locality	376 902 703
František locality – <u>additional construction work</u>	63 260 118
<b>Total 5</b>	<b>689 071</b>
<b>6. Land development upon termination of mining</b>	
Demolition KOBLOV	6 914 610
Demolition HRUŠOV	6 845 432
Project documentation regarding land development within the scope of eliminating environmental damage upon termination of mining – executed in areas no. 1 and 3 of project no. 45	1 543 500
45/01 František premises, phase 1	13 917 808
45/02 František premises, phase 2 – <u>demolition</u>	1 229 793
Ostravice Dam – Hrabová km 12.05, no. st. 237	63 580 471
Remediation of the damaged Ostravice dam body – additional construction work	12 184 996
45/07 Přívoz premises, demolition	10 835 872
45/08 Pokrok premises, demolition	25 498 110
Landslide stabilisation and drainage modification in the area of Bučinský les in the cadastral area of Radvanice and Bartovice – <u>project</u>	1 591 030



Landslide stabilisation and drainage modification in the area of Bučinský les in the cadastral area of Radvanice and Bartovice – <u>supplemental engineering-geological survey</u>	235 620
45/09 Farma VKK 1 Rychvald premises	19 276 732
VKK Rychvald premises – <u>additional construction work</u>	3 321 357
45/12 Land development upon termination of mining by DIAMO, s. p., o. z. ODRA – Hlubina premises	7 057 921
45/14 Land development upon termination of mining by DIAMO, s. p., o. z. ODRA –Barbora premises, phase 2	2 268 698
Humination of the town centre of Orlová Lutyně – <u>study</u>	2 031 687
Reclamation of lands of the former František – Horní Suchá mine – <u>additional construction work</u>	17 729 490
Preparation of a biological assessment according to Act No. 114/1992 Coll., as amended, as part of the land development upon termination of sand and gravel mining – Hlučín	237 600
<b>Total 6</b>	<b>199 768 726</b>
<b>Total 1-6</b>	<b>1 096 295 578</b>

### Projects in progress (in CZK)

Project name	Project price	Project costs thus far
<b>1. Reclamation work</b>		
7/02 Rudná land reclamation, structure 5 (along Polanecká street)	5 722 142	4 997 001
7/03 Remediation and reclamation of reservoirs and lands below the Stachanov reservoirs	54 069 969	38 751 818
7/05 Drainage of waterlogged land at Ščučí – <u>project</u>	7 348 974	7 256 635
7/09 Reclamation of NP 1 lands	116 751 008	38 177 998
7/10 Remediation of the Václav waste dump	19 607 557	18 581 560
7/13 Remediation SALMA	7 125 814	5 714 272
7/14 Reclamation of the Oskar waste dump	6 087 125	4 540 836
7/17 Remediation of the Urx landslide area	6 948 614	6 925 975
7/20 Drainage of waterlogged land in Paskov	6 974 422	2 413 156
7/21 Anti-erosion measures Salma	875 800	592 965
<b>Total 1</b>	<b>231 511 424</b>	<b>127 952 216</b>
<b>2. Reducing thermal activity</b>		
8/08 Long-term monitoring of thermal activity in the Hedvika waste dump – project	3 265 884	1 741 942
<b>Total 2</b>	<b>3 265 884</b>	<b>1 741 942</b>
<b>3. Comprehensive land development</b>		
9/02 Monitoring, measuring and assessment of the area of the Slezkostravsky and Bartovický fault	533 520	366 795
<b>Total 3</b>	<b>533 520</b>	<b>366 795</b>
<b>4. Comprehensive reduction of uncontrolled methane emissions</b>		
Controlled methane drainage from underground areas in the City of Orlová (Project Orlová 3)	110 552 559	8 039 296
35/1 Safeguarding of liquidated Jan Maria pit and remediation of the mining premises	32 103 924	11 134 274
35/D3 Monitoring and maintaining the old mine working during the project execution, methane-screening	21 883 130	11 286 387

35/B "Land categorisation map OKR"	2 260 100	1 330 090
35/D3 Monitoring and maintenance of old mine working with continuous data transfer (4 SDD) – <u>project</u>	2 391 240	933 363
35/J Redesign of existing electrical monitoring system – <u>project</u>	37 784 901	22 751 892
Updated project no. 35 – Comprehensive reduction of methane connected with old mine workings in the Moravian-Silesian Region	1 271 961 696	86 654 389
<b>Total 4</b>	<b>1 478 937 550</b>	<b>142 129 691</b>
<b>5. Eliminating old ecological burdens in OKD, a.s.</b>		
Decontamination and reclamation of sludge tanks – phase III., IV. and V.	261 509 319	224 320 537
Darkov land reclamation, phase I, locality C2	395 034 187	385 804 140
Decontamination and reclamation of the Lazy mine sludge tanks, phase I. and II.	33 744 913	23 648 775
Reclamation of the Lazy waste dump	101 239 436	89 182 390
Rehabilitation of the Zdeněk Nejedlý Park – phase I., remediation of land south of the Karvinský Stream – <u>project</u>	47 642 235	40 780 254
Reclamation at the former OKD Dopravy, site A - <u>construction work</u>	4 702 095	2 454 544
Reclamation of Solecký Hill, structure II	22 454 644	7 748 543
Reclamation of Solecký Hill, structure 2 – <u>additional construction work</u>	4 399 633	0
Regulation of the Stonávka River, km 0.00-2.90 phase A	176 627 804	52 315 551
Regulation of the Stonávka River, km 0.00-2.90 phase A - <u>additional construction work</u>	31 789 848	0
Reclamation of the D1 waste dump – slope adjustment	11 434 914	9 151 084
<b>Total 5</b>	<b>1 090 579 027</b>	<b>835 405 818</b>
<b>6. Land development upon termination of mining</b>		
Huminsation of the town centre of Orlová Lutyně – <u>project documentation</u>	4 440 000	785 180
Reclamation of lands of the former František – Horní Suchá mine	95 200 679	93 765 102
Land stabilisation and drainage modification in the area of the Šporovnice locality in the cadastral area of Radvanice – <u>project</u>	1 779 600	1 048 300
Remediation and reclamation of land upon termination of sand and gravel mining at Hlučina – <u>project documentation</u>	34 508 640	5 733 360
45/11 Comprehensive development of the water channel and canal network on the premises of the Petr Bezruč mine – <u>project documentation</u>	1 920 000	0
Reclamation of former sandpit lands and forest areas in the cadastral area of Sedlnice for recreation purposes – <u>project</u>	2 334 000	1 262 800
Reclamation of former mining land in the cadastral area of Malá Štáhle for leisure and tourism purposes – <u>project</u>	2 208 000	1 150 600
Reclamation of the waterbody in the historic Božena Němcová Park, affected by mining, for leisure activities of residents of the City of Karviná – <u>project</u>	2 346 000	676 500
Reclamation of former mining land in the cadastral area of Horní Benešov – <u>project</u>	2 353 800	839 850
Revitalisation of the Mír Gardens in Svinov – <u>project</u>	201 600	157 300
Revitalisation of the town centre of Doubrava – square – <u>project</u>	120 000	0
Reclamation of the area of Volný Pond and forest lands in the cadastral area of Radvanice for leisure activities	4 911 702	4 095 218
Development of former mining land – Reconstruction of road no.III/472 (Doubrava-Dědina) damaged by mining activities – <u>project documentation</u>	2 398 680	0
Revitalisation of the centre of the Svinov District near the elementary school at Bílovecká 1 – <u>project</u>	270	0

Reclamation of former mining land in the cadastral area of Horní Benešov – Cycle Routes – <u>project</u>	2 146 800	0
45/15 Bezruč premises, phase 2	3 519 309	0
45/20 Potable water conveyance to and from the Alexander premises – <u>project documentation</u>	366 000	0
Reclamation of former mining land in the cadastral area of Horní Benešov – Road Restoration – <u>project</u>	1 131 840	0
Reclamation of former mining land in the cadastral area of Bruntál – “Za mlékárnou“ locality – <u>project documentation</u>	2 397 000	0
Reclamation of former mining land in the cadastral area of Bruntál – “Laguny“ locality – <u>project documentation</u>	2 340 000	0
Remediation and reconstruction of the canal system due to the aftermath of mining impacts of coal mining in Petřvald	353 147 158	0
Documentation pursuant to § 6 of Act No. 100/2001 Coll., on environmental impact assessment; Noise Study and Dispersion Study for the project documentation	228 000	209 000
<b>Total 6</b>	<b>519 999 078</b>	<b>109 723 210</b>
<b>7. Eliminating ecological burdens caused by the extraction of crude oil and natural gas</b>		
Remediation of old ecological burdens – insufficiently plugged probe holes upon termination of the extraction of crude oil and natural gas – Eliminating hazardous conditions at probe hole HR 43	238 149 638	218 201 260
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production – Eliminating hazardous conditions at probe hole HR 44 – <u>additional construction work</u>	38 147 146	0
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production in sector I CHOPAV of the Quaternary of the Morava River	827 179 888	405 015 074
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production in sector II CHOPAV of the Quaternary of the Morava River	706 200 913	403 965 531
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production in sector III CHOPAV of the Quaternary of the Morava River	525 360 000	12 755 043
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production in sector IV CHOPAV of the Quaternary of the Morava River	806 326 171	0
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production in sector V CHOPAV of the Quaternary of the Morava River	709 049 734	0
Remediation of old ecological burdens – inadequately liquidated probe holes of past crude oil and natural gas production in sector VI CHOPAV of the Quaternary of the Morava River	3 179 970 042	31 566 722
<b>Total 7</b>	<b>7 030 383 533</b>	<b>1 071 503 630</b>
<b>Total 1-7</b>	<b>10 355 210 015</b>	<b>2 288 823 302</b>

### Reducing impacts caused by the termination of coal mining in the Kladno region

In the middle of 2002, the Czech Republic Government decided to phase out underground mining of bituminous coal in the Kladno region due to the economic ineffectiveness of mining. This hasty closure of mines in this region brought about, similarly as in the preceding

coal districts, the need to deal with eliminating environmental damage caused by past mining operations in a special way.

In consideration of the situation which developed in the Kladno region, the Czech Republic Government noted the need to reduce the impacts caused by the termination of coal mining in the Kladno region, by issuing Resolution No. 552 on 4 June 2003, dealing with the reduction of impacts caused by the termination of coal mining in the Kladno Region. It agreed with the idea of gradually releasing, according to the means of the National Property Fund of the Czech Republic, an amount of up to **CZK 1.177 billion** from FNM resources starting in 2004 in order to deal with ecological impacts caused by coal mining in the past and with land reclamation. Considering the shortage of funds in order to carry out the “Reclamation of the Tuchlovice Mine Waste Dump“ contract, the Czech Republic Government modified the above-mentioned resolution with Resolution No. 1467 on 20 December 2006, and agreed with the idea of gradually releasing, according to the means of the MF, funds in the amount of up to **CZK 1.427 billion** starting in 2004 from a special account managed by the MF pursuant to article 4 of Act No. 178/2005 Coll., on the termination of the National Property Fund, in order to deal with ecological burdens caused in the past and with land reclamation.

**The following projects are considered essential:**

- eliminating the dangerous conditions at the V Němcích Schöeller mine waste dump
- reclamation of the Tuchlovice mine waste dump

As of 31 December 2011, the funds actually spent on 3 concluded projects amounted to **CZK 0.388 billion** and on 2 projects in progress they amounted to **CZK 0.974 billion** as of the date specified. The remaining financial amount required to secure additional money for projects in progress amount to about **CZK 0.319 billion** according to contracts.

**Projects concluded (in CZK)**

Project name	Project costs
V Němcích Schoeller mine waste dump – eliminating dangerous conditions	234 429 193
Eliminating the dangerous conditions at the V Němcích Schoeller mine waste dump – stage 2, western section	106 862 466
Eliminating the dangerous conditions at the V Němcích Schoeller mine waste dump – additional construction work	46 608 677
<b>Total</b>	<b>387 900 336</b>

**Projects in progress (in CZK)**

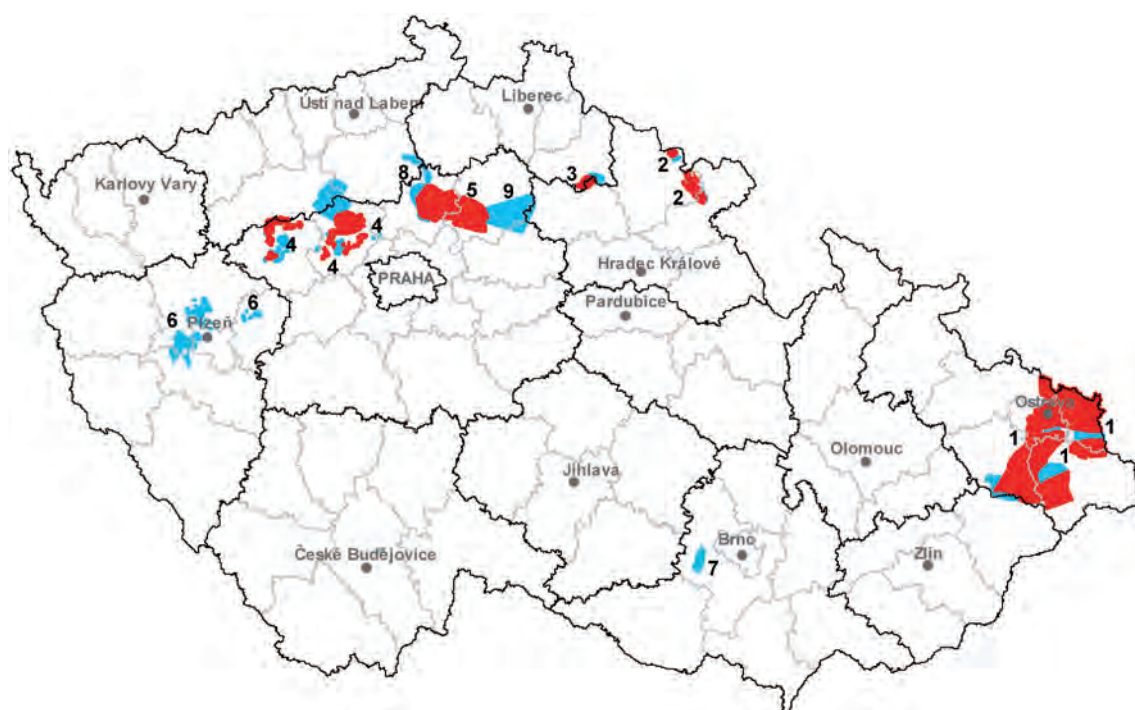
Project name	Project price	Project costs thus far
Reclamation of the Tuchlovice mine waste dump	1 023 419 198	909 182 406
Reclamation of the Schoeller mine waste dump in Libušín	269 016 641	64 441 641
<b>Total</b>	<b>1 292 435 839</b>	<b>973 624 047</b>

# MINERALS CURRENTLY MINED IN THE CZECH REPUBLIC

## ENERGY MINERALS

### Bituminous coal

#### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

#### 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	2007	2008	2009	2010	2011
Deposits – total number	63	62	62	62	62
exploited	9	8	8	8	8
Total mineral *reserves, kt	16 159 327	16 193 970	16 455 297	16 421 504	16 339 004
economic explored reserves	1 566 771	1 523 979	1 543 177	1 536 411	1 518 929
economic prospected reserves	5 876 191	5 928 406	6 011 672	6 009 407	5 998 902
potentially economic reserves	8 716 365	8 741 585	8 900 448	8 875 686	8 821 173
exploitable (recoverable) reserves	182 165	192 182	205 630	168 917	180 729
Mine production, kt	12 462	12 197	10 621	11 193	10 967

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P1, kt	590 300	590 300	590 300	590 300	590 300
P2	–	–	–	–	–
P3	–	–	–	–	–

## 3. Foreign trade

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

		2007	2008	2009	2010	2011
Import	kt	2 532	1 997	1 789	2 022	2 398
Export	kt	6 687	6 112	6 032	6 445	6 257

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 040	3 289	2 390	2 775	3 534
Average export prices	CZK/t	2 307	3 144	2 612	3 015	3 349



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

		2007	2008	2009	2010	2011
Import	kt	725	503	517	787	552
Export	kt	798	777	531	891	517

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 132	5 638	3 365	6 387	6 494
Average export prices	CZK/t	5 630	8 194	4 737	7 291	9 572

## 4. Prices of domestic market

**Average sale prices of bituminous coal EXW (EUR/tonne) recalculated to CZK/tonne with using of Czech National Bank CZK/EUR exchange rate annual averages**

Coal type/Year		2007	2008	2009	2010	2011
coking coal	EUR/tonne	86	137	87	141	181
steam coal	EUR/tonne	48	69	72	63	70
exchange rate	CZK/EUR	27.8	24.9	26.4	25.3	24.6
coking coal	CZK/t	2 391	3 411	2 297	3 567	4 453
steam coal	CZK/t	1 334	1 718	1 901	1 594	1 722

Source:

In 2007 – *New World Resources Annual Report for the year ended December 2007. New World Resources BV, pp. 39, 53.*

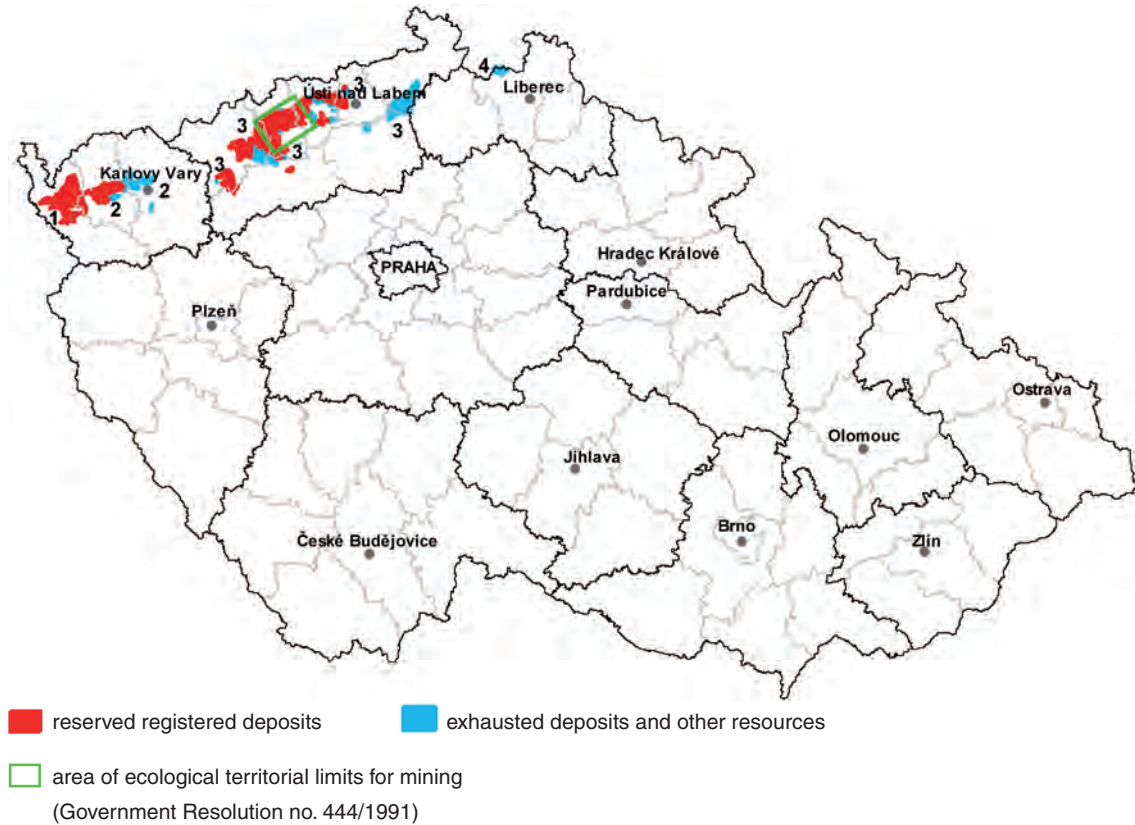
In 2008 – 2011 – *New World Resources Annual Report and Accounts 2011. New World Resources Plc, pp. 31, 35.*

## 5. Mining companies in the Czech Republic as of December 31, 2011

OKD a.s., Ostrava

## Brown coal

### 1. Registered deposits and other resources of the Czech Republic



### Coal basin

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

1 Cheb Basin

2 **Sokolov Basin**

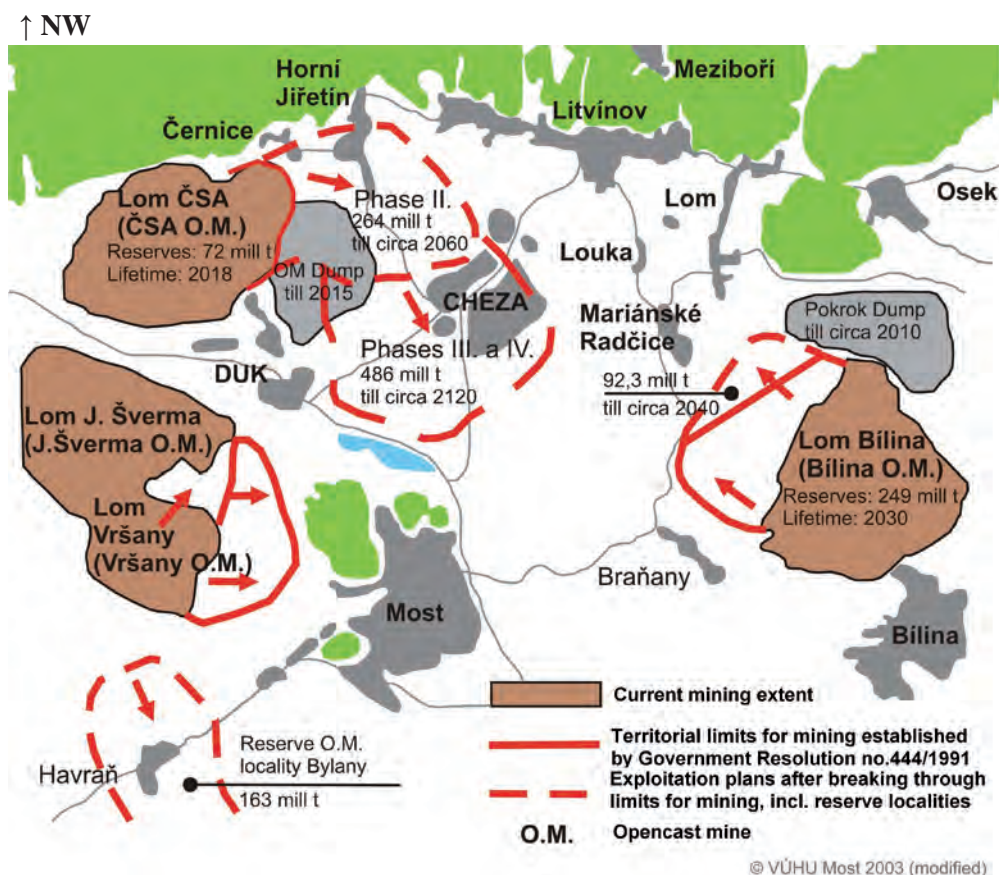
3 **North-Bohemian Basin**

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	2007	2008	2009	2010	2011
Deposits – total number	54	54	54	54	53
exploited	9	9	10	10	10
Total mineral* reserves, kt	9 140 769	9 090 892	9 055 290	8 998 999	8 948 767
economic explored reserves	2 516 982	2 608 212	2 789 379	2 405 345	2 361 825
economic prospected reserves	2 305 437	2 168 466	2 168 466	2 063 444	2 063 444
potentially economic reserves	4 318 350	4 314 214	4 097 445	4 530 210	4 523 498
exploitable (recoverable) reserves	931 488	886 223	862 633	915 100	871 142
Mine production, kt	49 134	47 456	45 354	43 931	46 848

\* 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

#### 2702 – Brown coal, also agglomerated, except jet

		2007	2008	2009	2010	2011
Import	kt	34	75	163	187	236
Export	kt	1 164	1 636	1 300	1 109	1 188

#### 2702 – Brown coal, also agglomerated, except jet

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 371	1 283	1 763	2 106	2 017
Average export prices	CZK/t	1 155	1 228	1 400	1 432	1 426

*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 1.900–2.150 per tonne, as cube coal I at CZK 1.730–1.950 per tonne, and as cube coal II at CZK 1.470–1.790 per tonne. Prices of coarse brown coal dust fluctuated between CZK 812 and 1.169 per tonne, and prices of brown coal industrial mixtures (with a calorific value of 11.4–15.6 MJ/kg) between CZK 705 and 962 per tonne. The industrial mixture from the Doly Nástup Tušimice mine (calorific value of 10.5–11.5 MJ/kg) was offered at CZK 538 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 offers 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.

**Domestic brown coal prices\***

Product specification	2007	2008	2009	2010	2011
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	1 900–2 150
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	1 730–1 950
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	1 470–1 790
coarse coal dust I, II; Severočeské doly	708 –1 023	N	758–1 095	796–1 146	812–1 169
industrial mixture; 10.5–15.6 MJ/kg; Severočeské doly	627–855	N	511–915	691–943	538–962
graded; cube coal; Mostecká uhelná	1 869	1 680–2 015	2 015	N	N
graded; cube coal I; Mostecká uhelná	1 780	1 589–1 910	1 910	N	N
graded; cube coal II; Mostecká uhelná	1 181	995	995	N	N
graded; cobble; Sokolovská uhelná	N	950–1 120	N	N	N
graded; cube coal; Sokolovská uhelná	N	880–1 020	N	N	N
dried brown coal dust; Sokolovská uhelná	N	1 270–1 625	N	N	N

\* Prices given without taxes on solid fuels.

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.

**Price quotations\*) (for home consumption) of Graded Brown Coal Most (THU\*\*) quoted on the Energy Exchange of the Czech Moravian Commodity Exchange Kladno (CZK/tonne)**

Coal type***)	Calorific value Qir (MJ/kg)	2009	2010		2011	
		1. 4. – 31. 12.	1. 1. – 31. 3.	1. 4. – 31. 12.	1. 1. – 31. 3.	1. 4. – 1. 12.
cube	19.90	1 720	1 720	1 737	1 737	1 754
nut 1	20.00	1 650	1 650	1 667	1 667	1 684
nut 2	19.80	920	920	929	929	938

Source: Czech Moravian Commodity Exchange Kladno

Explanations:

\*) Prices are quoted in CZK without VAT, solid fuels tax or any other indirect tax and do not include transport costs

\*\*) THU = tříděné hnědé uhlí

\*\*\*) Regular grain size (mm): cube = 40–100, nut 1 = 20 – 40, nut 2 = 1–20

## **5. Mining companies in the Czech Republic as of December 31, 2011**

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



#### 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	2007	2008	2009	2010	2011
Deposits – total number	28	30	33	34	33
exploited	22	24	27	27	27
Total mineral *reserves, kt	31 118	31 144	31 031	29 015	30 891
economic explored reserves	14 602	15 553	15 440	15 424	20 326
economic prospected reserves	5 163	5 113	4 482	4 475	3 983
potentially economic reserves	11 353	10 478	11 109	9 116	6 582
exploitable (recoverable) reserves	1 793	1 718	1 535	1 415	1 664
Mine production, kt	240	236	217	173	163

\* 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

		2007	2008	2009	2010	2011
Import	kt	7 147	8 142	7 452	7 770	6 969
Export	kt	17	20	22	18	19

### 2709 – Petroleum oils and oils obtained from bituminous minerals, crude

		2007	2008	2009	2010	2011
Average import prices	CZK/t	10 079	12 641	8 115	10 907	14 113
Average export prices	CZK/t	9 975	11 695	8 174	10 334	13 733

### 271011 – Petrol (Gasoline)

		2007	2008	2009	2010	2011
Import	kt	5 469	2 276	697	501	606
Export	kt	171	233	142	220	315

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

**271011 – Petrol (Gasoline)**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 148	4 306	12 653	16 814	18 136
Average export prices	CZK/t	18 245	14 852	13 897	18 366	17 755

*Notice: The conversion 1 000 litres of petrol = 750 kg was used*

**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, 2011**

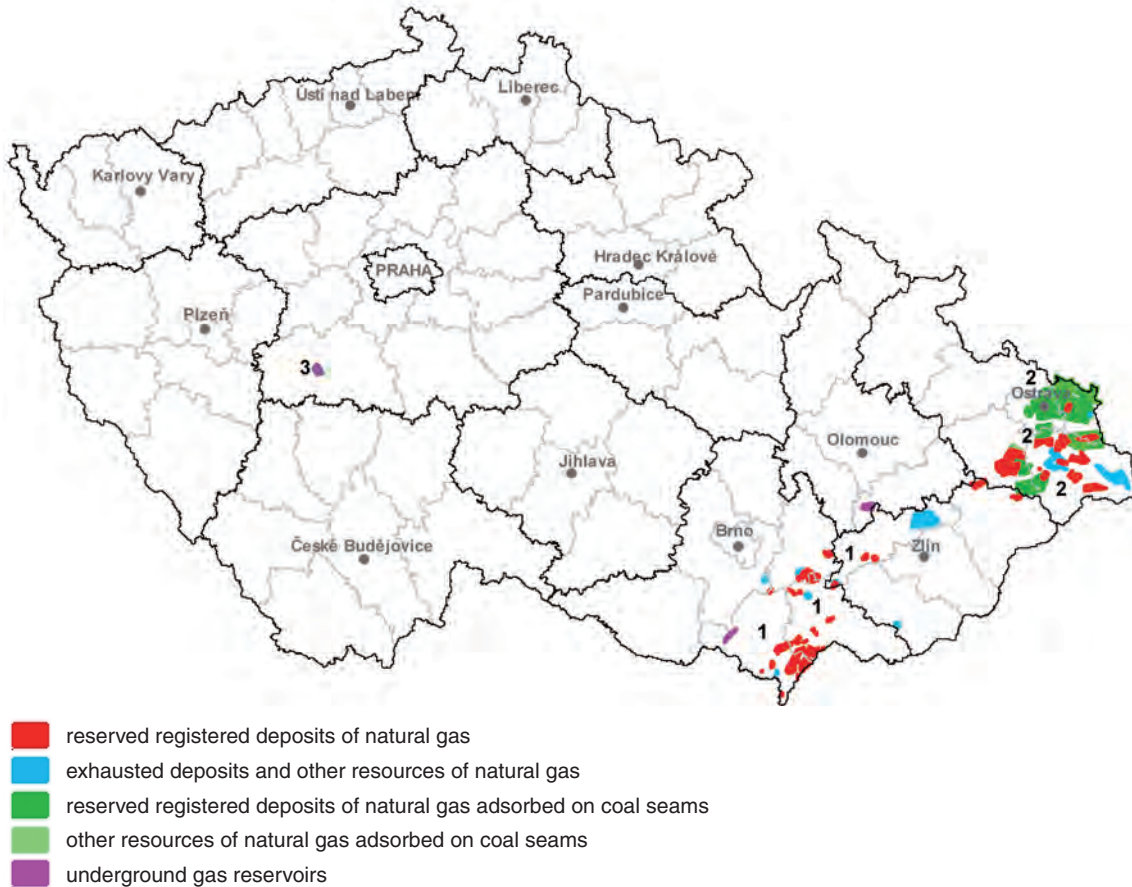
MND a.s., Hodonín

Česká naftařská společnost s.r.o., Hodonín

Unigeo a.s., Ostrava – Hrabová

## Natural gas

### 1. Registered deposits and other resources of the Czech Republic



#### 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	2007	2008	2009	2010	2011
Deposits – total number	85	88	92	94	83
exploited	39	41	49	52	48
Total mineral *reserves, mill m <sup>3</sup>	45 989	46 044	46 140	28 924	30 172
economic explored reserves	4 139	4 265	4 339	6 123	7 374
economic prospected reserves	39 765	39 807	39 895	2 281	2 335
potentially economic reserves	2 085	1 973	1 906	20 520	20 463
exploitable (recoverable) reserves	27 819	27 812	27 846	4 767	4 660
Mine production, mill m <sup>3</sup>	148	168	180	201	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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	mil. m <sup>3</sup>	16 767	16 767	16 767	16 767	16 767
P <sub>2</sub>		–	–	–	–	–
P <sub>3</sub>		–	–	–	–	–

## 3. Foreign trade

### 271121 – Natural gas

		2007	2008	2009	2010	2011
Import	ths m <sup>3</sup>	N	N	N	N	N
Export	ths m <sup>3</sup>	N	N	N	N	N

### 271121 – Natural gas

		2007	2008	2009	2010	2011
Average import prices	CZK/ths m <sup>3</sup>	N	N	N	N	N
Average export prices	CZK/ths m <sup>3</sup>	N	N	N	N	N

#### 4. Prices of domestic market

Prices of domestic producers are open to public incompletely.

In period under consideration company MND a.s. stated for 2010 and 2009 that average price of own production gas was 6.80 CZK/m<sup>3</sup> in 2010 so it was by 9.5 % higher of that in 2009 (6.20 CZK/m<sup>3</sup>).

Unigeo a.s. shows data in its Annual Reports for 2007, 2008, 2009, 2011 which allow to deduct approximate average prices of natural gas supply to local gas distribution system.

	2007	2008	2009	2010	2011
Unigeo a.s. price – CZK/m <sup>3</sup>	5.14	5.50	4.50	N	6.60

#### Trading on the Energy Exchange of the Czech Moravian Commodity Exchange Kladno (CMK BK) with the SSDP (composite natural gas supply services of gas products (commodity)) – price quotation\*) averages weighted by realized quantity

		2010 (traded since 10th August)	2011
To 630 MWh/delivery point (630 MWh = 59 684 m <sup>3</sup> )	CZK/MWh **)	570	696
	CZK/th <sup>s</sup> m <sup>3</sup> ***)	6 017	7 347
Over 630 MWh/ delivery point (630 MWh = 59 684 m <sup>3</sup> )	CZK/MWh **)	516	677
	CZK/th <sup>s</sup> m <sup>3</sup> ***)	5 447	7 146

Source: Czech Moravian Commodity Exchange Kladno

Explanations:

SSDP (*sdružené služby dodávky zemního plynu*) = composite natural gas supply services of gas products (commodity) = natural gas physically delivered into the customers offtake point on the territory of the Czech Republic with obligation of the customer to take delivery of the gas from the distribution network (gas grid) and responsibility of the holder of the natural gas trading licence (supplier) for any deviations in line with relevant legal regulations according to the Energy Act and the relevant implementing and related regulations in force including distribution of natural gas and the system services.

\*) Prices are quoted in CZK without VAT, gas tax or any other indirect tax or similar payment and do not include distribution of natural gas and related services

\*\*) Original format of quoted prices

\*\*\*) Recalculated quoted prices with using of calorific value 1 MWh = 94.74 m<sup>3</sup> of natural gas

#### 5. Mining companies in the Czech Republic as of December 31, 2011

MND a.s., Hodonín

MND Production a.s., Hodonín

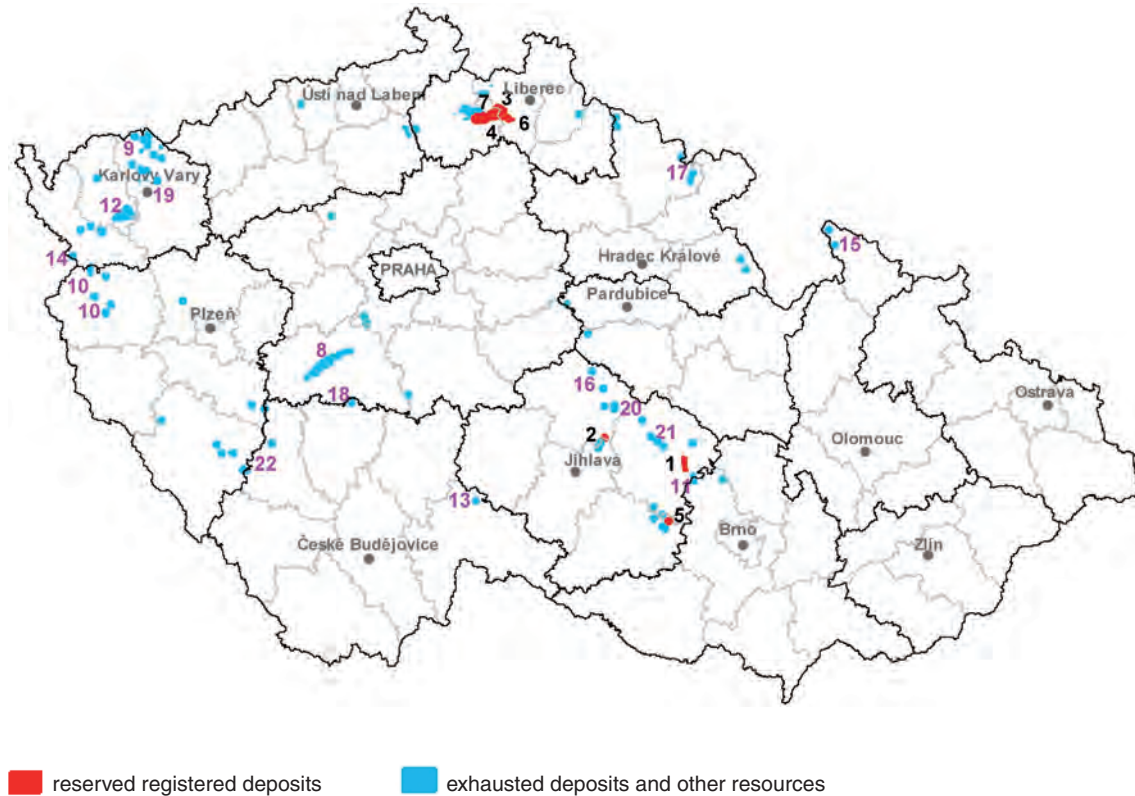
Česká naftařská společnost s.r.o., Hodonín

Unigeo a.s., Ostrava – Hrabová



## Uranium

### 1. Registered deposits and other resources of the Czech Republic



#### Reserved registered deposits

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

1 <b>Rožná</b>	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	2007	2008	2009	2010	2011
Deposits – total number	7	7	7	7	7
exploited	1	1	1	1	1
Total mineral * reserves, t U	135 729	135 553	135 425	135 361	135 276
economic explored reserves	1 677	1 545	1 426	1 416	1 406
economic prospected reserves	19 435	19 428	19 420	19 427	19 402
potentially economic reserves	114 617	114 581	114 579	114 518	114 468
exploitable (recoverable) reserves	643	503	377	374	338
Mine production, t U	322	290	286	259	252
Production of concentrate, t U **	291	261	243	237	216

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , t U	19 025	19 025	19 025	19 025	19 025
P <sub>2</sub> , t U	2 181	2 181	2 181	2 181	2 181
P <sub>3</sub>	–	–	–	–	–

### Other\* prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , t U	202 827	202 827	202 827	202 827	202 827
P <sub>2</sub> , t U	16 522	16 522	16 522	16 522	16 522
P <sub>3</sub>	–	–	–	–	–

\* Prognostic resources of uranium-bearing sandstones type in the Bohemian Cretaceous Basin, unexploitable at the present time

### 3. Foreign trade

#### 28441030 – Natural uranium – wrought

		2007	2008	2009	2010	2011
Import	t U	0	0	0	0	0
Export	t U	420	131	103	169	176

#### 28441030 – Natural uranium – wrought

		2007	2008	2009	2010	2011
Average import prices	CZK/kg U	–	–	–	–	–
Average export prices	CZK/kg U	1 764	2 491	3 771	3 522	3 032

### 4. Prices of domestic market

Extracted uranium is exported.

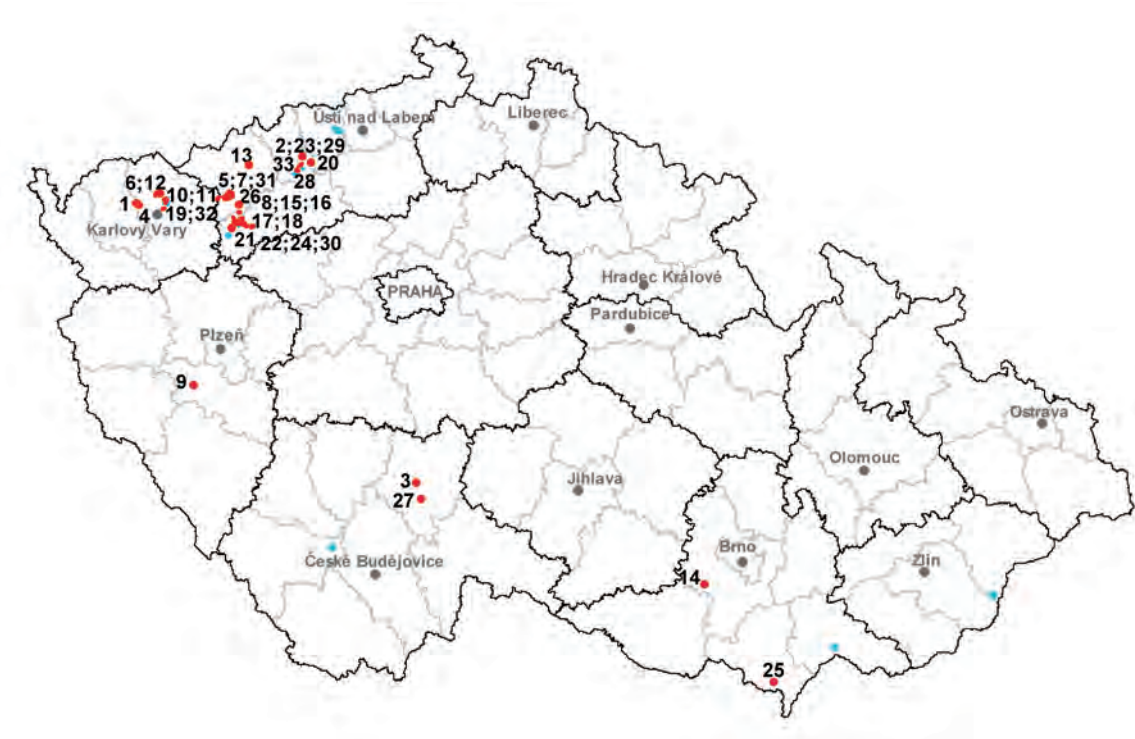
### 5. Mining companies in the Czech Republic as of December 31, 2011

DIAMO, s. p., Stráž pod Ralskem

## INDUSTRIAL MINERALS

### Bentonite

#### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| 1 <b>Božičany-Osmosa-jih</b>      | 18 Krásný Dvůr-Vysoké Třebušice |
| 2 <b>Braňany-Černý vrch</b>       | 19 Lesov                        |
| 3 <b>Maršov u Tábora</b>          | 20 Liběšice                     |
| 4 <b>Mírová</b>                   | 21 Nepomyšl                     |
| 5 <b>Rokle</b>                    | 22 Nepomyšl-Velká               |
| 6 <b>Ruprechtov</b>               | 23 Obrnice-Vtelno               |
| 7 Blov-Krásný Dvoreček            | 24 Podbořany-Letov              |
| 8 Blšany 2                        | 25 Poštorná                     |
| 9 Dnešice-Plzeňsko-jih            | 26 Račetice                     |
| 10 Hájek 1                        | 27 Rybova Lhota                 |
| 11 Hájek 2                        | 28 Stránce                      |
| 12 Hroznětín-Velký Rybník         | 29 Střimice 1                   |
| 13 Chomutov-Horní Ves             | 30 Veliká Ves-Nové Třebčice     |
| 14 Ivančice-Réna                  | 31 Vlkaň                        |
| 15 Krásný Dvůr-Brody              | 32 Všeborovice                  |
| 16 Krásný Dvůr-Podbořany          | 33 Vtelno-Sedlec u Obrnic       |
| 17 Krásný Dvůr-Vysoké Třebušice 1 |                                 |

*Names of mined deposits are indicated in bold type*

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	29	29	30	32	33
exploited	4	4	4	6	6
Total mineral *reserves, kt	317 813	319 613	303 313	304 673	292 159
economic explored reserves	50 895	51 228	60 598	62 401	73 849
economic prospected reserves	162 625	163 176	139 809	139 670	116 400
potentially economic reserves	104 293	105 209	102 906	102 602	101 910
exploitable (recoverable) reserves	18 901	18 760	27 434	28 402	29 599
Mine production, kt**	335	235	177	183	160

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kt	23 792	23 792	23 792	23 792	23 792
P <sub>2</sub> ,	kt	36 874	36 874	36 874	36 874	36 874
P <sub>3</sub>		–	–	–	–	–

## 3. Foreign trade

### 250810 – Bentonite

		2007	2008	2009	2010	2011
Import	kt	25	24	25	19	39
Export	kt	97	105	100	120	144

### 250810 – Bentonite

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 936	3 714	3 370	2 738	5 500
Average export prices	CZK/t	2 307	2 134	2 760	2 626	3 134

**250820 – Decolourizing earths and fuller's earth**

		2007	2008	2009	2010	2011
Import	kt	0	0	1	0	0
Export	kt	0	0	0.5	0	0

**250820 – Decolourizing earths and fuller's earth**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	–	5 372	–	–	–
Average export prices	CZK/t	–	42 308	–	–	–

**4. Prices of domestic market**

Technical bentonites applicable as a sealant, backfill material or as an additive in fertilizers, are not indicated by mining companies. Around 2005 they were offered from CZK 2 500 per tonne. Bentonite cat litter (lumping) in 5 – 40 kg package is offered for 8.50 – 12 CZK per kilogramme.

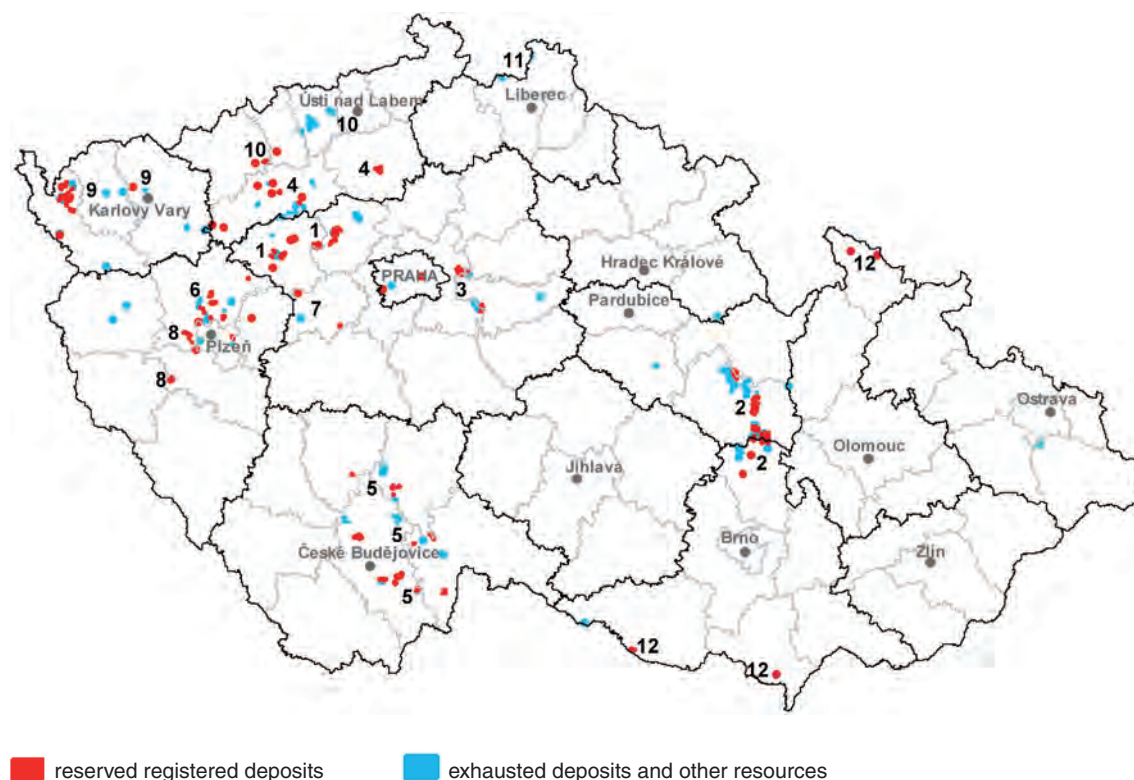
**5. Mining companies in the Czech Republic as of December 31, 2011**

Sedlecký kaolin a.s., Božičany  
KERAMOST a.s., Most



## Clays

### 1. Registered deposits and other resources of the Czech Republic



#### Major deposit areas:

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

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

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	106	106	106	108	108
exploited	21	19	18	18	17
Total mineral *reserves, kt	927 520	927 639	925 714	924 112	925 554
economic explored reserves	185 168	179 551	180 311	180 945	180 393
economic prospected reserves	396 645	397 614	402 944	401 419	401 667
potentially economic reserves	345 707	350 474	342 459	341 748	343 494
exploitable (recoverable) reserves	46 248	42 301	47 273	46 990	51 742
Mine production, kt	679	574	377	429	498

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	330 710	330 710	330 710	330 710	330 710
P <sub>2</sub> , kt	38 196	38 196	38 196	38 196	38 196
P <sub>3</sub>	–	–	–	–	–

## 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

		2007	2008	2009	2010	2011
Import	t	70 556	64 753	47 192	52 332	78 294
Export	t	201 953	216 106	223 080	242 640	293 909

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 027	3 673	4 384	3 978	4 807
Average export prices	CZK/t	2 485	2 370	2 435	2 374	2 568

**250830 – Refractory (fire) clay**

		2007	2008	2009	2010	2011
Import	t	23 275	14 171	9 459	12 332	13 242
Export	t	31 830	30 666	20 996	22 361	22 536

**250830 – Refractory (fire) clay**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 932	2 250	3 024	3 092	3 264
Average export prices	CZK/t	1 331	1 183	1 294	1 226	1 197

**250840 – Other clays**

		2007	2008	2009	2010	2011
Import	t	14 055	16 478	4 840	12 667	14 856
Export	t	11 405	11 098	50 494	51 453	73 450

**250840 – Other clays**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	3 038	1 995	4 334	1 759	1 602
Average export prices	CZK/t	2 237	2 096	857	916	846

**250870 – Chamotte or dinas earth**

		2007	2008	2009	2010	2011
Import	t	2 862	3 026	3 035	4 422	5 005
Export	t	61 127	68 934	52 005	48 679	54 068

**250870 – Chamotte or dinas earth**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 617	4 147	4 609	5 341	5 845
Average export prices	CZK/t	3 405	3 301	3 806	3 822	3 958

#### 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 3,800–5,700 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 330–1,627 per tonne, from Vackov CZK 200–675 per tonne, and from Suchá CZK 665–1,318 per tonne, etc.

#### 5. Mining companies in the Czech Republic as of December 31, 2011

LB MINERALS, s.r.o., Horní Bříza

KERAMOST a.s., Most

České lupkové závody a.s., Nové Strašecí

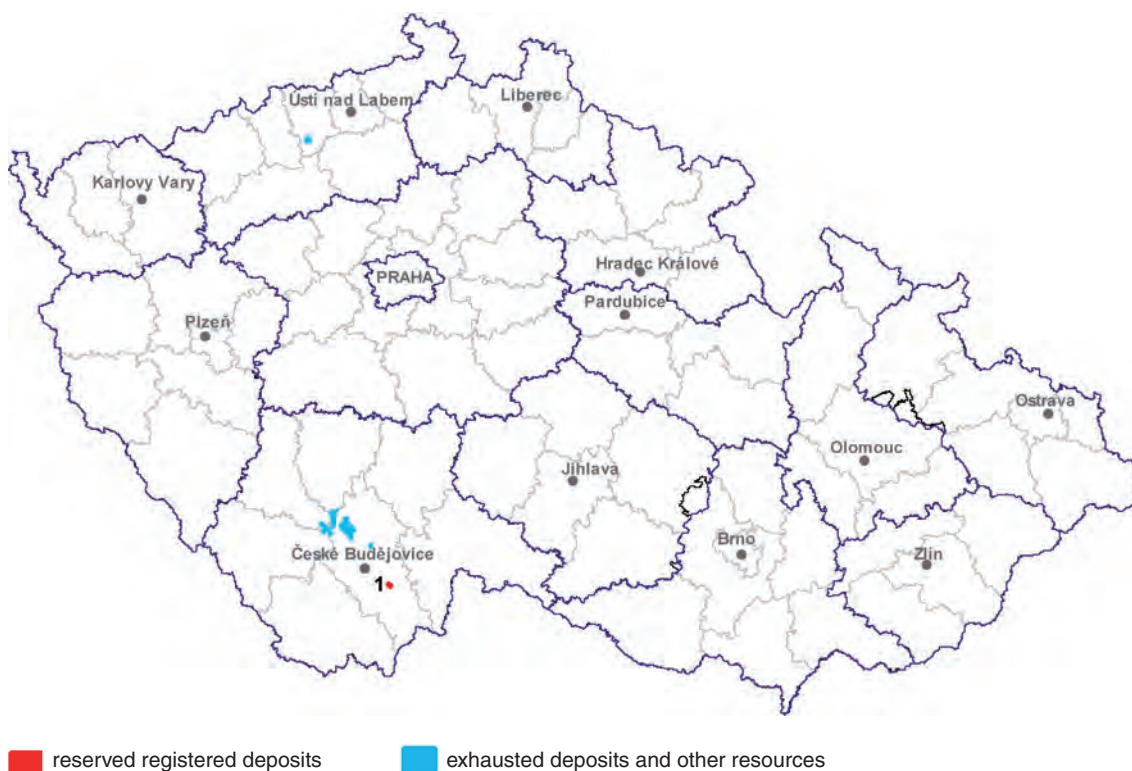
P-D Refractories CZ a.s., Velké Opatovice

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

Kaolin Hlubany, a.s.

## Diatomite

### 1. Registered deposits and other resources of the Czech Republic



1 Borovany-Ledenice

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

#### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	1	1	1	1	1
exploited	1	1	1	1	1
Total mineral *reserves, kt	4 432	4401	4 401	4 367	4 318
economic explored reserves	4 104	4073	4 073	4 039	3 990
economic prospected reserves	328	328	328	328	328
potentially economic reserves	0	0	0	0	0
exploitable (recoverable) reserves	4 412	4 381	4 381	4 349	4 303
Mine production, kt	19	31	0*	32	46

\* 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

		2007	2008	2009	2010	2011
Import	t	3 273	4 824	3 175	2 753	3 263
Export	t	3 616	4 166	3 599	4 230	5 182

#### 2512 – Siliceous fossil meal\*, siliceous earth

		2007	2008	2009	2010	2011
Average import prices	CZK/t	10 803	7 034	8 292	8 690	8 155
Average export prices	CZK/t	8 825	9 029	8 072	6 671	5 684

Note: \* diatomite

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

		2007	2008	2009	2010	2011
Import	t	3 697	3 220	2 173	726	2 452
Export	t	4 684	191	43	19	50

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	7 609	8 524	6 977	6 298	2 913
Average export prices	CZK/t	3 055	15 160	60 533	12 389	62 086

### 4. Prices of domestic market

Diatomite for filtration purposes is sold domestically for CZK 14–16 thousand per tonne based on various parameters (filtration velocity, bulk density, pH).

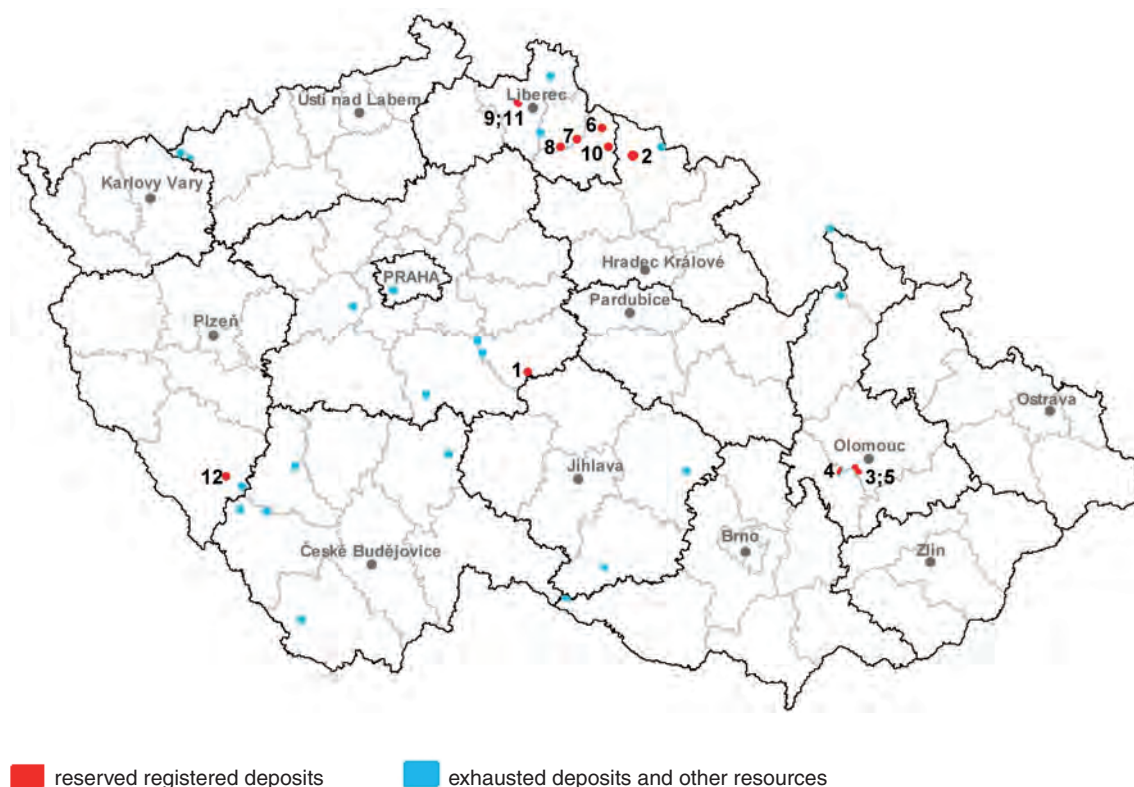
### 5. Mining companies in the Czech Republic as of December 31, 2011

LB MINERALS, s.r.o., Horní Bříza



## Dolomite

### 1. Registered deposits and other resources of the Czech Republic



### Principal areas of deposits presence a podzemní zásobník plynu Příbram:

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

1 **Bohdaneč**

2 **Lánov**

3 Bystročice

4 Čelechovice na Hané

5 Hněvotín

6 Horní Rokytnice

7 Jesenný-Skalka

8 Koberovy

9 Kryštofovo Údolí

10 Křížlice

11 Machníň-Karlov pod Ještědem

12 Podmokly

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	12	12	12	12	12
exploited	2	2	2	2	2
Total mineral *reserves, kt	514 168	513 719	513 382	512 996	512 627
economic explored reserves	79 041	78 600	78 277	77 959	77 608
economic prospected reserves	340 843	340 843	340 843	340 843	340 843
potentially economic reserves	94 284	94 276	94 262	94 194	94 176
exploitable (recoverable) reserves	4 412	4 381	4 381	4 349	10 229
Mine production, kt	385	449	337	385	369

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	23 946	23 946	23 946	23 946	23 946
P <sub>2</sub>	–	–	–	–	–
P <sub>3</sub>	–	–	–	–	–

## 3. Foreign trade

### 2518 – Dolomite calcined, roughly trimmed or cut; agglomerated

		2007	2008	2009	2010	2011
Import	t	493 559	588 025	417 189	432 068	455 545
Export	t	19 908	22 613	18 303	15 133	7 209

### 2518 – Dolomite calcined, roughly trimmed or cut; agglomerated

		2007	2008	2009	2010	2011
Average import prices	CZK/t	224	239	244	202	182
Average export prices	CZK/t	2 389	2 379	2 563	2 569	2 626

#### 4. Prices of domestic market

Prices of lump dolomite start at CZK 185 per tonne and dolomite aggregates are sold for CZK 695 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	2011
Dolomite aggregates, CZK/t	210–350	210–350	210–350	210-350	210-695
Ground calcitic dolomite bulk, CZK/t	540–640	600–690	600–700	620-700	622-694
Ground calcitic dolomite, bagged, CZK/t	1 580	1 615	1 615	1 615	1 615

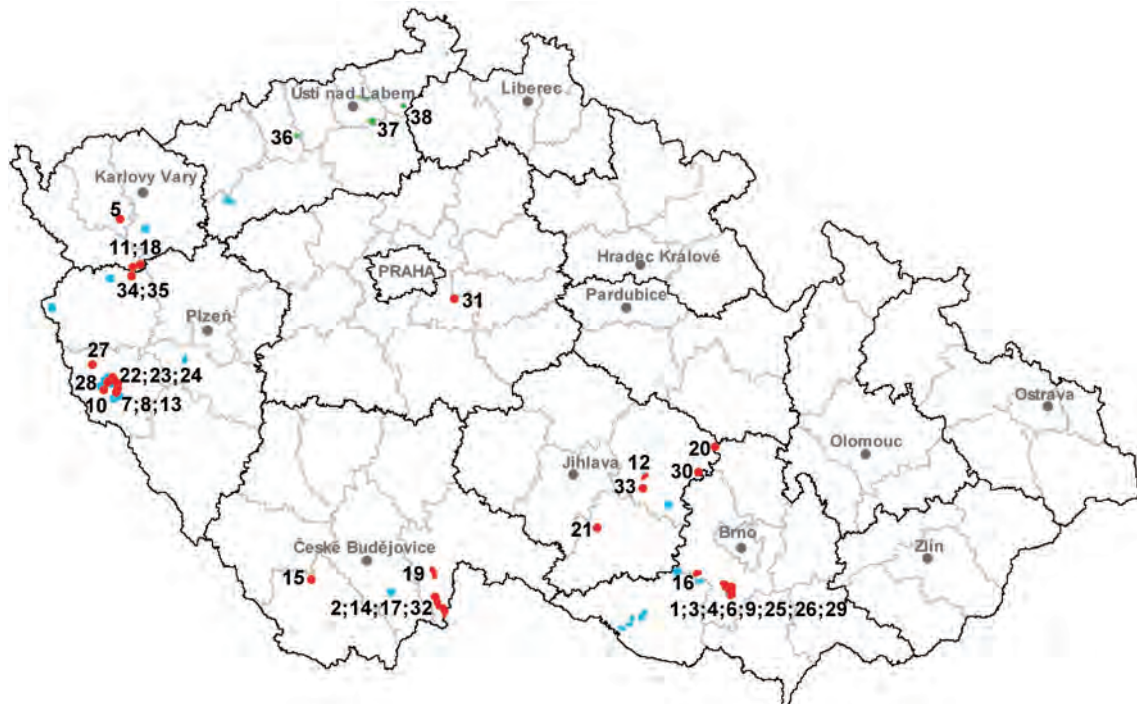
#### 5. Mining companies in the Czech Republic as of December 31, 2011

Krkonošské vápenky Kunčice, a.s.

UNIKOM a.s., Kutná Hora

## Feldspar

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

#### Feldspar minerals:

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

1 <b>Bratčice</b>	12 Bory-Olší	24 Meclov-západ
2 <b>Halámky</b>	13 Bozdíš	25 Medlov
3 <b>Hrušovany u Brna</b>	14 Dvory nad Lužnicí-Tušť	26 Medlov-Smolín
4 <b>Hrušovany u Brna-Protlas</b>	15 Chvalšiny	27 Mutěnin
5 <b>Krásno-Vysoký Kámen</b>	16 Ivančice-Němčice	28 Ohnišovice-Za Kulichem
6 <b>Ledce-Hrušovany u Brna</b>	17 Krabonoš	29 Smolín-Žabčice
7 <b>Luženičky</b>	18 Křepkovice-Nezdice	30 Smrček
8 <b>Mračnice</b>	19 Majdalena	31 Štíhllice
9 <b>Žabčice-Smolín</b>	20 Malé Tresné*	32 Tušť-Halámky
10 <b>Ždánov</b>	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

*Names of mined deposits are indicated in bold type***2. Basic statistical data of the Czech Republic as of December 31****Feldspar****Number of deposits; reserves; mine production**

Year	2007	2008	2009	2010	2011
Deposits – total number	33	34	34	35	35
exploited	10	8	8	8	9
Total mineral *reserves, kt	71 092	69 234	68 788	68 696	68 276
economic explored reserves	30 126	28 594	28 176	27 784	27 392
economic prospected reserves	27 220	26 829	26 804	27 107	27 079
potentially economic reserves	13 746	13 811	13 808	13 805	13 805
exploitable (recoverable) reserves	15 213	14 625	16 666	15 960	24 940
Mine production, kt	514	488	431	388	407

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>**

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	19 737	48 530	48 530	48 530	48 530
P <sub>2</sub>	–	–	–	–	–
P <sub>3</sub>	–	–	–	–	–

### Number of deposits; reserves; mine production Feldspar substitutes (nepheline phonolites)

Year	2007	2008	2009	2010	2011
Deposits – total number	3	3	3	3	3
exploited	1	1	1	1	1
Total mineral *reserves, kt	200 005	199 969	199 946	199 927	199 905
economic explored reserves	0	0	0	0	0
economic prospected reserves	200 005	199 969	199 946	199 927	199 905
potentially economic reserves	0	0	0	0	0
exploitable (recoverable) reserves	21 659	21 623	24 376	24 357	24 335
Mine production, kt	25	36	23	19	22

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub>	–	–	–	–	–
P <sub>2</sub> , kt	52 900	52 900	52 900	52 900	52 900
P <sub>3</sub>	–	–	–	–	–

## 3. Foreign trade

### 252910 – Feldspar

		2007	2008	2009	2010	2011
Import	kt	13	11	5	6	7
Export	kt	186	172	137	130	167

### 252910 – Feldspar

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 681	2 586	3 205	2 972	2 865
Average export prices	CZK/t	991	942	875	889	947



**252930 – Leucite, nepheline and nepheline syenite**

		2007	2008	2009	2010	2011
Import	kt	2	2	1	2	2
Export	kt	0.004	0	0.04	0.002	0.002

**252930 – Leucite, nepheline and nepheline syenite**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	7 045	6 413	6 893	6 170	6 635
Average export prices	CZK/t	29 858	–	7 132	9 709	10 000

**4. Prices of domestic market**

Potassium feldspar is sold domestically for CZK 400–1 750 per tonne, sodium-potassium feldspar for CZK 500–2 900 per tonne and sodium-calcium feldspar for CZK 720–3 600 per tonne.

**Average prices of traded feldspar on the domestic market**

Product specification	2007	2008	2009	2010	2011
feldspar Krásno, ŽK 05 Ž 55 NaK 60, CZK/t	560	560	560	560	N
feldspar Krásno, Ž 55 NaK 60, CZK/t	582	582	582	582	N
feldspar Krásno, Ž 55 NaK 60 – ground, CZK/t	2 350	2 350	N	N	N

**5. Mining companies in the Czech Republic as of December 31, 2011**

LB MINERALS, s.r.o., Horní Bříza

KMK GRANIT, a.s., Krásno

Družstvo DRUMAPO, Němčičky

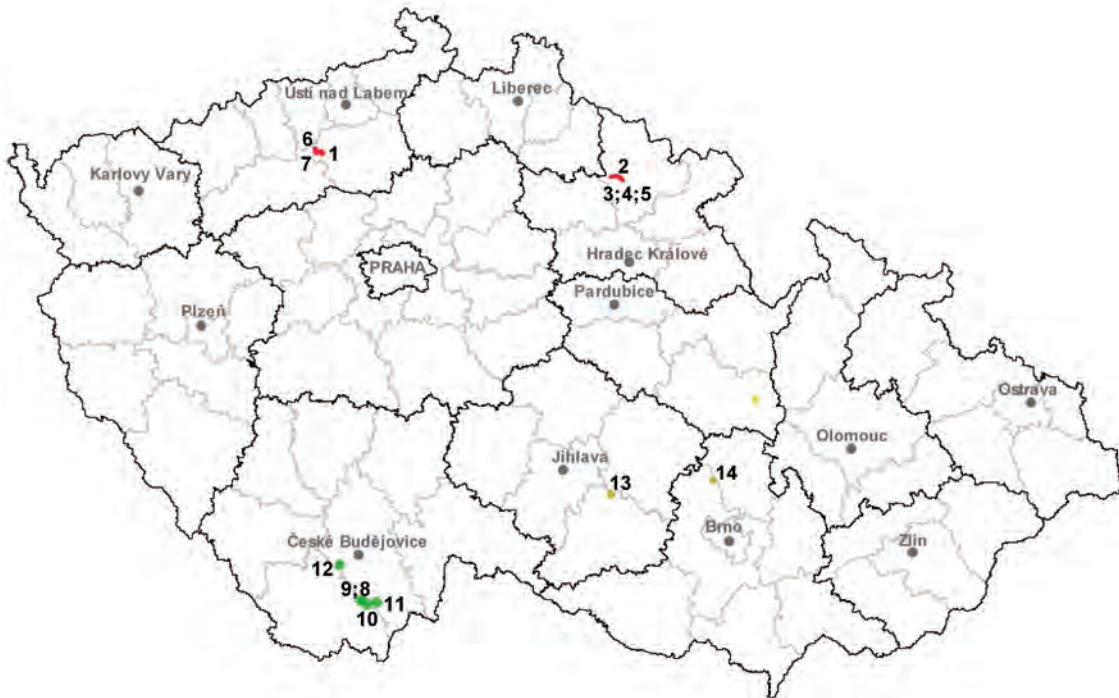
České šterkopísky spol. s r.o., Praha

AGRO Brno – Tuřany, a.s.

KERAMOST a.s., Most (feldspar nepheline phonolites substitutes)

## Gemstones

### 1. Registered deposits and other resources of the Czech Republic



- 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

Pyrope-bearing rock:	Moldavite-bearing rock:	Other gemstones:
<b>1 Podsedice-Dřemčice</b>	<b>8 Ločenice-Chlum</b>	13 Bochovice *
2 Vestřev	9 Besednice	14 Rašov **
3 Dolní Olešnice	10 Chlum nad Malší-východ	
4 Horní Olešnice 1	11 Slavče-sever	
5 Horní Olešnice 2	12 Vrábče-Nová Hospoda	
6 Linhorka-Staré		
7 Třebívlice		

\* *amethyst*, \*\* *opal*

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

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	13	13	14	14	14
exploited <sup>b)</sup>	4	3	2	2	3
Total mineral *reserves, kt <sup>a)</sup>	19 155	19 131	19 510	19 487	19 471
economic explored reserves <sup>a)</sup>	3 384	3 360	3 328	3 305	3 288
economic prospected reserves <sup>a)</sup>	12 882	12 882	13 283	13 283	13 002
potentially economic reserves <sup>a)</sup>	2 889	2 889	2 899	2 899	3 181
exploitable (recoverable) reserves <sup>a)</sup>	180	1 249	1 216	1 193	1 176
Total mineral *reserves, m <sup>3</sup> <sup>c)</sup>	766 519	397 077	339 132	793 865	729 718
economic explored reserves <sup>c)</sup>	0	0	0	190 078	169 362
economic prospected reserves <sup>c)</sup>	763 420	393 978	336 033	600 688	557 257
potentially economic reserves <sup>c)</sup>	3 099	3 099	3 099	3 099	3 099
exploitable (recoverable) reserves <sup>c)</sup>	587 008	217 570	159 625	732 136	667 589
Total mineral *reserves, kt (1 m <sup>3</sup> =1.8 t) <sup>c)</sup>	1 380	715	610	1 429	1 313
economic explored reserves <sup>c)</sup>	0	0	0	342	305
economic prospected reserves <sup>c)</sup>	1 374	709	605	1 081	1 003
potentially economic reserves <sup>c)</sup>	6	6	6	6	6
exploitable (recoverable) reserves <sup>c)</sup>	1 057	392	287	1 318	1 202
Mine production, kt <sup>a)</sup>	34	24	26	23	17
Mine production, ths m <sup>3</sup> <sup>c)</sup>	114	99	58	57	65
Mine production, kt <sup>c)</sup> (1 m <sup>3</sup> = 1.8 t)	205	177	104	103	117

\* 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, one deposit of pyrope, two deposits of moldavite in 2011.

c) moldavite-bearing rock

**Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>**

Year		2007	2008	2009	2010	2011
P <sub>1</sub>		–	–	–	–	–
P <sub>2</sub> ,	a) t	100	100	100	100	100
P <sub>2</sub> ,	b) kt	749	749	749	749	749
P <sub>2</sub> ,	c) ths m <sup>3</sup>	66 000	66 000	66 000	66 000	66 000
P <sub>2</sub> ,	c) kt	119	119	119	119	119
P <sub>3</sub>		–	–	–	–	–

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**

		2007	2008	2009	2010	2011
Import	kg	317	322	283	156	325
Export	kg	185	46	55	67	32

**7102 – Diamonds, whether or not worked, but not mounted or set**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	410 814	977 435	851 025	2 129 526	1 517 606
Average export prices	CZK/kg	109 135	2 850 022	1 605 673	1 885 761	7 862 188

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

		2007	2008	2009	2010	2011
Import	kg	147 541	222 338	173 606	311 474	375 345
Export	kg	2 230	601	1 495	1 346	1 284

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

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	199	205	230	126	122
Average export prices	CZK/kg	4 060	12 156	16 012	3 779	178 794

**251320 – Emery, natural corundum, natural garnet and other natural abrasives**

		2007	2008	2009	2010	2011
Import	t	4 037	2 240	987	1 213	1 393
Export	t	374	155	45	47	68

**251320 – Emery, natural corundum, natural garnet and other natural abrasives**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	5 513	6 541	7 385	6 281	6 467
Average export prices	CZK/t	7 870	8 789	17 394	39 921	32 576

#### 4. Prices of domestic market

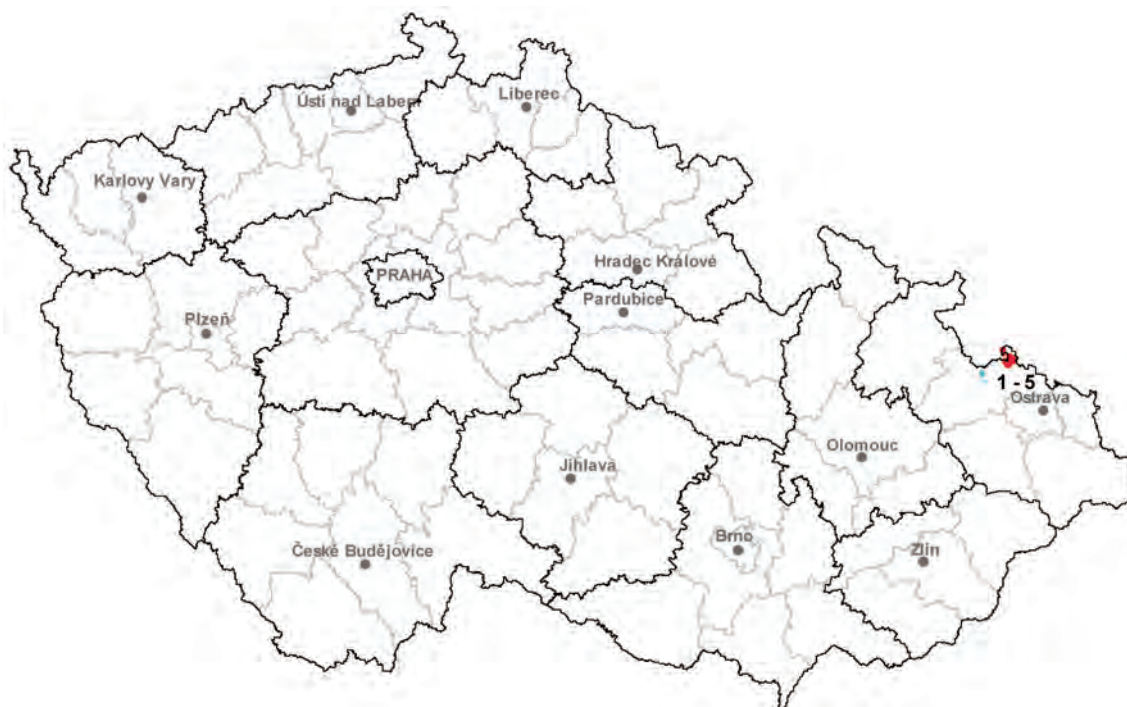
The international gemstone trade is currently so globalized that no substantial price differences exist anywhere in the world including the Czech Republic. The only difference is that rather lower-quality gemstones are imported due to lower purchasing power as well as to less experienced jewellers and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

#### 5. Mining companies in the Czech Republic as of December 31, 2011

Granát, družstvo umělecké výroby, Turnov  
MAWE CK s.r.o., Český Krumlov

## Gypsum

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

1 **Kobeřice ve Slezsku-jih**

2 **Kobeřice ve Slezsku-sever**

3 Rohov-Strahovice

4 Sudice

5 Třebom

*Names of mined deposits are indicated in bold type*

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	5	5	5	5	5
exploited	1	1	1	1	1
Total mineral *reserves, kt	504 349	504 295	504 276	504 269	504 256
economic explored reserves	119 222	119 168	119 149	119 142	119 129
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
exploitable (recoverable) reserves	2 391	2 328	2 308	2 301	2 288
Mine production, kt	66	35	13	5	11

\* 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

		2007	2008	2009	2010	2011
Import	t	60 027	77 320	86 641	55 096	57 962
Export	t	107 180	100 038	12 677	48 606	103 362

### 252010 – Gypsum, anhydrite

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 124	1 860	2 006	2 017	2 094
Average export prices	CZK/t	181	213	1 180	132	88

## 4. Prices of domestic market

### Average prices of traded commodities on the domestic market

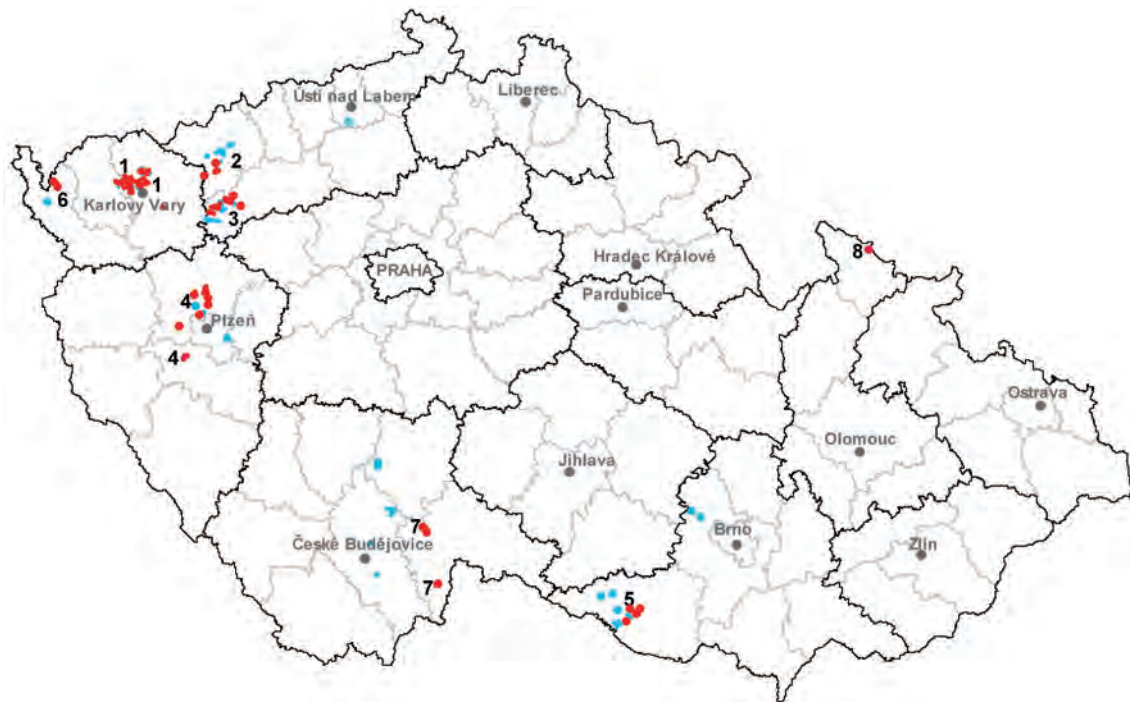
	2007	2008	2009	2010	2011
mined gypsum, CZK/t	300	330	330	N	N
grey gypsum binder, bagged in 30 kgs, pallets, CZK/t	2 700	2 720	2 766	3 460	3 460
white gypsum binder, bagged in 30 kgs, pallets, CZK/t	4 500	4 600	4 675	5 851	5 851

## 5. Mining companies in the Czech Republic as of December 31, 2011



## Kaolin

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

#### Major deposit areas:

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

1 **Karlovy Vary Region**

2 **Kadaň Region**

3 **Podbořany Region**

4 **Plzeň Region**

5 Znojmo Region

6 Cheb Basin

7 Třeboň Basin

8 Vidnava

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	69	70	70	70	70
exploited	14	13	13	13	14
Total mineral *reserves, kt	1 220 315	1 212 123	1 208 331	1 207 631	1 204 751
economic explored reserves	249 703	244 494	244 636	240 673	234 061
economic prospected reserves	497 175	497 356	504 720	506 213	507 488
potentially economic reserves	473 437	470 273	458 975	462 222	463 202
exploitable (recoverable) reserves	79 411	79 040	80 024	93 055	102 257
Mine production, kt <sup>a)</sup>	3 604	3 833	2 886	3 493	3 606
Beneficiated (water-washed) kaolin production, kt	682	672	525	636	660

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	24 627	24 627	24 627	24 627	24 627
P <sub>2</sub> , kt	4 998	4 998	4 998	4 998	4 998
P <sub>3</sub>	–	–	–	–	–

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**

<b>Kaolin for production of porcelain and fine ceramics (KJ)</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Deposits – total number	30	30	30	30	30
exploited	6	6	6	7	7
Total mineral *reserves, kt	259 416	256 317	256 023	253 228	252 791
economic explored reserves	54 054	53 042	52 748	50 196	49 833
economic prospected reserves	111 858	111 713	111 713	111 713	111 713
potentially economic reserves	93 504	91 562	91 562	91 319	91 245
exploitable (recoverable) reserves	6 281	5 951	6 314	17 919	17 612
Mine production, kt	383	331	257	297	368

\* 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, Jimlikov, Krásný Dvůr-Podbořany, Mirová, Podlesí 2, Podlesí-Čapí hnízdo, Ruprechtov

**Number of deposits; reserves; mine production**

<b>Kaolin for paper industry (KP)</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Deposits – total number	23	24	25	25	26
exploited	7	6	6	6	6
Total mineral *reserves, kt	312 105	310 982	301 670	300 649	301 326
economic explored reserves	57 019	55 980	58 589	57 614	55 350
economic prospected reserves	185 205	185 205	183 999	184 015	185 290
potentially economic reserves	69 881	69 797	59 082	59 020	60 686
exploitable (recoverable) reserves	26 765	25 853	27 341	26 468	34 261
Mine production, kt	1 021	969	700	901	973

\* 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

		2007	2008	2009	2010	2011
Import	t	24 161	20 871	13 744	14 124	19 352
Export	t	248 673	234 500	379 593	485 427	537 962

#### 2507 – Kaolin and other kaolinic clays, whether or not calcined

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 378	4 548	3 658	4 375	3 563
Average export prices	CZK/t	2 636	2 449	2 263	2 519	2 629

#### 25070020 – Kaolin

		2007	2008	2009	2010	2011
Import	t	15 239	15 629	6 558	7 991	12 285
Export	t	247 076	233 868	379 117	484 843	537 231

#### 25070020 – Kaolin

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 819	4 304	4 995	5 180	4 222
Average export prices	CZK/t	2 608	2 441	2 260	2 517	2 627

#### 25070080 – Kaolinic clay (other than kaolin)

		2007	2008	2009	2010	2011
Import	t	8 922	5 243	7 186	6 133	7 068
Export	t	1 597	632	476	583	731

#### 25070080 – Kaolinic clay (other than kaolin)

		2007	2008	2009	2010	2011
Average import prices	CZK/t	3 626	5 275	2 437	3 325	2 418
Average export prices	CZK/t	7 005	5 667	4 723	4 015	4 509

#### 4. Prices of domestic market

In 2009 the average prices of ceramic grade kaolin on the domestic market fluctuated between CZK 2 200–3 000 per tonne depending on quality. Paper grade kaolin was sold for CZK 1 700–2 500 per tonne. Only a small amount exceeded CZK 2 500 per tonne (bulk kaolin). Only the products for the chemical industry, which were produced by grinding paper grade kaolin, reach prices above CZK 3 000 per tonne. Crude kaolin for construction ceramics was sold for CZK 200–300 per tonne. Beneficiated (water-washed) kaolin from Podbořany was 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

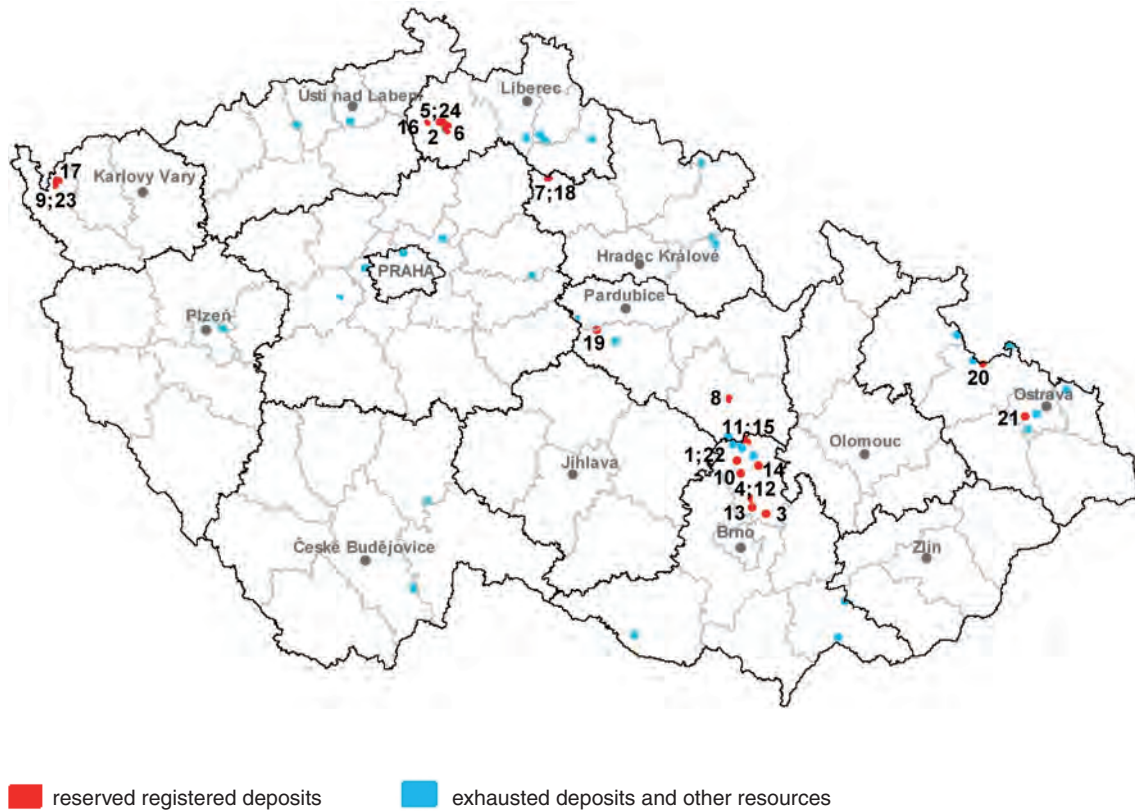
Product specification	2007	2008	2009	2010	2011
Ceramic grade kaolin, CZK/t	2 000–3 500	2 200–2 950	2 200–2 950	N	1 100–3 500
Paper grade kaolin, CZK/t	1 500–2 200	1 700–2 500	1 700–2 500	N	N
Kaolin for chemical industry, microground, CZK/t	above 3 000	above 3 000	above 3 000	N	N
Kaolin for porcelain manufacture from Sedlec, CZK/t	3 000–3 500	N	N	N	N
Beneficiated kaolin from Podbořany, KD, CZK/t	1 640	1 800	1 949	1 949	1 300–3 040
Kaolin for manufacture of fine porcelain and glazes from Podbořany KDG, CZK/t	2 100	2 200	2 392	2 392	2 300–3 200
Activated kaolin from Podbořany KDA, CZK/t	2 500	2 700	2 900	2 900	N

#### 5. Mining companies in the Czech Republic as of December 31, 2011

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

## Industrial sands

### 1. Registered deposits and other resources of the Czech Republic



*Names of exploited deposits are in bold type*

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

\* deposits of glass and foundry sands

\*\* deposits of foundry sands

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

### Glass sand

#### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	6	6	6	6	6
exploited	5	5	5	5	5
Total mineral *reserves, kt	254 871	260 440	259 344	258 366	254 942
economic explored reserves	91 391	90 231	89 378	88 415	86 844
economic prospected reserves	25 892	25 781	25 538	25 523	23 523
potentially economic reserves	137 588	144 428	144 428	144 428	144 575
exploitable (recoverable) reserves	83 812	82 773	81 671	80 782	79 873
Mine production, kt	942	1 151	990	888	976

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	21 750	0	0	0	0
P <sub>2</sub> , kt	14 927	14 927	14 927	14 927	14 927
P <sub>3</sub>	–	–	–	–	–

### Foundry sand

#### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	22	24	23	23	23
exploited	10	10	10	11	11
Total mineral *reserves, kt	378 201	378 977	376 774	409 668	409 618
economic explored reserves	134 964	134 202	133 071	129 561	128 903
economic prospected reserves	80 465	80 455	97 066	133 470	133 460
potentially economic reserves	162 772	164 320	146 637	146 637	147 255
exploitable (recoverable) reserves	76 707	76 004	75 520	75 026	78 642
Mine production, kt	850	702	374	473	395

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>**

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kt	23 157	23 157	23 157	15 157	15 157
P <sub>2</sub> ,	kt	14 723	14 723	14 723	14 723	14 723
P <sub>3</sub>		–	–	–	–	–

**3. Foreign trade****250510 – Silica sands and quartz sands**

		2007	2008	2009	2010	2011
Import	t	322 259	333 863	284 932	285 692	294 073
Export	t	516 050	515 830	445 608	421 217	472 223

**250510 – Silica sands and quartz sands**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	626	552	491	500	535
Average export prices	CZK/t	590	508	475	498	475

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

		2007	2008	2009	2010	2011
Import	t	75 966	80 804	101 287	89 298	141 524
Export	t	13 007	14 459	11 080	8 931	8 092

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 807	2 886	2 449	2 874	2 169
Average export prices	CZK/t	1 786	1 548	847	621	1 082

#### **4. Prices of domestic market**

Prices of industrial sands are not open to public. It can be assumed that generally prices of glass sands are not outside of limits of that in 2008. 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 were 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, 2011**

##### **Glass sand**

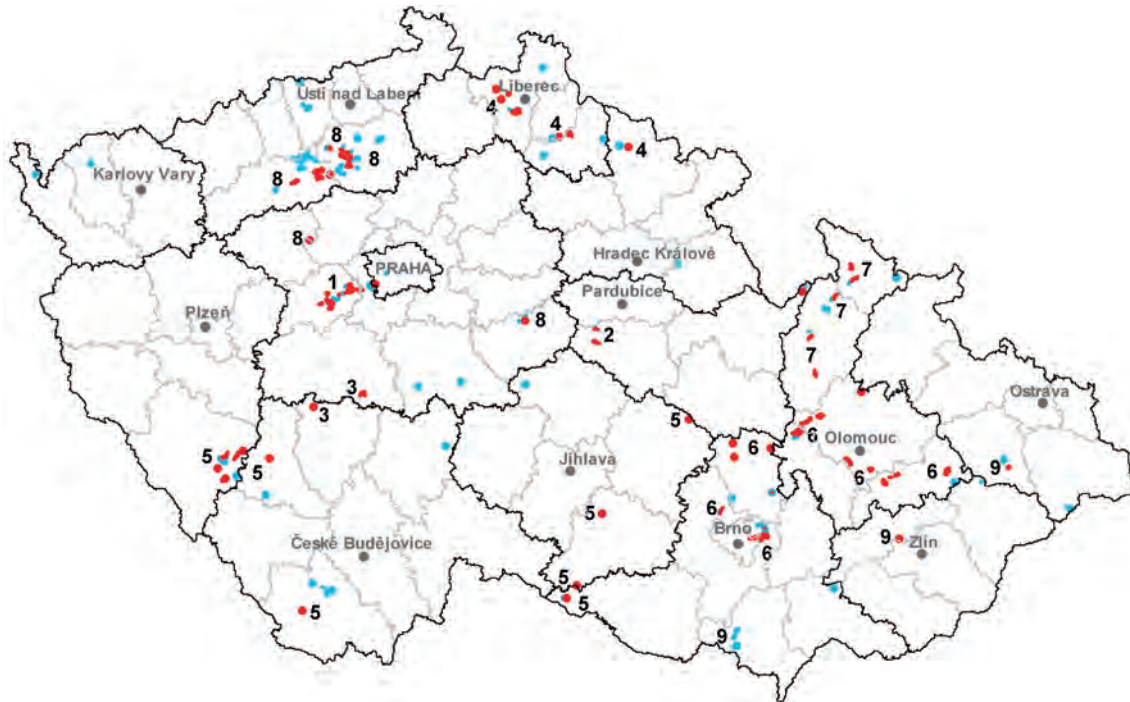
Sklopísek Střeleč, a.s., Mladějov  
Provodínské písky a.s., Provodín  
LB MINERALS, s.r.o., Horní Bříza

##### **Foundry sand**

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

## Limestones and corrective additives for cement production

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

#### 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	2007	2008	2009	2010	2011
Deposits – total number	87	86	85	85	85
exploited	22	21	21	21	21
Total mineral *reserves, kt	4 279 084	4 265 039	4 286 327	4 265 944	4 252 835
economic explored reserves	1 755 091	1 742 662	1 762 240	1 742 290	1 730 722
economic prospected reserves	1 778 279	1 777 976	1 777 754	1 777 529	1 777 351
potentially economic reserves	745 714	744 401	746 333	746 125	744 762
exploitable (recoverable) reserves	1 387 191	1 374 694	1 385 719	1 361 101	1 353 361
Mine production, kt	11 279	10 958	9 117	9 828	10 859

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	114 292	114 292	114 292	114 292	114 292
P <sub>2</sub> , kt	427 057	427 057	427 057	427 057	427 057
P <sub>3</sub>	–	–	–	–	–

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 CaCO<sub>3</sub> (VV) Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	28	27	27	27	27
exploited	11	10	10	10	10
Total mineral *reserves, kt	1 355 031	1 349 890	1 369 283	1 368 089	1 361 548
economic explored reserves	622 492	617 467	635 737	634 543	629 347
economic prospected reserves	546 162	546 096	546 096	546 096	546 096
potentially economic reserves	186 377	186 327	187 450	187 450	186 105
exploitable (recoverable) reserves	728 401	732 322	741 601	737 094	733 125
Mine production, kt	4 885	4 602	4 174	4 389	4 684

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	5 400	5 400	5 400	5 400	5 400
P <sub>2</sub> , kt	26 345	26 345	26 345	26 345	26 345
P <sub>3</sub>	–	–	–	–	–

### Other limestones (VO)

#### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	47	48	48	48	48
exploited	14	16	16	16	16
Total mineral *reserves, kt	2 283 330	2 277 099	2 279 853	2 273 803	2 268 240
economic explored reserves	970 282	964 288	966 455	960 653	955 286
economic prospected reserves	796 574	796 337	796 115	795 890	795 712
potentially economic reserves	516 474	516 474	517 283	517 260	517 242
exploitable (recoverable) reserves	579 060	572 889	570 302	563 610	560 804
Mine production, kt	5 138	5 198	4 115	4 300	5 205

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>**

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kt	103 070	103 070	103 070	103 070	103 070
P <sub>2</sub> ,	kt	50 000	50 000	50 000	50 000	50 000
P <sub>3</sub>		–	–	–	–	–

**Corrective additives for cement production (CK)****Number of deposits; reserves; mine production**

Year		2007	2008	2009	2010	2011
Deposits – total number		15	15	15	15	15
exploited		4	3	3	3	3
Total mineral *reserves, kt		628 191	622 440	621 989	621 629	621 236
economic explored reserves		341 787	341 245	340 794	340 434	340 041
economic prospected reserves		159 688	156 785	156 785	156 785	156 785
potentially economic reserves		126 716	124 410	124 410	124 410	124 410
exploitable (recoverable) reserves		188 285	187 743	187 292	186 932	186 538
Mine production, kt		392	507	372	343	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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>**

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kt	86 880	86 880	86 880	86 880	86 880
P <sub>2</sub>		–	–	–	–	–
P <sub>3</sub>		–	–	–	–	–

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**

		2007	2008	2009	2010	2011
Import	t	580 545	497 775	441 951	520 502	458 373
Export	t	97 417	99 367	99 693	84 696	155 118

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	160	169	173	167	168
Average export prices	CZK/t	427	452	474	493	466

**2522 – Quicklime, slaked lime and hydraulic lime**

		2007	2008	2009	2010	2011
Import	t	124 159	125 685	88 026	106 266	105 506
Export	t	157 850	153 301	126 743	153 391	178 510

**2522 – Quicklime, slaked lime and hydraulic lime**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 529	1 610	1 691	1 604	1 615
Average export prices	CZK/t	1 657	1 791	2 098	1 989	1 925

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

		2007	2008	2009	2010	2011
Import	t	1 055 695	1 099 248	1 058 852	890 708	842 311
Export	t	644 975	653 982	616 926	670 725	845 320

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 744	1 730	1 791	1 692	1 672
Average export prices	CZK/t	1 415	1 493	1 587	1 434	1 470

**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 2,100–2,450 per tonne, and cement on pallets between CZK 2,450–2,800 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 185–1,408 per tonne depending on CaCO<sub>3</sub> content and grain fraction. Prices of ground limestone were CZK 592–643 depending on end-use and grain fraction.

#### Average prices of traded commodities on the domestic market

Product specification	2007	2008	2009	2010	2011
Cement CEM I, 42,5 R, on pallets, CZK/t	2 560	N	2 400	2 400–2 640	2 640
Cement CEM I, 42,5 R, on pallets, covered with foil, CZK/t	2 640	N	2 750	2 700	2 700
Cement CEM III A, 32,5 R, on pallets, CZK/t	2 260	N	N	2 300	2 300
Cement CEM III A, 32,5 R, on pallets, covered with foil, CZK/t	2 340	N	N	2 360	2 360
Dolomitic hydrated lime, CZK/t	2 300–2 565	N	N	2 618–3 410	2 696
Quicklime, ground, CZK/t	1 290	N	N	1 560	1 722

## 5. Mining companies in the Czech Republic as of December 31, 2011

### Limestones

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

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 SKALKA, 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

PRACTIC 99, s.r.o., Brno

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

### Corrective additives for cement production

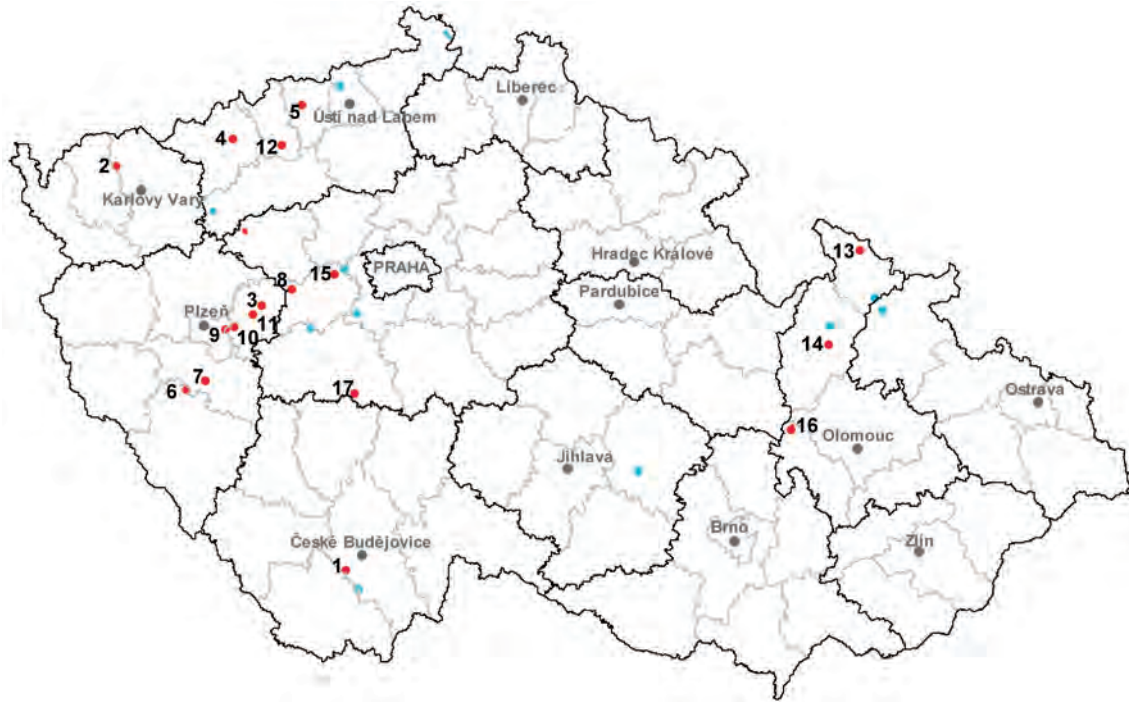
Českomoravský cement, a.s., nástupnická společnost, Mokrý

Cement Hranice, a.s.

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

## Silica minerals

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

#### Quartz – quartzites:

1 **Vrábče-Boršov**

2 Černava-Tatrovice

3 Drahoňův Újezd-Bechlov

4 Chomutov-Horní Ves

5 Jeníkov-Lahošť

6 Kaliště

7 Kbelnice

8 Kublov-Dlouhá Skála

9 Kyšice-Pohodnice

10 Litohlavy-Smrkový vrch

11 Sklená Huť

12 Stránce

13 Velká Kraš

14 Vikýřovice

15 Železná

#### Quartz for special glass:

16 Dětkovice

17 Krašovice

*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	2007	2008	2009	2010	2011
Deposits – total number	18	18	18	18	17
exploited	1	1	1	1	1
Total mineral *reserves, kt	28 673	28 655	28 640	28 626	26 166
economic explored reserves	907	907	907	907	907
economic prospected reserves	23 014	22 996	22 981	22 967	20 507
potentially economic reserves	4 752	4 752	4 752	4 752	4 752
exploitable (recoverable) reserves	732	714	553	540	515
Mine production, kt	19	18	16	14	24

### Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	4 533	4 533	4 533	4 533	4 533
P <sub>2</sub>	–	–	–	–	–
P <sub>3</sub>	–	–	–	–	–

\* 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

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

		2007	2008	2009	2010	2011
Import	t	16 560	18 228	10 483	12 507	13 352
Export	t	24	29	55	29	13

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 837	2 781	2 946	2 535	2 818
Average export prices	CZK/t	50 852	41 174	20 600	15 253	37 780

**720221 – Ferrosilicon**

		2007	2008	2009	2010	2011
Import	t	39 658	35 913	22 181	28 758	28 227
Export	t	8 208	8 855	4 282	9 492	5 704

**720221 – Ferrosilicon**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	22 367	31 069	25 859	30 562	32 466
Average export prices	CZK/t	21 058	30 088	23 801	30 284	30 396

**4. Prices of domestic market**

Prices of silica minerals are not open to public.

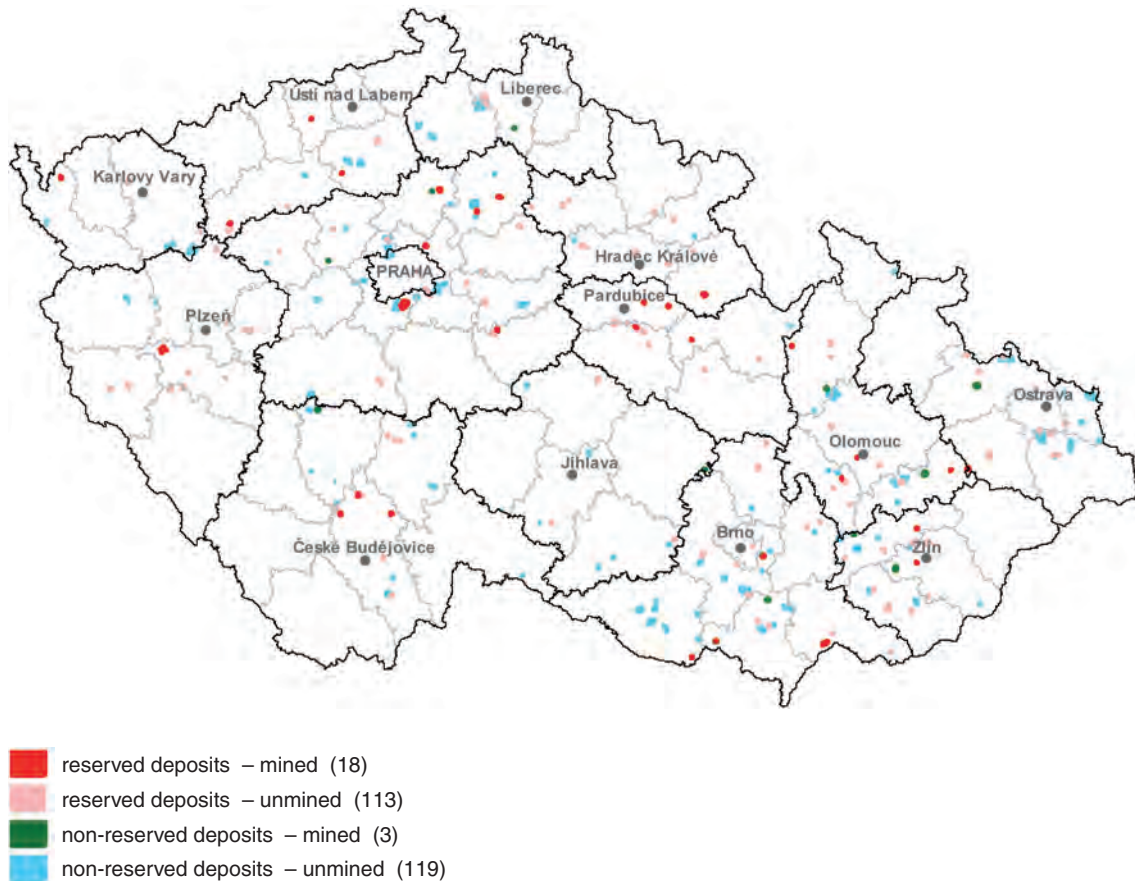
**5. Mining companies in the Czech Republic as of December 31, 2011**

Budějovické štěrkopísky spol. s r.o., Vrábče

## CONSTRUCTION MINERALS

### Brick clays and related minerals

#### 1. Registered deposits and other resources of the Czech Republic



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	2007	2008	2009	2010	2011
Deposits – total number	142	136	134	134	131
exploited	37	29	22	18	18
Total mineral *reserves, ths m <sup>3</sup>	559 324	549 753	548 769	546 392	542 022
economic explored reserves	220 955	217 782	217 977	212 276	206 577
economic prospected reserves	238 341	232 729	232 709	231 886	232 827
potentially economic reserves	100 028	99 242	98 083	102 230	102 618
exploitable reserves	70 550	68 132	67 775	64 070	64 217
Mine production in reserved deposits, ths m <sup>3</sup>	1 433	1 242	1 028	838	932

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , ths m <sup>3</sup>	27 122	27 122	27 122	27 122	27 122
P <sub>2</sub> , ths m <sup>3</sup>	245 494	245 494	245 494	245 494	245 494
P <sub>3</sub>	–	–	–	–	–

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

Year	2007	2008	2009	2010	2011
Deposits – total number	123	123	122	123	122
exploited	9	9	4	4	3
Total mineral *reserves, ths m <sup>3</sup>	686 805	687 075	686 873	686 264	686 513
economic explored reserves	65 161	65 114	65 114	63 622	63 622
economic prospected reserves	515 170	515 487	515 285	515 789	516 038
potentially economic reserves	106 474	106 474	106 474	106 853	106 853
exploitable reserves	1 315	1 054	725	544	707
Mine production in non-reserved deposits, ths m <sup>3</sup> a)	300	270	203	182	147

\* 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

		2007	2008	2009	2010	2011
Import	ths pcs	51 403	40 314	21 425	15 544	18 070
Export	ths pcs	14 461	17 983	12 459	12 914	9 781

#### 690410 – Building bricks

		2007	2008	2009	2010	2011
Average import prices	CZK/piece	15	15	14	12	12
Average export prices	CZK/piece	14	17	18	20	22

#### 690510 – Roof tiles

		2007	2008	2009	2010	2011
Import	ths pcs	6 708	6 252	4 633	7 834	9 296
Export	ths pcs	75 581	43 174	7 594	6 554	12 207

#### 690510 – Roof tiles

		2007	2008	2009	2010	2011
Average import prices	CZK/piece	16	15	18	13	15
Average export prices	CZK/piece	5	6	18	17	17

### 4. Prices of domestic market

Price of brick crude material on domestic market has been about CZK 500/t, brick clay roughly about CZK 90–180/t. Clay (ground clay bricks for tennis courts) is offered about CZK 1,500 per tonne. Prices of full bricks oscillate between CZK 6 and 7 apiece, depending on their quality (especially resistance against frost) and producer. The average price is CZK 7 apiece. Lightened full bricks were sold at about CZK 6 apiece. Honeycomb bricks were sold at CZK 11–14 apiece, on average for CZK 13 apiece. Prices of roof tiles fluctuated depending on type and surface finish (fair-face, engoba, glaze) within the limits CZK 20–44 apiece, prices of special types, e.g. ventilating, boundary tile, have been between CZK 81–123 apiece. Prices of classical shingle tile oscillated between CZK 12–57 apiece. Brick blocks “Porotherm” are offered at CZK 21 to 85 apiece. Prices of grinding Porotherm perlite-filled elements have been CZK 67–134 per tonne. Evolution of the average import and export prices are contained in the following table:



**Domestic prices of brick products**

Product specification	2007	2008	2009	2010	2011
Full brick; CZK/piece	6–12	5–12	6–12	5-9	6-7
Honeycomb brick; CZK/piece	7–14	8–15	10–14	10–14	11–14
Facing bricks; CZK/piece	10–16	10–17	10–17	7-17	8–51
Brick blocks Porotherm; CZK/piece	40–130	35–135	35–135	23–114	21–85
Classical shingle tile	13–28*	11–20	12–26	7–20	12–57

\* tile in general

**5. Mining companies in the Czech Republic as of December 31, 2011****Brick clays and related minerals – reserved deposits**

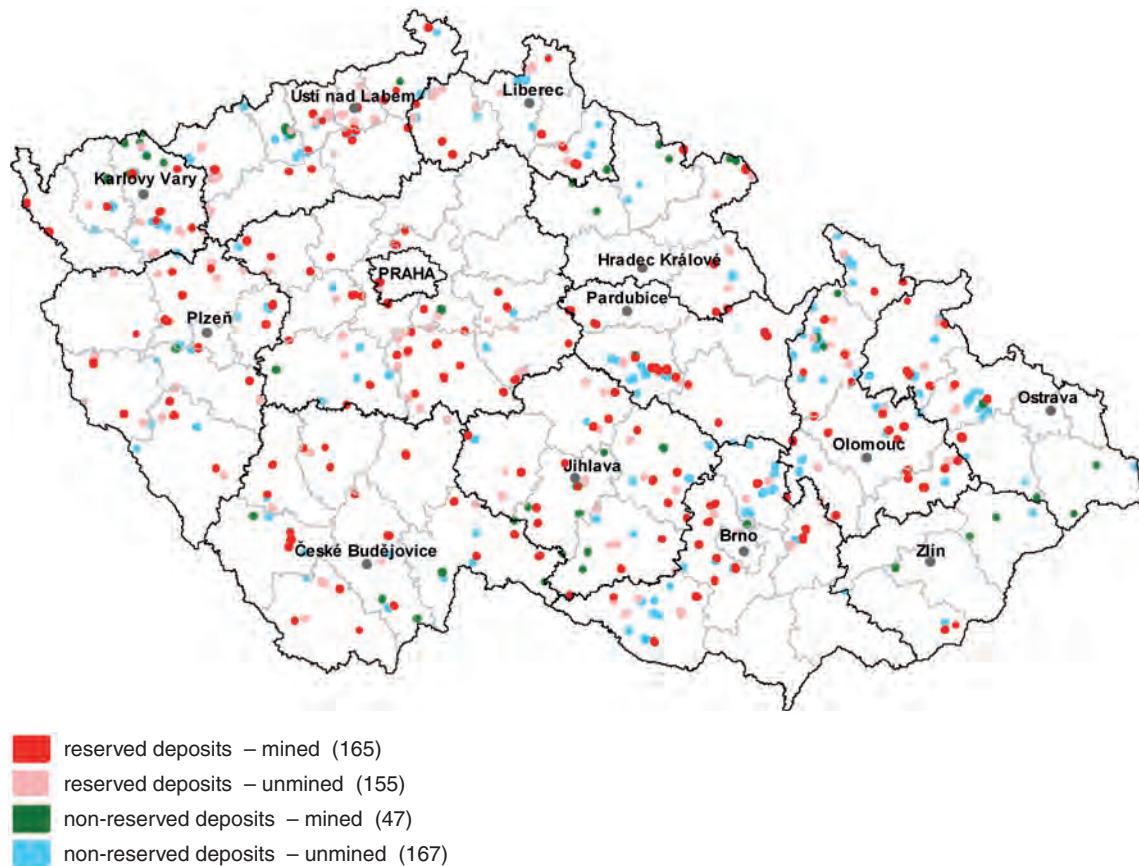
HELUZ cihlářský průmysl v.o.s., Dolní Bukovsko  
 TONDACH Česká republika s.r.o., Hranice  
 Wienerberger Cihlářský průmysl, a.s., Č.Budějovice  
 Cihelna Kinský s.r.o., Kostelec n. Orlicí  
 Cihelna Hodonín, s.r.o.  
 Cihelna Vysoké Mýto s.r.o.  
 Zlínské cihelny s.r.o., Zlín  
 Cihelna Polom, s.r.o.  
 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  
 Ing.Jiří Hercl, cihelna Bratronice, Kyšice

## Crushed stone

### 1. Registered deposits and other resources of the Czech Republic



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	2007	2008	2009	2010	2011
Deposits – total number	319	319	317	318	320
exploited	169	165	166	164	165
Total mineral *reserves, ths m <sup>3</sup>	2 266 643	2 290 511	2 346 363	2 392 813	2 392 105
economic explored reserves	1 129 149	1 138 025	1 153 009	1 156 294	1 157 255
economic prospected reserves	1 005 144	1 017 433	1 043 741	1 089 355	1 090 044
potentially economic reserves	132 350	135 053	149 613	147 164	144 806
exploitable reserves	661 007	664 653	718 922	715 142	717 064
Mine production in reserved deposits, ths m <sup>3</sup>	14 655	14 799	13 947	12 350	12 299

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , ths m <sup>3</sup>	78 950	78 950	78 950	78 950	78 950
P <sub>2</sub> , ths m <sup>3</sup>	399 314	399 314	399 314	399 314	399 314
P <sub>3</sub>	–	–	–	–	–

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

Year	2007	2008	2009	2010	2011
Deposits – total number	208	210	215	213	214
exploited	45	47	50	48	47
Total mineral *reserves, ths m <sup>3</sup>	1 033 583	1 036 450	1 038 869	1 011 792	1 019 574
economic explored reserves	46 090	45 616	45 772	43 376	43 075
economic prospected reserves	907 050	910 512	912 925	888 377	892 905
potentially economic reserves	80 443	80 322	80 172	80 039	83 594
exploitable reserves	29 804	34 906	34 708	35 985	46 249
Mine production in non-reserved deposits, ths m <sup>3</sup> a)	1 350	1 600	1 350	1 450	1 300

\* 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**

a) estimate

### 3. Foreign trade

#### 251710 – Pebbles, gravel, broken or crushed stone

		2007	2008	2009	2010	2011
Import	kt	246	276	229	214	221
Export	kt	471	486	345	364	694

#### 251710 – Pebbles, gravel, broken or crushed stone

		2007	2008	2009	2010	2011
Average import prices	CZK/t	378	401	342	403	344
Average export prices	CZK/t	220	148	187	249	216

### 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 2011 size fraction 4–8 mm was offered at following prices in CZK/t: spilite – approximately 269, amphibolite – approximately 340, granite – approximately 323, gneiss – approximately 319, porphyry – approximately 316, granodiorite – approximately 298, greywacke – approximately 315, basalt – approximately 293, chert – approximately 248, limestone – approximately 258. In size fraction 8–16 mm, the prices in CZK/t were as a whole lower: spilite – approximately 262, amphibolite – approximately 275, basalt – 267, chert – approximately 238, gneiss – approximately 255, porphyry – approximately 248, granodiorites – 256, greywacke – 268, granite – 241, limestone – approximately 230. Prices of crushed stone in size fraction 16–32 mm were still lower (in CZK/t): spilite – approximately 250, basalt – approximately 240, amphibolite – approximately 270, gneiss – approximately 231, chert – approximately 250, porphyry – approximately 227, granodiorite – 216, greywacke – approximately 220, granite – 204, limestone – approximately 196. Prices of crushed stone in size fraction 32–63 mm as a whole were between 186 and 229 CZK/t in 2011; the cheapest was again limestone and the most expensive amphibolite.

**Domestic prices of crushed stone**

<b>Product specification</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
crushed stone, spilite, fraction 4–8mm, CZK/t	355	310	284	259	269
crushed stone, amphibolite, fraction 4–8 mm, CZK/t	310	319	345	320	340
crushed stone, granite, fraction 4–8 mm, CZK/t	303	317	288	323	323
crushed stone, gneiss and porphyry, fraction 4–8 mm, CZK/t	300	314	319	305	319
crushed stone, granodiorite, fraction 4–8 mm, CZK/t	295	339	311	332	298
crushed stone, greywacke, fraction 4–8 mm, CZK/t	288	307	297	N	315
crushed stone, basalt, fraction 4–8 mm, CZK/t	275	240	294	230	293
crushed stone, chert, fraction 4–8 mm, CZK/t	260	275	248	248	248
crushed stone, limestones, fraction 4–8 mm, CZK/t	230	248	271	290	258
crushed stone, spilite, fraction 8–16 mm, CZK/t	292	260	278	244	262
crushed stone, amphibolite, fraction 8–16 mm, CZK/t	255	266	276	261	275
crushed stone, granite, fraction 8–16 mm, CZK/t	236	249	265	230	241
crushed stone, gneiss, fraction 8–16 mm, CZK /t	242	243	258	249	255
crushed stone, granodiorites, fraction 8–16 mm, CZK /t	237	266	250	238	256
crushed stone, greywacke, fraction 8–16 mm, CZK /t	235	252	259	N	268
crushed stone, basalt, fraction 8–16 mm, CZK /t	253	221	261	240	267
crushed stone, chert, fraction 8–16 mm, CZK /t	242	248	238	238	238
crushed stone, limestones, fraction 8–16 mm, CZK /t	195	210	235	220	230

**5. Mining companies in the Czech Republic as of December 31, 2011****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, Všechlapy  
 C4SC78 s.r.o., Praha  
 BÖGL a KRÝSL, k.s., Praha  
 Kamenolom Císařský a.s., Praha  
 Berger Bohemia a.s., Plzeň  
 GRANITA s.r.o., Skuteč  
 Stavební recyklace s.r.o., Sokolov

Kámen Brno s.r.o.  
 LOMY MOŘINA spol.s r.o., Mořina  
 DOBET s.r.o., Ostrožská Nová Ves  
 ZAPA beton a.s., Praha 4  
 Rosa s.r.o., Drásov  
 Lom Klecany, s.r.o., Praha 9  
 RENO Šumava a.s., Vlachovo Březí  
 CEMEX Sand, s.r.o., Napajedla  
 Silnice Čáslav Holding, a.s.  
 SHB s.r.o., Bernartice  
 Žula Rácov, s.r.o., Batelov  
 Ludvík Novák, Komňa  
 BES s.r.o., Benešov  
 HUTIRA OMICE, s.r.o., Omice  
 ŽPSV a.s., Uherský Ostroh  
 LB spol. s r.o., Nová Role  
 KARETA s.r.o., Bruntál

Basalt s.r.o., Zabuřany  
Madest s.r.o., Pavlice  
PEDOP s.r.o., Lipovec  
Froněk s.r.o., Rakovník  
Zemědělské družstvo Šonov u Broumova  
ČNES dopravní stavby a.s., Kladno  
František Matlák, Mochov  
PETRA lom Číměř, s.r.o.  
EKOZIS spol. s r. o., Zábřeh  
Kozákov družstvo, Záhoří  
OLZ, a.s., Olomouc  
Weiss s.r.o., Děčín  
FORTEX AGS, a.s., Šumperk  
Thorssen s.r.o., Kamenolom Mladecko  
POLABSKÉ ŠTĚRKOPÍSKY s.r.o., Praha  
JHF Heřmanovice spol.s r.o.  
NATRIX, a.s., Bojkovice  
Kamenolom KUBO s.r.o., Malé Žernoseky  
EKOSTAVBY Louny s.r.o.  
Pavel Dragoun, Cheb  
Daosz, s.r.o., Jesenec

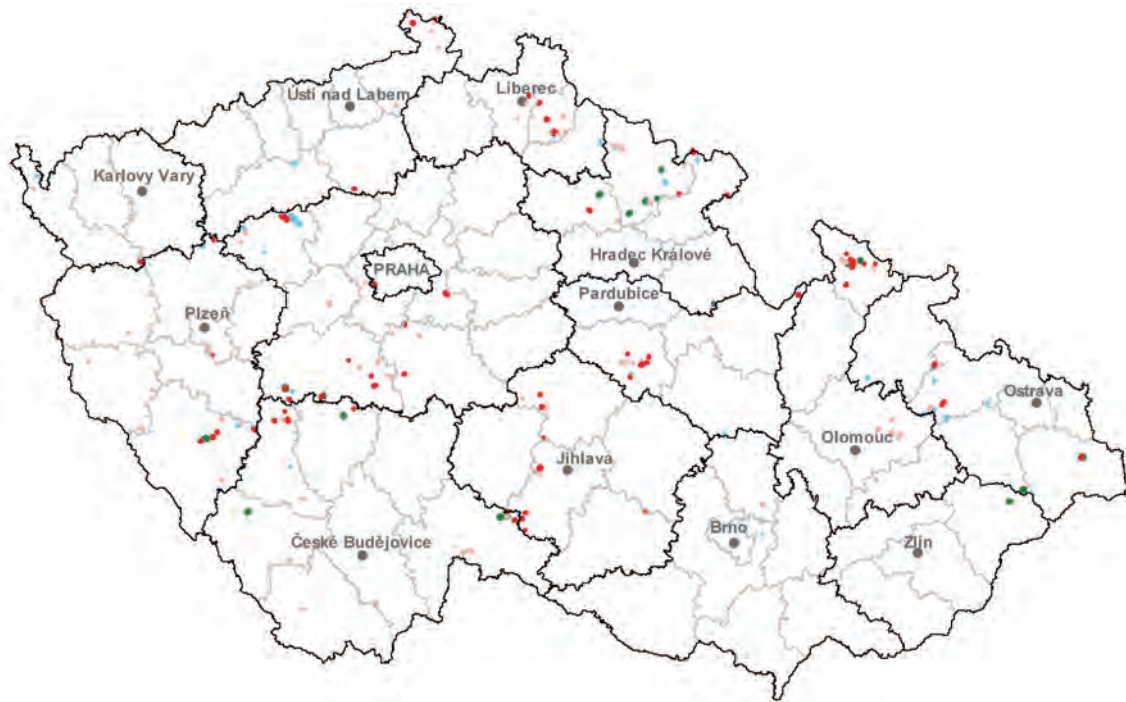
**Crushed stone – non-registered deposits**

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

ZETKA Strážník a.s., Studenec  
KÁMEN Zbraslav, spol. s r.o.  
SENECO s.r.o., Polná  
Kamenolom Žlutava, s.r.o.  
LOM Babí, a.s., Trutnov  
TS služby s.r.o., Nové Město na Moravě  
COLAS CZ, a.s., Praha  
Kalcit s.r.o., Brno  
Stavoka Kosice a.s.  
ZUD a.s., Zbůch  
EUROVIA Kamenolomy, a.s., Liberec  
KAMENOLOMY ČR s.r.o., Ostrava Svinov  
GRANITA s.r.o., Skuteč  
Lesy České republiky, s.p., Hradec Králové  
Valašské lesotechnické meliorace, a.s.  
RENO Šumava a.s., Vlachovo Březí  
Lesostavby FrýdekMístek, a.s.  
Berger Bohemia a.s., Plzeň  
Stavební recyklace s.r.o., Sokolov  
LB spol. s r.o., Nová Role  
Vojenské lesy a statky ČR, s.p., Praha 6  
Obec Hošťálková  
DOBET s.r.o., Ostrožská Nová Ves  
Petr Vaněk – Lomstava, Horní Maršov  
EKOZIS spol. s r. o., Zábřeh  
Kamena výrobní družstvo Brno  
Lesní družstvo obcí, Příbyslav  
Pískovec Bělov s.r.o

## Dimension stone

### 1. Registered deposits and other resources of the Czech Republic



- reserved deposits – mined (61)
- reserved deposits – unmined (97)
- non-reserved deposits – mined (18)
- non-reserved deposits – unmined (52)

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	2007	2008	2009	2010	2011
Deposits – total number	163	162	161	160	158
exploited	70	57	60	61	61
Total mineral *reserves, ths m <sup>3</sup>	190 994	187 131	183 752	183 677	182 753
economic explored reserves	83 262	81 864	79 955	79 950	79 287
economic prospected reserves	66 778	66 464	65 826	65 757	65 421
potentially economic reserves	40 954	38 803	37 971	37 970	38 045
exploitable reserves	81 600	83 922	81 958	82 224	79 099
Mine production in reserved deposits, ths m <sup>3</sup>	242	229	209	262	192

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , ths m <sup>3</sup>	5 043	5 043	5 043	5 043	5 043
P <sub>2</sub> , ths m <sup>3</sup>	12 701	12 701	12 701	12 701	12 701
P <sub>3</sub>	–	–	–	–	–

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

Year	2007	2008	2009	2010	2011
Deposits – total number	66	67	70	70	70
exploited	28	25	19	19	18
Total mineral *reserves, ths m <sup>3</sup>	33 211	30 547	33 546	33 498	33 437
economic explored reserves	2 307	2 304	2 293	2 280	2 264
economic prospected reserves	27 988	28 243	28 297	28 262	28 217
potentially economic reserves	2 916	2 956	2 956	2 956	2 956
exploitable reserves	2 881	2 775	2 755	2 686	2 120
Mine production in non-reserved deposits, ths m <sup>3</sup> a)	50	45	54	47	46

\* 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

		2007	2008	2009	2010	2011
Import	kt	5	4	11	7	12
Export	kt	59	48	31	29	13

#### 2514 – Slate, also roughly worked or cut

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 306	2 508	655	2 220	2 382
Average export prices	CZK/t	1 078	1 056	1 134	995	1 260

#### 2515 – Marble, travertine, ecaussine and other calcareous stone

		2007	2008	2009	2010	2011
Import	kt	3	5	2	1	0.07
Export	kt	0.0002	0.01	0.1	0.0005	0.09

#### 2515 – Marble, travertine, ecaussine and other calcareous stone

		2007	2008	2009	2010	2011
Average import prices	CZK/t	10 301	5 150	9 549	13 094	7 760
Average export prices	CZK/t	133 663	19 039	7 979	187 225	170 367

#### 2516 – Granite, porphyry, basalt, sandstone and other stone

		2007	2008	2009	2010	2011
Import	kt	11	14	18	13	9
Export	kt	7	9	5	6	16

#### 2516 – Granite, porphyry, basalt, sandstone and other stone

		2007	2008	2009	2010	2011
Average import prices	CZK/t	6 358	5 882	4 786	5 397	4 739
Average export prices	CZK/t	1 862	2 249	1 864	1 661	3 766

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

		2007	2008	2009	2010	2011
Import	kt	3	7	15	5	4
Export	kt	106	91	75	57	73

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	16 317	4 239	18 851	26 938	64 042
Average export prices	CZK/t	2 034	1 853	5 422	1 854	1 784

**6802 – Worked monumental and crushed stone (except slate) and stonework**

		2007	2008	2009	2010	2011
Import	kt	26	29	21	19	33
Export	kt	92	83	62	54	41

**6802 – Worked monumental and crushed stone (except slate) and stonework**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	12 692	12 037	15 192	14 689	31 573
Average export prices	CZK/t	3 764	5 389	4 455	6 823	21 795

**6803 – Worked slate and articles of slate or of agglomerated slate**

		2007	2008	2009	2010	2011
Import	kt	2	2	3	3	3
Export	kt	0.3	0.3	0.08	0.06	0.2

**6803 – Worked slate and articles of slate or of agglomerated slate**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	12 323	13 179	11 927	10 576	8 003
Average export prices	CZK/t	9 324	17 033	14 795	29 607	21 671

#### 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 2,100–3,250 per tonne, prices of granite margin stones of the same material range from CZK 320 to 400 per linear meter, cut granite panels made of it about CZK 2,100/m<sup>2</sup>, granite curbs about CZK 1,000–1,200 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/m<sup>2</sup> for slabs thick from 2 to 8 cm), granite slabs with scoring finish were little less expensive (CZK 1,600–3,600 m<sup>2</sup>) and even less expensive granite slabs with sand blasted finish (CZK 1,400–3,100 m<sup>2</sup>). Hlinec granite formatted slabs, suitable as pavement or lining, 3 cm thick, ranged CZK 1,560–2,200/m<sup>2</sup> depending on finish again. Prices of cobblestone of light Silesian granite ranged CZK 1,750–3,000/m<sup>2</sup>) 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/m<sup>2</sup>. Prices of granite pavement slabs made of Mrakotín type granites range depending on thickness CZK 1,450–2,250/m<sup>2</sup> with sand blasted finish, CZK 1,580–2,480/m<sup>2</sup> with scoring finish and CZK 1,900–2,700/m<sup>2</sup> with polished finish. Prices of granite blocks are very variable, basically they start at CZK 5,500/m<sup>2</sup>.

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 1,000–1,930/ m<sup>2</sup>, 10 cm thick CZK 2,770–3,410/m<sup>2</sup>, 15 cm thick CZK 4,190–5,180/m<sup>2</sup> 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/m<sup>2</sup> (Supíkovice marble) or CZK 300–1,180/m<sup>2</sup> (Lipová marble). Prices of smoothed marble pavement are little more expensive: CZK 400–1,200/m<sup>2</sup> (Supíkovice), CZK 400–1,340/m<sup>2</sup> (Lipová) and prices of polished marble pavement are even more expensive: CZK 440–1,500/m<sup>2</sup> (Supíkovice) or CZK 440–1,630/m<sup>2</sup>.

#### 5. Mining companies in the Czech Republic as of December 31, 2011

##### Dimension stone – reserved deposits

REVLAN s.r.o., Horní Benešov  
 Granit Lipnice s.r.o., Dolní Město  
 Slezský kámen, a.s., Jeseník  
 HERLIN s.r.o., Příbram  
 BÖGL a KRÝSL, k.s., Praha  
 Česká žula s.r.o., Strakonice LB spol. s r.o.,  
 Nová Role  
 Průmysl kamene a.s., Příbram  
 MEDIGRAN s.r.o., Plzeň  
 Plzeňská žula, Plzeň  
 Bohumil Vejvoda, Krakovany v Čechách  
 CREDITFORFEIT, a.s., Praha

Malkov Granit Baumann s.r.o., Drahenický  
 Málkov  
 GRANIO s.r.o., Chomutov  
 SATES ČECHY, s.r.o., Telč  
 Těžba nerostů a.s., Plzeň  
 GRANIT-ZACH, spol. s r.o., Praha  
 RALUX s.r.o., Uhelná  
 SLEZSKÁ ŽULA spol. s r.o., Javorník  
 Obec Studená  
 KAVEX-GRANIT HOLDING a.s., Plzeň 2  
 Kámen Hudčice s.r.o.  
 Pražský kamenoservis s.r.o., Praha 10  
 COMING PLUS, a.s., Praha 4

Kamenoprůmyslové závody s.r.o., Šluknov  
Ligranit a.s., Liberec  
KÁMEN OSTROMĚŘ s.r.o.  
Krákorka a.s., Červený Kostelec  
Lom Matula Hlinsko, a.s.  
Granit Zedníček s.r.o., Kamenná  
Jindřich Zedníček, Kamenná  
Anna Mrázová, Mukařov  
Josef Máca, Třešť  
JIHOKÁMEN, výrobní družstvo, Písek  
M. & H. Granit s.r.o., Plzeň  
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

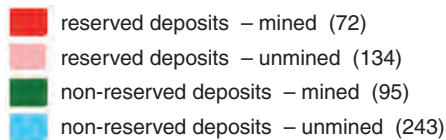
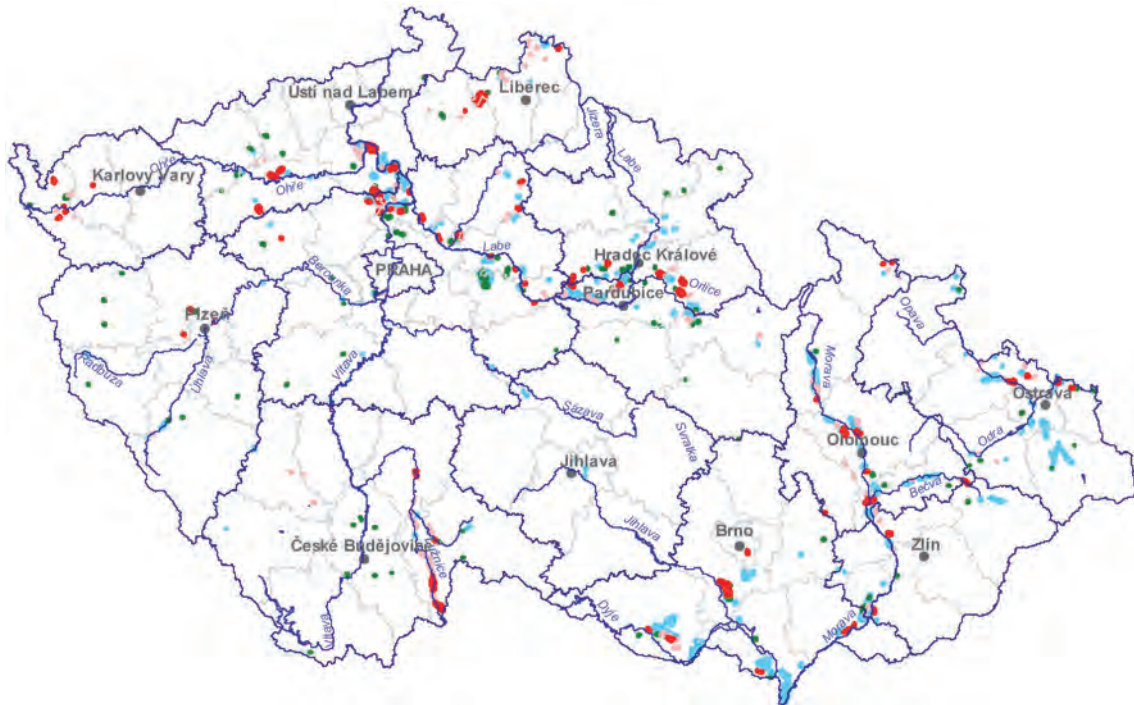
**Dimension stone – non-reserved deposits**

RENO Šumava a.s., Prachatice

KOKAM s.r.o., Kocbeře  
HERLIN s.r.o., Příbram  
Jiří Sršeň – TEKAM, Záměl  
Obec Studená  
K – Granit s.r.o., Jeseník  
PROFISTAV Litomyšl, a.s.  
Lom Horní Dvorce, s.r.o., Strmilov  
Josef Máca, Třešť  
Alfonz Dovičovič, Hořice  
Lesostavby Frýdek-Místek, a.s.  
Kamenolom Javorka s.r.o., Lázeň Běláhoř  
Ing. Danuše Plandorová, Házovice  
Bohumil Vejvoda, Krakovany v Čechách  
KAVEX – GRANIT HOLDING a.s.,  
Plzeň 2  
KAJA – TRADING spol. s r.o., Praha  
Krákorka a.s., Červený Kostelec  
Kateřina Zachová, Markvartice

## Sand and gravel

### 1. Registered deposits and other resources of the Czech Republic



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	2007	2008	2009	2010	2011
Deposits – total number	208	208	208	206	206
exploited	78	69	72	72	72
Total mineral *reserves, ths m <sup>3</sup>	2 145 835	2 125 644	2 112 759	2 134 304	2 126 991
economic explored reserves	1 141 041	1 132 411	1 123 164	1 129 913	1 126 123
economic prospected reserves	777 699	765 844	765 626	782 190	780 987
potentially economic reserves	227 095	227 389	223 969	222 201	219 881
exploitable reserves	345 367	341 758	356 412	358 569	362 676
Mine production in reserved deposits, ths m <sup>3</sup>	9 185	8 770	7 269	6 187	6 902

\* 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	ths m <sup>3</sup>	146 177	146 177	146 177	146 177	146 177
P <sub>2</sub> ,	ths m <sup>3</sup>	1 007 985	1 007 985	1 007 985	1 007 985	1 007 985
P <sub>3</sub>		–	–	–	–	–

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

Year		2007	2008	2009	2010	2011
Deposits – total number		338	336	338	340	338
exploited		101	94	96	94	95
Total mineral *reserves, ths m <sup>3</sup>		2 092 389	2 096 378	2 097 034	2 080 639	2 078 255
economic explored reserves		107 711	109 392	110 585	107 925	107 945
economic prospected reserves		1 743 741	1 746 049	1 745 512	1 734 314	1 731 910
potentially economic reserves		240 937	240 937	240 937	238 400	238 400
exploitable reserves		53 224	50 978	50 331	50 288	54 567
Mine production in non-reserved deposits, ths m <sup>3</sup> a)		6 450	6 350	6 050	4 500	5 000

\* 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)

		2007	2008	2009	2010	2011
Import	t	50	62	29	11	20
Export	t	2	0.7	0.4	0.6	5



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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	834	712	1 070	2 721	1 826
Average export prices	CZK/t	8 213	5 220	7 732	7 463	683

#### 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 263 CZK/t, size fraction 8–16 mm cost 222 CZK/t in 2011.

#### 5. Mining companies in the Czech Republic as of December 31, 2011

##### 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  
 Písky J.Elsnic s.r.o., Postoloprty  
 EUROVIA Kamenolomy, a.s., Liberec  
 KAMENOLOMY ČR s.r.o., Ostrava  
 Svinov  
 Družstvo DRUMAPO, Němčičky  
 TVARBET Moravia a.s., Hodonín  
 V.M.S. spol.s r.o., Louny  
 Městské lesy Hradec Králové a.s.  
 Realma-Pískovna Dolany s.r.o., Zlín  
 České štěrkopísky spol. s r.o., Praha  
 Václav Maurer, Lužec nad Vltavou  
 MIROS MAJETKOVÁ a.s., Pardubice  
 TEKAZ s.r.o., Cheb  
 Budějovické štěrkopísky spol. s r.o., Vrábče  
 Pískovna Sojovice, s.r.o.  
 Štěrkovny Olomouc a.s. Lubomír Kruncl,  
 Travčice  
 DOBET s.r.o., Ostrožská Nová Ves

Kinský dal Borgo, a.s., Chlumeč nad  
 Cidlinou  
 Obec Kostomlátky  
 Jana Lobová, Pardubice  
 Pískovny Hrádek a.s., Hrádek nad Nisou  
 Těžba štěrkopísku s.r.o., Brodek  
 Pískovna Černovice, s.r.o., Brno  
 Zemědělské obchodní družstvo Zálabí,  
 Ovčáry  
 BÖGL a KRÝSL, k.s., Praha  
 Písek Beton a.s., VeltrubyHradištko  
 Kaolin Hlubany, a.s.  
 KM Beta Moravia s.r.o., Hodonín  
 NZPK s.r.o., Podbořany  
 Oldřich Psočka, Mikulovice u Jeseníka  
 Ladislav Šeda, Turnov  
 Zechmeister, spol. s r.o., Praha  
 UNIM s.r.o., Všestudy u Veltrus  
 Zemědělské obchodní družstvo, Brniště  
 František Dvořák, Dolní Dunajovice  
 Sokolovská uhelná, právní nástupce, a.s.,  
 Sokolov  
 KARETA s.r.o., Bruntál  
 AG Skořenice, akciová společnost  
 Berger Bohemia a.s., Plzeň

Best Písek s.r.o., Rybnice  
 Česká geologická služba  
 FRISCHBETON s.r.o., Praha  
 GKR TRANSPORT s.r.o., Roudnice nad  
 Lab.  
 Lesy České republiky, s.p., Hradec Králové  
 Město Mělník Miloš Feigl, Úžice  
 PÍSEK OSTRAVA s.r.o., Ostrava Poruba  
 Pískovna Hrušovany a.s., Hradčany  
 Rovina Písek, a.s., Písek u Chlumce n.C  
 S MOST s.r.o. , Hradec Králové  
 ŠARAVEC A RUČ, spol. s r.o., Pardubice  
 TAPAS Borek, s.r.o., Stará Boleslav  
 Technické služby města Strakonice s.r.o.  
 TELETÍNSKÁ ŽULA, s.r.o., Praha  
 ZAPA beton a.s., Praha 4  
 ZEPIKO spol. s r.o., Brno ZS Kratonohy a.s.

#### **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  
 Písek Žabčice, s.r.o.  
 ROBA štěrkovny Nové Sedlo, s.r.o.  
 Písník Kinský, s.r.o., Kostelec nad Orlicí  
 ZEPIKO spol. s r.o., Brno  
 Lubomír Kruncl, Travčice  
 Vršanská uhelná a.s., Most  
 AGRO Brno Tuřany, a.s.  
 Holcim (Česko) a.s., člen koncernu,  
 Prachovice  
 FRISCHBETON s.r.o., Praha  
 Písek Beton a.s., VeltrubyHradištko  
 ZS Kratonohy a.s.  
 Václav Maurer, Lužec nad Vltavou  
 TAPAS Borek, s.r.o., Stará Boleslav  
 Luděk Měchura, Kyjov  
 Sušárna a.s. Kratonohy  
 Rovina Písek, a.s., Písek u Chlumce n.C  
 ACHP s.r.o., Hradec Králové  
 Plzeňské štěrkopísky s.r.o., Plzeň  
 Agropodnik Humburky, a.s.  
 AG Skořenice, akciová společnost  
 DOBET s.r.o., Ostrožská Nová Ves

BEST a.s., Rybnice  
 Hradecký písek a.s., Brno  
 Obec Malhotice  
 KÁMEN Zbraslav, spol. s r.o.  
 LIKOD s.r.o., Lípa  
 Silnice Klatovy, a.s.  
 Vratislav Matoušek, Tursko  
 Kobra Údlice s.r.o.  
 realmapískovna dolany s.r.o., Zlín  
 SPONGILIT PP, spol. s r.o., Praha  
 ZEPOS a.s., Radovesice  
 Štěrkopísky Milhostov, s.r.o., Sokolov  
 Ing.Václav Luka, Český Brod  
 SABIA s.r.o., Bohušovice nad Ohří  
 MORAS a.s., Moravany  
 Ing.Milan Tichý Inženýrské stavby VOKA,  
 Zahrádky  
 Agrodružstvo Klas, Staré Ždánice  
 MAPO, s.r.o., Písty  
 Obecní lesy Bludov s.r.o.  
 RYNOLTICKÁ PÍSKOVNA s.r.o., Liberec  
 Písky Skviřín, s.r.o., Tachov  
 Ing.František Klika, Kladno  
 BALLAST CZ a.s., Praha  
 JF TAKO s.r.o., Tatce  
 Ilona Seidlová, Jetřichov  
 Technické služby města Strakonice s.r.o.  
 Václav Merhulík prod.a těž.písku, Lety  
 Stavoka Kosice a.s.  
 Správa a údržba silnic Jihoč.kraje,  
 Č.Budějovice  
 Obec Osek nad Bečvou  
 Unigeo a.s., Ostrava Hrabová  
 Mgr.Milan Roček, Moravany  
 Kateřina Zachová, Markvartice  
 Jiří Bartoš, Poříčí u Litomyšle  
 Václav Mašek, Hýskov  
 STAVOKA Hradec Králové, a.s.  
 Obec Rabštejnská Lhota  
 Zemědělské družstvo Kokory  
 Městys Senomaty  
 Městys Polešovice  
 Recyklaceštěrkovna Frýdlant s.r.o.  
 ALFIT s.r.o., České Budějovice  
 META Servis s.r.o., Černošice  
 ZD v Pňovicích

STAKUS písek s.r.o., Tachov	M&M Dresler s.r.o., Medlov
Obec Police	Marie Beranová Pískovna u Beranů, Daleké Dušníky
Lesy České republiky, s.p., Hradec Králové	Neuvedena
Městské lesy Jaroměř s.r.o., Proruby	Obec Libá
RENOVUM stavební činnost s.r.o., Staňkov	Panelárna v.d., Oldřichov v Hájích
Technické služby města Úpice	Pražské vodovody a kanalizace a.s.
AGROSPOL HRÁDEK, spol. s r.o.	REALSTAV MB spol.s r. o., Mladá Boleslav
BG Technik cs, a.s., Praha	Štěrkovny Olomouc a.s.
BÖGL a KRÝSL, k.s., Praha	TEKAZ s.r.o., Cheb
Českomoravský štěrk, a.s., Mokrá	Václav Staněk, pískovna Pihovice
Grábštejn s.r.o., Jablonec nad Nisou	VHS Břeclav, s.r.o.
II.severoč.staveb.spol. s.r.o., Okounov	VIKING Holoubkov, s.r.o., Plzeň
Ing.Josef Novák NOBI, Praha 5	Vladislav Durczok pískovna Petrovice
INGEA realizace s.r.o., OstravaSvinov	Zájmové sdružení právnických osob PEROS, Hředle
JSK Rozhraní, s.r.o.	
Lesní družstvo obcí, Příbyslav	

# MINERALS CURRENTLY UNMINED IN THE CZECH REPUBLIC

## MINERALS MINED IN THE PAST WITH RESOURCES AND RESERVES

### ENERGY MINERALS

#### Lignite

#### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits     
 ■ exhausted deposits and other resources

#### Principal areas of deposits presence:

*(None of regions has mined deposit)*

1 Vienna Basin

2 České Budějovice Basin

3 Czech part of the Zittau (Žitava) Basin

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	9	9	9	9	5
exploited	1	1	1	0	0
Total mineral reserves*, kt	976 367	975 702	975 261	975 261	997 229
economic explored reserves	204 412	204 221	203 780	203 780	619 652
economic prospected reserves	615 273	615 273	615 273	615 273	229 932
potentially economic reserves	156 682	156 208	156 208	156 208	147 645
exploitable (recoverable)	2 107	2 165	1 903	1 903	1 903
Mine production, kt	437	416	262	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**

Lignite mining ended in 2009

### Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	232 867	232 867	232 867	232 867	169 262
P <sub>2</sub>	–	–	–	–	37 531
P <sub>3</sub>	–	–	–	–	–

## 3. Foreign trade

No separate tariff item exists for lignite.

## INDUSTRIAL MINERALS

### Barite

#### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

Registered deposits and other resources are not mined

1 Běstvina

2 Bohousová

3 Křižanovice

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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**

<sup>a)</sup> Deposits with registered barite reserves

## 3. Foreign trade

### 251110 – Natural barium sulphate (barite)

		2007	2008	2009	2010	2011
Import	t	6 616	7 194	4 797	7 079	7 456
Export	t	284	237	142	239	283

### 251110 – Natural barium sulphate (barite)

		2007	2008	2009	2010	2011
Average import prices	CZK/t	5 832	5 579	6 807	6 497	7 494
Average export prices	CZK/t	18 143	11 813	11 868	12 340	11 804

### 251120 – Natural barium carbonate (witherite)

		2007	2008	2009	2010	2011
Import	t	0	134	0.4	113	108
Export	t	0	0	0	0	0

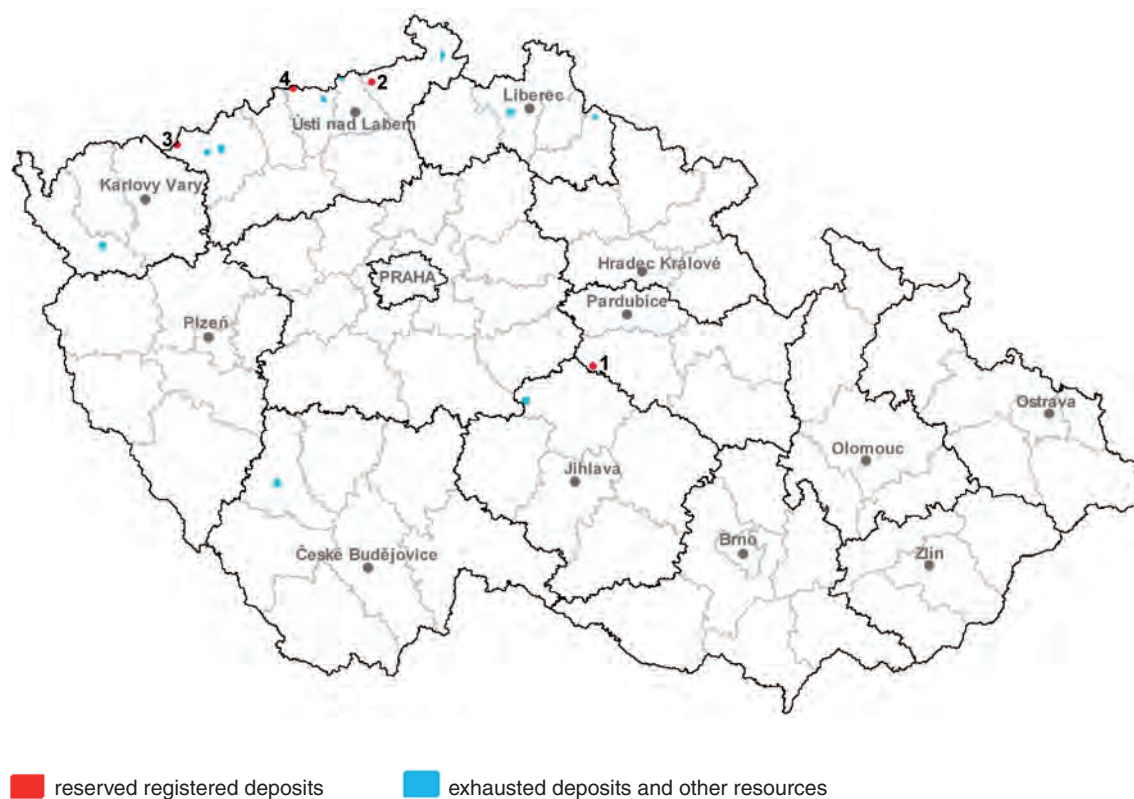
### 251120 – Natural barium carbonate (witherite)

		2007	2008	2009	2010	2011
Average import prices	CZK/t	–	7 112	11 111	8 849	9 583
Average export prices	CZK/t	–	–	–	–	–



## Fluorspar

### 1. Registered deposits and other resources of the Czech Republic



Registered deposits and other resources are not mined

1 Běstvína

2 Jílové u Děčína

3 Kovářská

4 Moldava

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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

<sup>a)</sup> Deposits with registered fluorspar reserves

## 3. Foreign trade

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

		2007	2008	2009	2010	2011
Import	t	11 700	1 873	4 247	5 752	4 851
Export	t	3 936	1 963	4 707	5 584	3 025

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 347	4 584	4 358	4 969	6 455
Average export prices	CZK/t	7 122	7 554	8 634	7 842	7 807

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

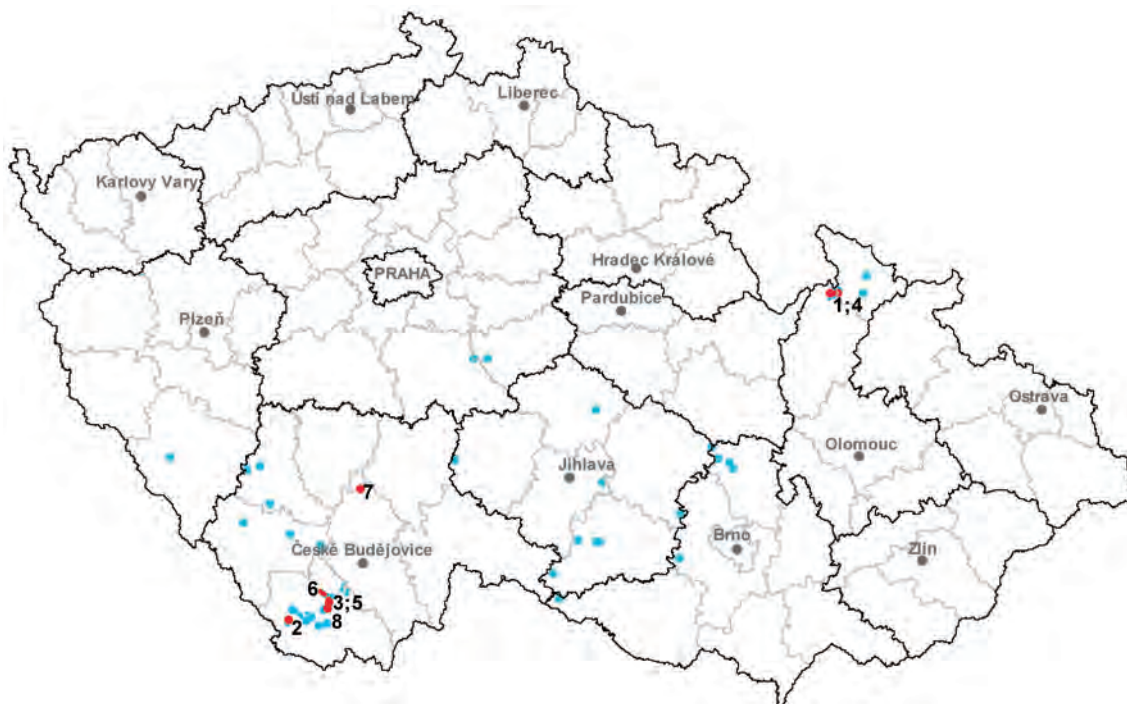
		2007	2008	2009	2010	2011
Import	t	11 532	1 567	4 379	8 743	10 971
Export	t	6 210	2 544	1 431	5 003	7 539

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 870	5 045	6 030	5 252	6 560
Average export prices	CZK/t	8 030	8 595	9 030	8 650	9 955

## Graphite

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

■ exhausted deposits and other resources

Registered deposits and other resources are not mined

#### Amorphous graphite:

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

#### Crystalline graphite:

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

#### Mixed (from amorphous to crystalline) graphite:

- 8 Spolí

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	8	8	8	8	8
exploited	1	1	1	1	1
Total mineral *reserves, kt	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 <sup>a)</sup>	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

<sup>a)</sup> 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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	3 878	3 878	3 878	3 878	3 878
P <sub>2</sub> , kt	5 279	5 279	5 279	5 279	5 279
P <sub>3</sub> , kt	1 505	1 505	1 505	1 505	1 505

## 3. Foreign trade

### 2504 – Natural graphite

		2007	2008	2009	2010	2011
Import	t	5 353	6 235	2 679	3 634	5 145
Export	t	4 031	4 076	2 151	3 155	3 418

### 2504 – Natural graphite

		2007	2008	2009	2010	2011
Average import prices	CZK/t	23 628	20 619	22 657	21 381	21 940
Average export prices	CZK/t	26 661	27 088	28 905	25 880	31 649

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

		2007	2008	2009	2010	2011
Import	t	4 402	7 376	5 500	3 583	4 396
Export	t	565	999	1 178	1 656	1 181

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

		2007	2008	2009	2010	2011
Average import prices	CZK/t	36 897	24 636	27 187	35 737	35 931
Average export prices	CZK/t	20 362	20 398	23 760	25 841	33 973

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

		2007	2008	2009	2010	2011
Import	t	11 211	10 596	4 606	5 598	6 756
Export	t	16 385	16 579	10 564	11 419	12 471

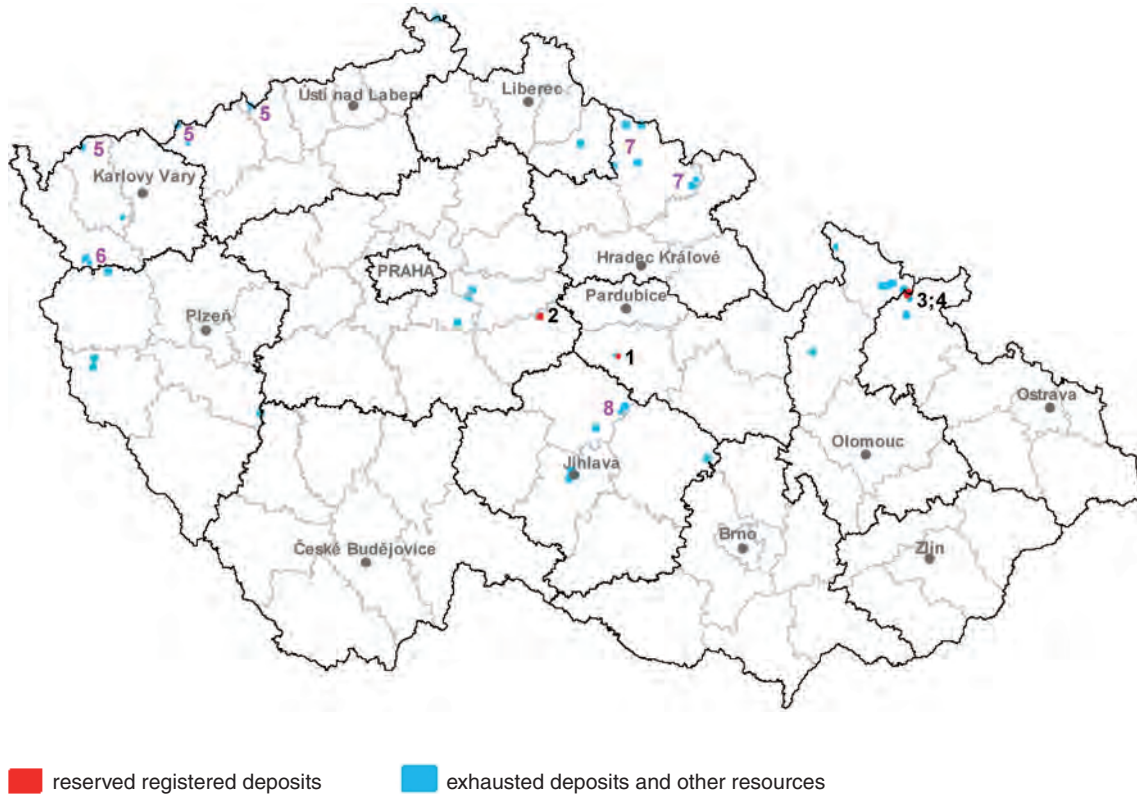
**6903 – Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods)**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	85 925	72 687	98 596	99 956	86 450
Average export prices	CZK/t	136 916	113 331	117 344	127 577	121 179

## METALLIC ORES

### Copper

#### 1. Registered deposits and other resources of the Czech Republic



Registered deposits and other resources are not mined

#### Reserved registered deposits:

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>1 Křižanovice</li> <li>2 Kutná Hora</li> </ul> | <ul style="list-style-type: none"> <li>3 Zlaté Hory-Hornické Skály</li> <li>4 Zlaté Hory-východ</li> </ul> |
|---|--|

#### Exhausted deposits and other resources:

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>5 in Krušné hory Mts. (Erzgebirge Mts.) and Tisová</li> <li>6 Tři Sekery and surroundings</li> </ul> | <ul style="list-style-type: none"> <li>7 in Krkonoše Mts. Piedmont Basin and Intrasudetic Basin</li> <li>8 Staré Ransko</li> </ul> |
|---|--|

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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

<sup>a)</sup> deposits with registered Cu content

## 3. Foreign trade

### 2603 – Copper ores and concentrates

		2007	2008	2009	2010	2011
Import	t	0	1	1	0	0.001
Export	t	0	0	0	0	0

### 2603 – Copper ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	–	178 400	258 114	–	1 000
Average export prices	CZK/t	–	–	–	–	–

### 7402 – Unrefined copper

		2007	2008	2009	2010	2011
Import	t	2 234	1 633	116	91	86
Export	t	0.004	1	24	7	1



**7402 – Unrefined copper**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	149 985	130 807	79 605	174 269	193 912
Average export prices	CZK/t	12 500 000	658 015	97 858	185 656	6 000 000

**7403 – Refined copper and copper alloys**

		2007	2008	2009	2010	2011
Import	t	16 625	14 063	24 320	10 506	9 540
Export	t	10 002	8 200	14 606	14 627	13 492

**7403 – Refined copper and copper alloys**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	128 196	131 292	68 492	144 568	148 043
Average export prices	CZK/t	118 858	129 425	108 761	135 058	160 395

**7404 – Copper waste and scrap**

		2007	2008	2009	2010	2011
Import	t	8 980	8 826	9 666	12 297	18 952
Export	t	59 548	59 693	105 562	124 927	86 654

**7404 – Copper waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	106 826	90 446	77 378	113 233	132 373
Average export prices	CZK/t	101 869	86 415	76 924	98 614	116 018

**740311 – Copper cathodes and sections of cathodes unwrought**

		2007	2008	2009	2010	2011
Import	t	12 429	8 583	20 696	5 298	4 962
Export	t	6 466	3 869	10 628	11 082	10 347

**740311 – Copper cathodes and sections of cathodes unwrought**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	149 878	133 158	58 097	148 406	158 838
Average export prices	CZK/t	161 575	135 173	105 370	137 459	154 955

**740321 – Copper-zinc base alloys, unwrought**

		2007	2008	2009	2010	2011
Import	t	3 251	3 560	2 925	3 330	3 021
Export	t	3 426	4 185	2 802	3 313	2 642

**740321 – Copper-zinc base alloys, unwrought**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	37 394	126 210	130 401	129 518	126 077
Average export prices	CZK/t	37 896	122 189	127 860	126 691	125 465

**740322 – Copper-tin base alloys, unwrought**

		2007	2008	2009	2010	2011
Import	t	108	229	97	277	245
Export	t	67	19	1 082	102	71

**740322 – Copper-tin base alloys, unwrought**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	300 139	218 550	183 113	123 581	192 082
Average export prices	CZK/t	113 122	510 587	93 775	118 481	254 361

## Germanium

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

The registered deposit is not exploited

1 Lomnice u Sokolova

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number	1	1	1	1	1
exploited	0	0	0	0	0
Total mineral *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

## 3. Foreign trade

### 81129295 – Unwrought germanium, germanium powders; excluding waste and scrap

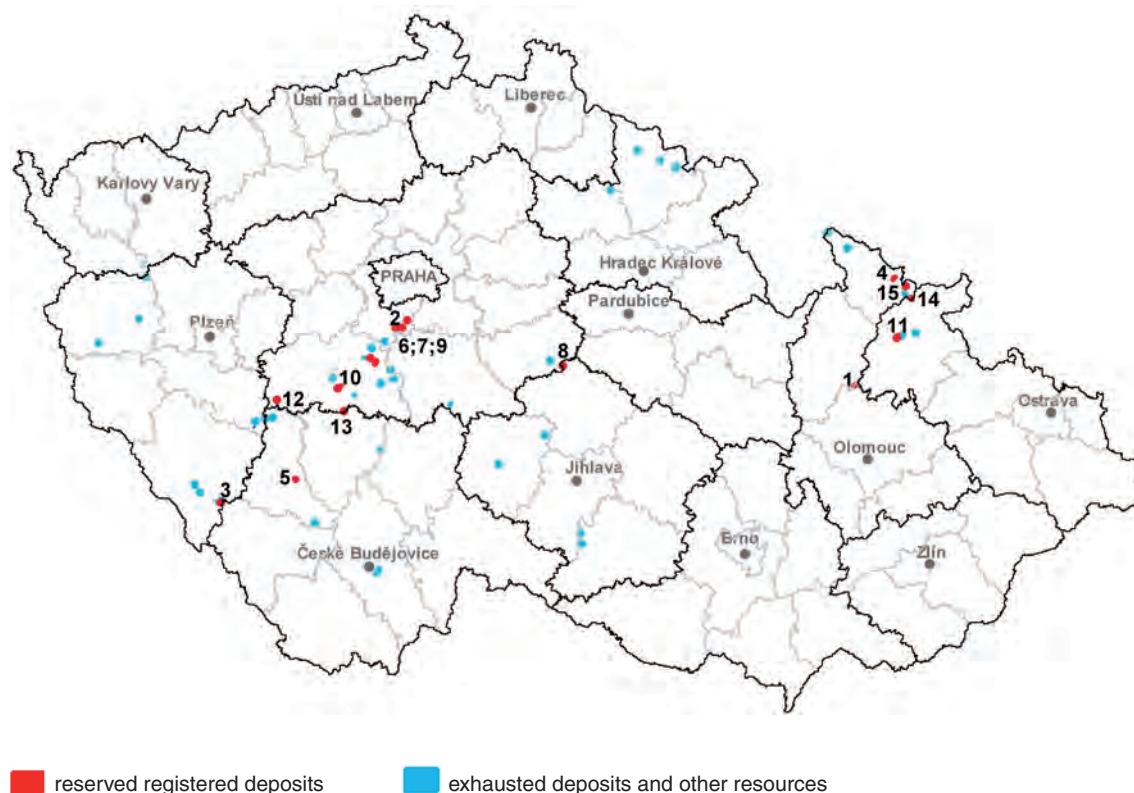
		2007	2008	2009	2010	2011
Import	kg	0	3	2	7	13
Export	kg	0	0	0	0	0

### 81129295 – Unwrought germanium, germanium powders; excluding waste and scrap

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	3 667	11 000	14 286	3 692
Average export prices	CZK/kg	–	–	–	–	–

## Gold

### 1. Registered deposits and other resources of the Czech Republic



Registered deposits and other resources are not mined

1 Břevenec

2 Jílové u Prahy

3 Kašperské Hory

4 Mikulovice u Jeseníka

5 Modlešovice

6 Mokrsko

7 Mokrsko-východ

8 Podmoky

9 Prostřední Lhota-Čelina

10 Smolotely-Horní Líšnice

11 Suchá Rudná-střed

12 Vacíkov

13 Voltýřov

14 Zlaté Hory-východ

15 Zlaté Hory-Zlatý potok

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
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 P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

#### Au metal in ores

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kg	60 221	60 221	60 221	60 221	60 221
P <sub>2</sub> ,	kg	65 846	65 846	65 846	65 846	65 846
P <sub>3</sub> ,		–	–	–	–	–

#### Au ore

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kt	16 700	16 700	16 700	16 700	16 700
P <sub>2</sub> ,	kt	20 341	20 341	20 341	20 341	20 341
P <sub>3</sub> ,	kt	2 850	2 850	2 850	2 850	2 850

## 3. Foreign trade

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

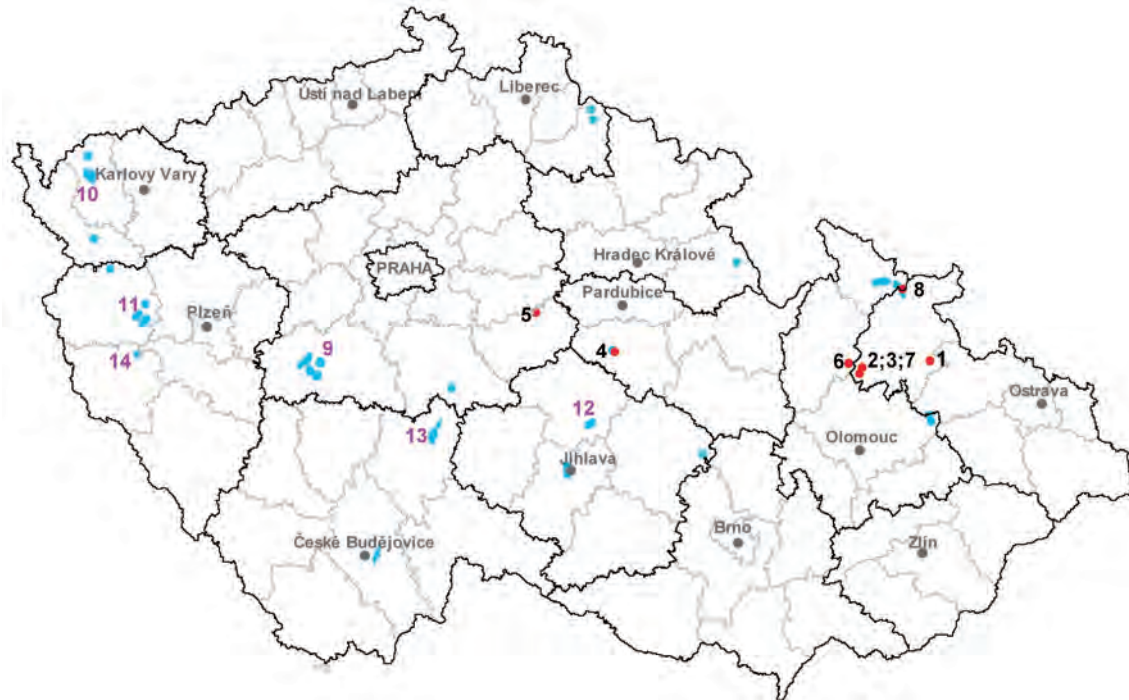
		2007	2008	2009	2010	2011
Import	kg	1 926	2 593	2 915	3 693	20 268
Export	kg	4 632	5 153	10 649	477	9 851

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

		2007	2008	2009	2010	2011
Average import prices	CZK/g	248	331	416	566	172
Average export prices	CZK/g	80	102	71	3 187	227

## Lead

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits     
 ■ exhausted deposits and other resources

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	12 Havlíčkův Brod (Dlouhá Ves + Bartoušov + Stříbrné Hory)
10 Oloví	13 Ratibořské Hory + Stará Vožice
11 Stříbro	14 Černovice



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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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

<sup>a)</sup> Deposits with registered Pb content

### Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub> Polymetallic (Pb – Zn ± Cu) ores

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	kt	786	786	786	786	786
P <sub>2</sub> ,	kt	5 340	5 340	5 340	5 340	5 340
P <sub>3</sub> ,		–	–	–	–	–

## 3. Foreign trade

### 2607 – Lead ores and concentrates

		2007	2008	2009	2010	2011
Import	t	0	0	238	0	254
Export	t	0	0	0	0	0

### 2607 – Lead ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	168 421	214 286	15 653	500 000	354 331
Average export prices	CZK/t	1 600 000	1 109 375	152 174	541 176	–

**7801 – Unwrought lead**

		2007	2008	2009	2010	2011
Import	t	68 661	59 358	65 846	82 402	35 971
Export	t	19 625	18 714	70 071	32 863	21 104

**7801 – Unwrought lead**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	48 451	39 860	34 426	43 444	45 535
Average export prices	CZK/t	43 480	44 525	7 804	35 682	45 242

**7802 – Lead waste and scrap**

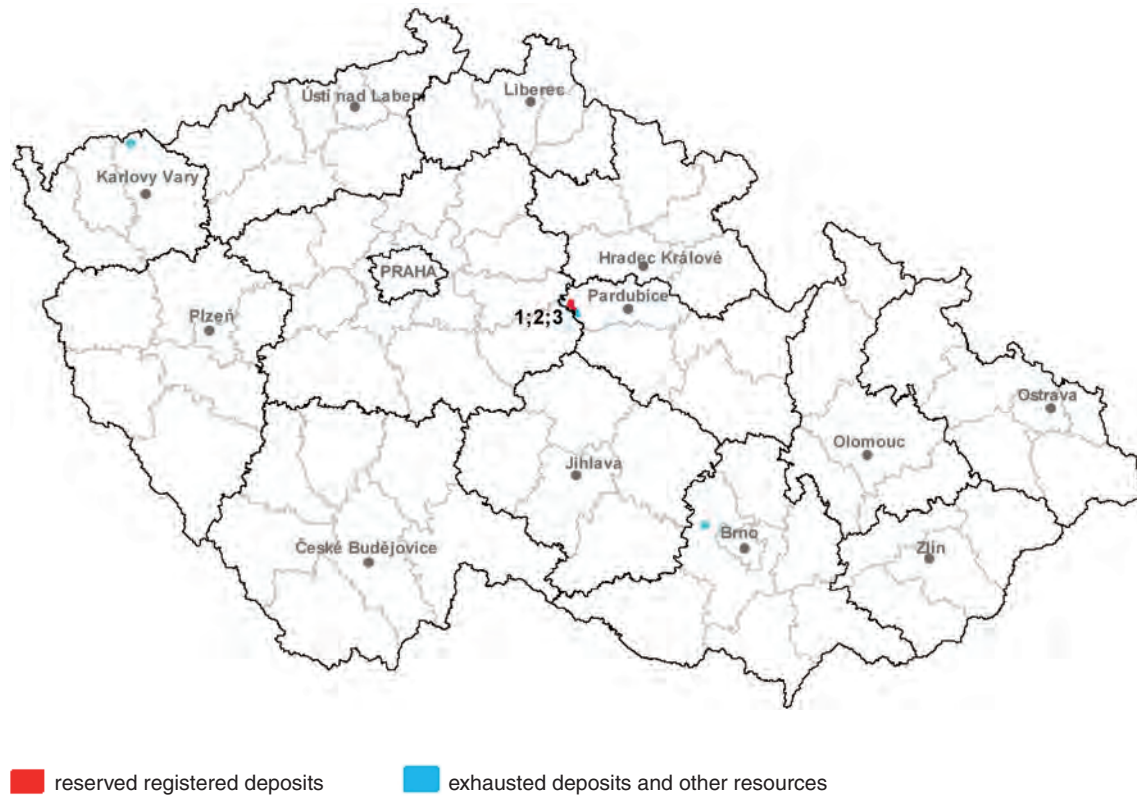
		2007	2008	2009	2010	2011
Import	t	6 502	4 773	4 199	2 901	2 770
Export	t	6 894	8 161	4 832	2 116	1 116

**7802 – Lead waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	44 658	34 373	25 175	32 004	37 005
Average export prices	CZK/t	27 716	26 308	26 561	33 899	39 418

## Manganese

### 1. Registered deposits and other resources of the Czech Republic



Registered deposits and other resources are not mined

1 Chvaletice

2 Chvaletice – tailing ponds  
Nos 1 & 2

3 Řečany – tailing pond  
No 3

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
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

## 3. Foreign trade

### 2602 – Manganese ores and concentrates

		2007	2008	2009	2010	2011
Import	t	15 902	15 714	16 089	25 546	28 905
Export	t	43	101	0	0.3	50

### 2602 – Manganese ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 640	10 112	8 112	9 409	8 108
Average export prices	CZK/t	14 503	15 388	–	14 545	14 069

### 720211; 720219 – Ferro-manganese

		2007	2008	2009	2010	2011
Import	t	35 668	34 663	23 642	26 259	25 281
Export	t	2 996	3 348	5 257	2 617	1 704

**720211; 720219 – Ferro-manganese**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	25 433	44 117	26 432	29 897	26 716
Average export prices	CZK/t	28 417	45 045	23 525	30 899	26 007

**720230 – Ferrosilicomanganese**

		2007	2008	2009	2010	2011
Import	t	52 199	50 565	34 425	39 793	45 035
Export	t	2 803	5 658	1 892	4 560	1 754

**720230 – Ferrosilicomanganese**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	22 723	33 871	23 992	26 142	24 500
Average export prices	CZK/t	22 407	32 427	22 137	25 774	23 404

**8111 – Manganese and articles thereof, including waste and scrap**

		2007	2008	2009	2010	2011
Import	t	804	2 542	2 229	1 014	911
Export	t	135	108	177	6	24

**8111 – Manganese and articles thereof, including waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	61 014	66 260	47 027	60 893	62 416
Average export prices	CZK/t	43 521	60 424	52 096	58 599	65 337

**2820 – Manganese oxides**

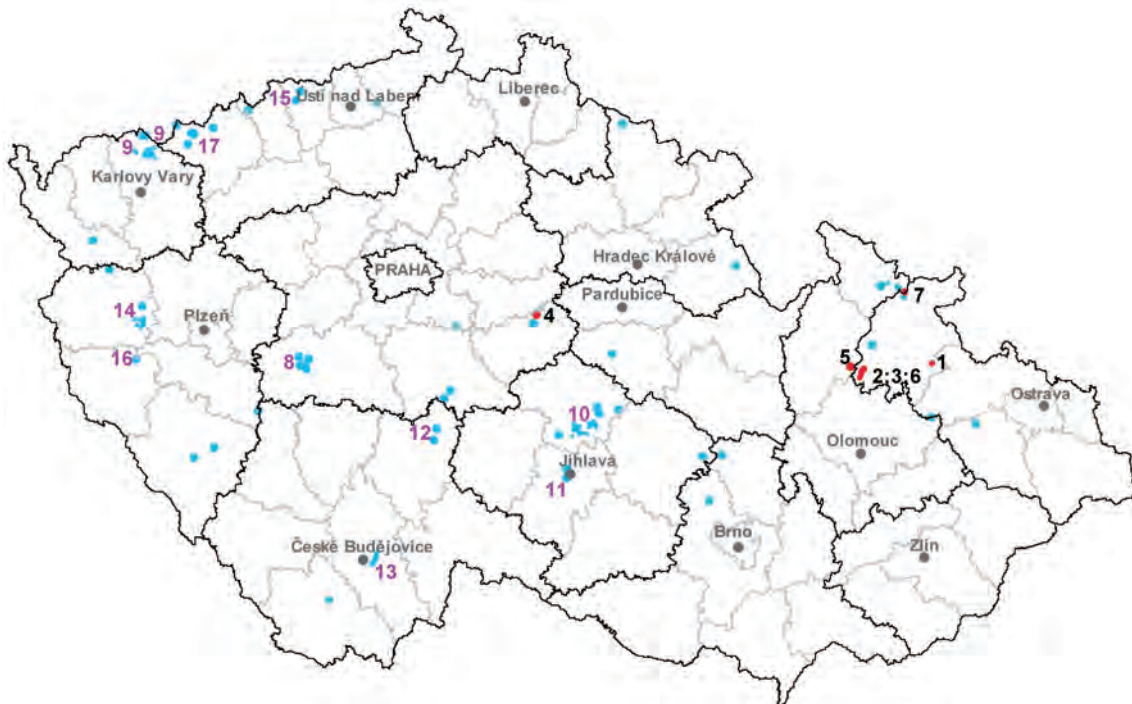
		2007	2008	2009	2010	2011
Import	t	1 058	1 476	1 347	2 146	1 107
Export	t	668	728	331	44	55

**2820 – Manganese oxides**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	18 758	19 783	22 542	22 605	22 278
Average export prices	CZK/t	19 852	23 638	22 294	21 721	21 072

## Silver

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits     
 ■ exhausted deposits and other resources

Registered deposits and other resources are not mined

#### Reserved registered deposits:

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

#### Exhausted deposits and other resources:

8 Příbram surroundings	13 Rudolfovo
9 Jáchymov surroundings	14 Stříbro
10 Havlíčkův Brod surroundings	15 Hrob + Mikulov
11 Jihlava surroundings	16 Nařovské hory
12 Ratibořské hory + Stará Vožice	17 Vejpřty + Hora sv. Kateřiny

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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

<sup>a)</sup> Deposits with registered Ag content

### Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub> Ag metal in ores

Year		2007	2008	2009	2010	2011
P <sub>1</sub> ,	t	33	33	33	33	33
P <sub>2</sub> ,	t	4	4	4	4	4
P <sub>3</sub> ,		–	–	–	–	–

## 3. Foreign trade

### 261610 – Silver ores and concentrates

		2007	2008	2009	2010	2011
Import	kg	0	0	5 660	990 207	0
Export	kg	0	0	2	990 205	3

### 261610 – Silver ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	–	64	347	–
Average export prices	CZK/kg	–	–	6 000	357	11 667



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

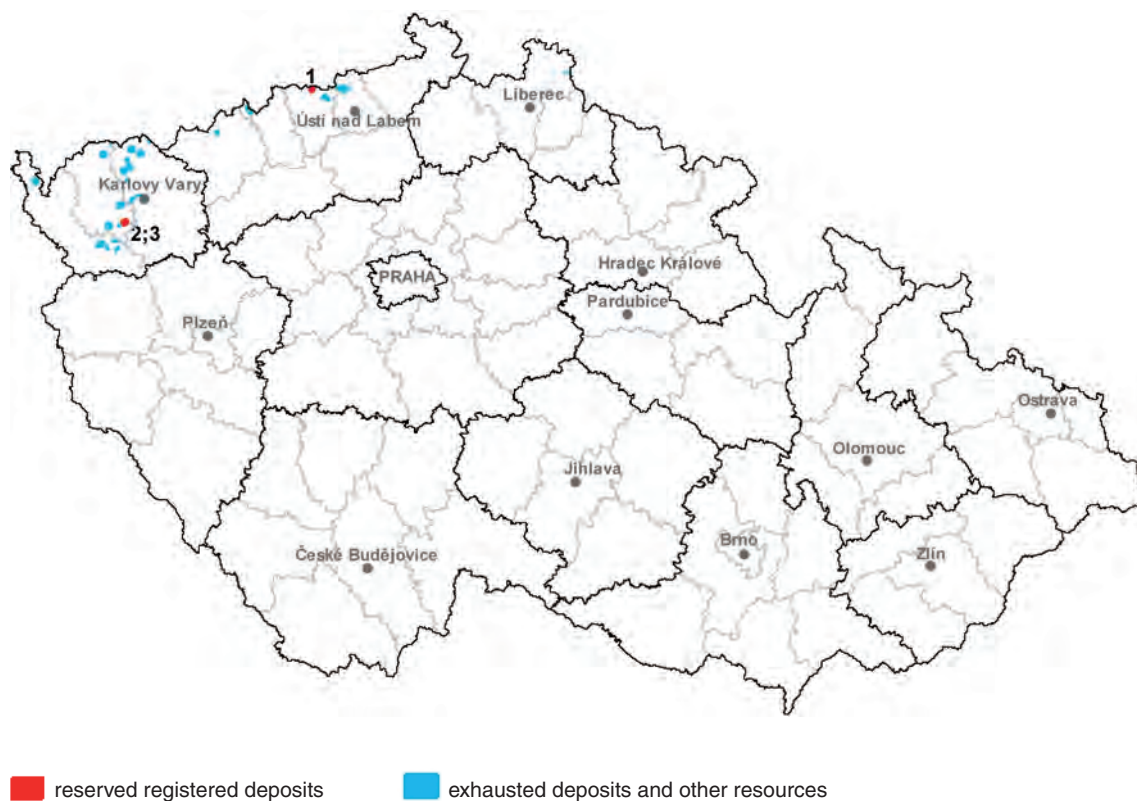
		2007	2008	2009	2010	2011
Import	kg	206 463	321 139	162 166	136 257	88 614
Export	kg	102 045	117 335	78 127	75 352	270 147

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

		2007	2008	2009	2010	2011
Average import prices	CZK/g	5.98	3.82	4.52	7.57	13.11
Average export prices	CZK/g	10.52	9.37	9.88	13.05	7.59

## Tin

### 1. Registered deposits and other resources of the Czech Republic



Registered deposits and other resources are not mined

1 Cínovec-jih

2 Krásno

3 Krásno-Horní Slavkov

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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

<sup>a)</sup> Sn-W ore deposits

### Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub> Sn – W ores

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , kt	2 195	2 195	2 195	2 195	2 195
P <sub>2</sub> ,	–	–	–	–	–
P <sub>3</sub> ,	–	–	–	–	1 505

## 3. Foreign trade

### 2609 – Tin ores and concretates

		2007	2008	2009	2010	2011
Import	t	2	1	0	101	0
Export	t	0	0	0	0.001	0

### 2609 – Tin ores and concretates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	358 960	181 463	–	841	–
Average export prices	CZK/t	–	–	–	2 000 000	1 000

**8001 – Unwrought tin**

		2007	2008	2009	2010	2011
Import	t	1 070	855	569	449	652
Export	t	256	85	81	275	17

**8001 – Unwrought tin**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	219 516	206 324	286 726	343 332	400 572
Average export prices	CZK/t	253 238	264 034	256 503	376 223	464 074

**8002 – Tin waste and scrap**

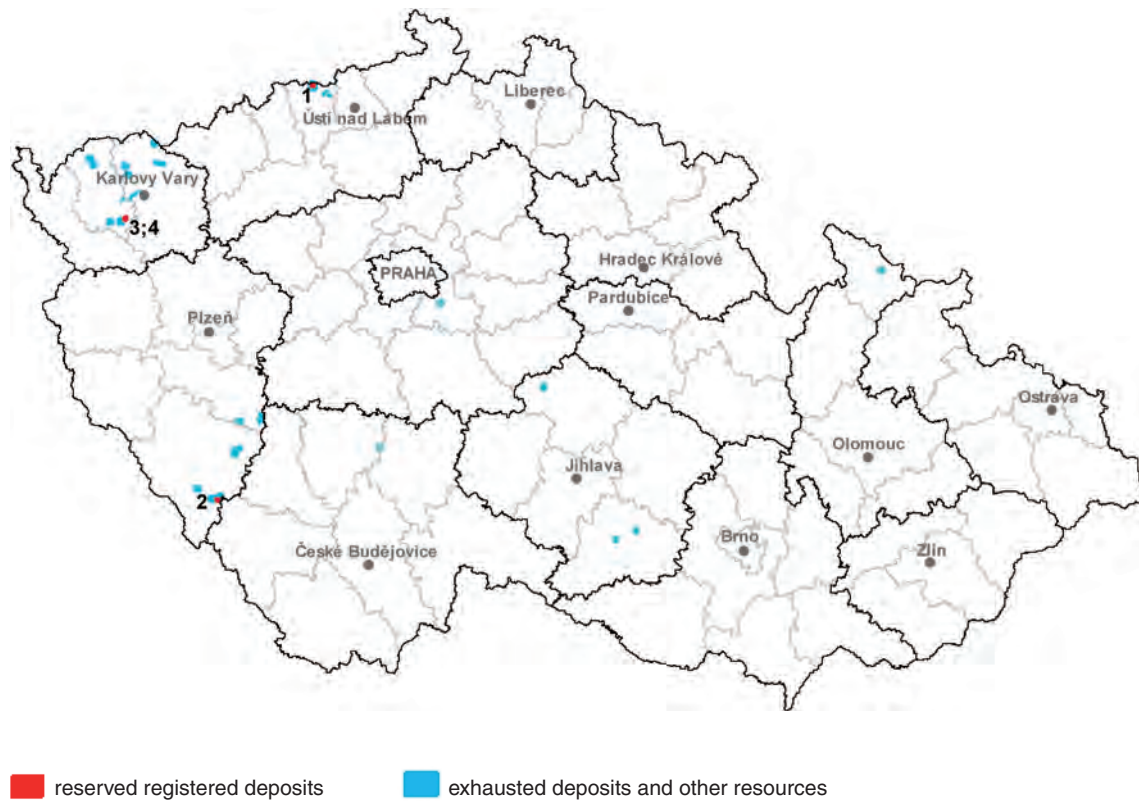
		2007	2008	2009	2010	2011
Import	t	13	44	90	4	5
Export	t	988	87	118	44	168

**8002 – Tin waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	104 517	112 233	67 536	92 672	176 397
Average export prices	CZK/t	12 263	126 181	93 951	166 868	105 777

## Tungsten

### 1. Registered deposits and other resources of the Czech Republic



Registered deposits and other resources are not mined

1 Cínovec-jih

2 Kašperské Hory

3 Krásno

4 Krásno-Horní Slavkov

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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

<sup>a)</sup> Sn-W and W ore deposits

### Approved prognostic resources P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>

#### W metal in ores

Year	2007	2008	2009	2010	2011
P <sub>1</sub> , t	3 252	3 252	3 252	3 252	3 252
P <sub>2</sub> , t	10 703	10 703	10 703	10 703	10 703
P <sub>3</sub> ,	–	–	–	–	–

## 3. Foreign trade

### 2611 – Tungsten ores and concentrates

		2007	2008	2009	2010	2011
Import	kg	320	170	0	73 660	292 634
Export	kg	561	0	0	0	0

### 2611 – Tungsten ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	269	235	–	9	14
Average export prices	CZK/t	303	–	–	–	–

**8101 – Tungsten and its products, including waste and scrap**

		2007	2008	2009	2010	2011
Import	kg	75 659	51 746	13 458	259 357	369 249
Export	kg	94 273	82 968	25 106	208 928	612 381

**8101 – Tungsten and its products, including waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	880	1 041	2 624	534	978
Average export prices	CZK/kg	723	762	919	507	961

**720280 – Ferro-tungsten and ferrosilicotungsten**

		2007	2008	2009	2010	2011
Import	kg	35 005	20 273	34 092	42 732	83 918
Export	kg	1 587	3 675	8 550	7 412	22 201

**720280 – Ferro-tungsten and ferrosilicotungsten**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	580	465	406	491	520
Average export prices	CZK/kg	565	500	479	525	517

**810196 – Tungsten wires**

		2007	2008	2009	2010	2011
Import	kg	764 809	154 135	4 172 737	419 343	101 918
Export	kg	10 035	9 593	6 430	8 756	32 881

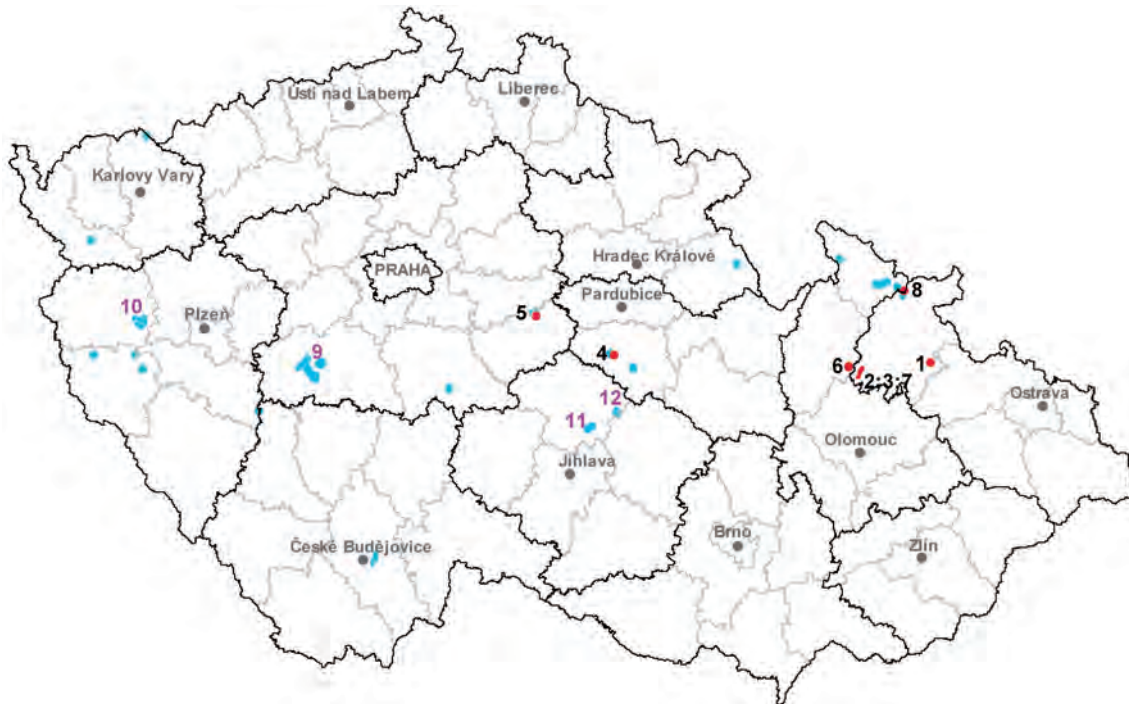
**810196 – Tungsten wires**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	284	1 318	36	475	1 766
Average export prices	CZK/kg	5 900	4 972	5 671	5 671	1 388



## Zinc

### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits     
 ■ exhausted deposits and other resources

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

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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
Deposits – total number <sup>a)</sup>	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, kt 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

<sup>a)</sup> Deposits with registered Zn content

## 3. Foreign trade

### 2608 – Zinc ores and concentrates

		2007	2008	2009	2010	2011
Import	t	5	1	1	5	37
Export	t	0.06	0.2	0.3	0.3	0.9

### 2608 – Zinc ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	189 201	504 613	355 799	57 930	39 643
Average export prices	CZK/t	500 000	480 769	122 047	185 185	52 928

### 7901 – Unwrought zinc

		2007	2008	2009	2010	2011
Import	t	47 755	48 089	32 016	27 961	27 974
Export	t	18 764	17 706	19 987	6 245	5 146

**7901 – Unwrought zinc**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	75 794	40 861	34 518	44 319	41 499
Average export prices	CZK/t	73 792	39 130	33 777	36 341	30 964

**7902 – Zinc waste and scrap**

		2007	2008	2009	2010	2011
Import	t	4 008	2 749	2 434	900	909
Export	t	2 934	2 885	2 717	4 800	4 189

**7902 – Zinc waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	72 547	35 456	28 439	34 247	30 650
Average export prices	CZK/t	47 537	23 901	19 855	23 258	25 683

## MINERALS MINED IN THE PAST WITHOUT RESOURCES AND RESERVES

### Antimony

#### Foreign trade

##### 261710 – Antimony ores and concentrates

		2007	2008	2009	2010	2011
Import	kg	34	45	37 021	53 035	69 054
Export	kg	0	0	0	0	0

##### 261710 – Antimony ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	25 647	16 556	91	112	192
Average export prices	CZK/kg	–	–	–	–	6 000

##### 8110 – Antimony and articles thereof, including waste and scrap

		2007	2008	2009	2010	2011
Import	t	64	131	54	75	64
Export	t	6	3	12	19	0.02

##### 8110 – Antimony and articles thereof, including waste and scrap

		2007	2008	2009	2010	2011
Average import prices	CZK/t	117 951	108 477	98 434	141 136	263 697
Average export prices	CZK/t	118 004	116 576	117 657	143 763	238 095

## Arsenic

### Foreign trade

#### 280480 – Arsenic

		2007	2008	2009	2010	2011
Import	kg	10 166	25 461	232	56	19
Export	kg	0	493	0	0	0

#### 280480 – Arsenic

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	178	107	1 819	11 661	9 000
Average export prices	CZK/kg	–	290	–	–	–

## Iron

### Foreign trade

#### 2601 – Iron ores and concentrates

		2007	2008	2009	2010	2011
Import	kt	6 590	7 710	4 810	5 937	7 365
Export	kt	0.05	0.03	0.0001	0.008	1

#### 2601 – Iron ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 862	2 360	1 752	2 469	2 657
Average export prices	CZK/t	6 135	3 960	N	N	16 266

#### 7201 – Crude iron

		2007	2008	2009	2010	2011
Import	kt	109	114	47	55	76
Export	kt	31	30	24	65	46

#### 7201 – Crude iron

		2007	2008	2009	2010	2011
Average import prices	CZK/t	8 274	10 327	6 836	8 930	10 218
Average export prices	CZK/t	8 669	10 642	6 575	7 216	10 279

#### 7204 – Ferrous waste and scrap, remelted scrap ingots or iron or steel

		2007	2008	2009	2010	2011
Import	kt	525	510	379	403	473
Export	kt	1 680	1 830	1 444	1 824	2 033

#### 7204 – Ferrous waste and scrap, remelted scrap ingots or iron or steel

		2007	2008	2009	2010	2011
Average import prices	CZK/t	6 184	7 612	4 540	6 048	7 489
Average export prices	CZK/t	7 232	8 077	4 870	7 216	7 840

## MINERALS UNMINED IN THE PAST WITH RESOURCES AND RESERVES

### Lithium, rubidium and cesium

#### 1. Registered deposits and other resources of the Czech Republic



■ reserved registered deposits

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



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

### Number of deposits; reserves; mine production

Year	2007	2008	2009	2010	2011
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 Činovec and its surroundings alone. As for the potentially economic deposit of tin-tungsten ores of Činovec-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 m<sup>3</sup> 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.

## 3. Foreign trade

### 280519 – Lithium, potassium, rubidium, cesium

		2007	2008	2009	2010	2011
Import	kg	60 223	36 101	39 422	21 566	20 383
Export	kg	0	35	205	0	117

### 280519 – Lithium, potassium, rubidium, cesium

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	199	167	351	744	862
Average export prices	CZK/kg	–	400	122	–	316

**28369100 – Lithium carbonates**

		2007	2008	2009	2010	2011
Import	kg	146 225	63 900	34 706	66 075	71 775
Export	kg	566	3 157	116	1 208	1 738

**28369100 – Lithium carbonates**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	109	135	130	118	121
Average export prices	CZK/kg	189	152	440	406	455

## 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

		2007	2008	2009	2010	2011
Import	kg	67 941	195 738	15 060	8 555	18 393
Export	kg	175	18 309	4 443	3 160	14 409

#### 81029400 – Unwrought molybdenum, including bars, rods obtained by simple sintering

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	966	1 196	557	766	677
Average export prices	CZK/kg	1 366	1 170	649	824	695

## 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

		2007	2008	2009	2010	2011
Import	kg	174 438	120 490	88 136	94 438	86 832
Export	kg	5 547	3 228	3 099	2 247	2 808

#### 28461000 – Cerium compounds

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	328	282	367	381	1 055
Average export prices	CZK/kg	301	437	512	933	1 366

#### 28053010 – Rare earth metals, scandium and yttrium, intermixed or interalloyed

		2007	2008	2009	2010	2011
Import	kg	2 783	100	200	3 597	4 270
Export	kg	50	0	0	435	1 720

#### 28053010 – Rare earth metals, scandium and yttrium, intermixed or interalloyed

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	402	250	200	718	1 962
Average export prices	CZK/kg	240	–	–	423	1 982

**28053090 – Rare earth metals, scandium and yttrium, not intermixed or interalloyed**

		2007	2008	2009	2010	2011
Import	kg	37	26	29	11 698	30 428
Export	kg	0	0	2	1	3

**28053090 – Rare earth metals, scandium and yttrium, not intermixed or interalloyed**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	5 838	12 385	11 862	577	638
Average export prices	CZK/kg	–	–	159 000	1 000	2 000

## Selenium, tellurium

### Registered deposits and other resources in the Czech Republic; basic statistical data of the Czech Republic as of December 31

In the Czech Republic (unapproved) prognostic resources of Se, in the Zn-Pb-Cu deposit Zlaté Hory-západ, were evaluated tentatively at more than 13 tonnes (K. Stuchlíková – I. Frolíková 1988).

#### Foreign trade

##### 280490 – Selenium

		2007	2008	2009	2010	2011
Import	kg	11 775	10 679	3 750	5 807	5 513
Export	kg	30	819	1 200	1 200	350

##### 280490 – Selenium

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	1 244	1 211	905	1 612	2 468
Average export prices	CZK/kg	2 967	1 161	887	1 694	2 471

##### 28045090 – Tellurium

		2007	2008	2009	2010	2011
Import	kg	39	15	3	25	26
Export	kg	0	0	0	0	0

##### 28045090 – Tellurium

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	6 590	14 867	5 000	24 560	16 462
Average export prices	CZK/kg	–	–	–	–	–

## 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

		2007	2008	2009	2010	2011
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

#### 26159010 – Tantalum and niobium ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	–	–	–	–
Average export prices	CZK/kg	–	–	–	–	–

#### 810320 – Unwrought tantalum

		2007	2008	2009	2010	2011
Import	kg	188 247	217 893	105 657	240 040	173 469
Export	kg	48 728	79 600	50 096	76 647	79 048

#### 810320 – Unwrought tantalum

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	8 237	6 760	7 348	8 426	11 710
Average export prices	CZK/kg	8 025	6 371	6 839	6 642	5 972



## 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

		2007	2008	2009	2010	2011
Import	kg	1 534 397	750 512	268 062	308 098	959 101
Export	kg	4 000	4 000	2	0	5 000

#### 26151000 – Zirconium ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	26	23	28	38	47
Average export prices	CZK/kg	33	27	0	–	63

#### 81129210 – Unwrought hafnium, hafnium waste and scrap, hafnium powders

		2007	2008	2009	2010	2011
Import	kg	0	1	450	8	2
Export	kg	12	0	0	0	0

#### 81129210 – Unwrought hafnium, hafnium waste and scrap, hafnium powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	4 000	109	12 875	27 500
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

		2007	2008	2009	2010	2011
Import	kt	5	6	4	4	4
Export	kt	0	0	0.001	0.002	0.01

##### 250850 – Andalusite, kyanite and sillimanite

		2007	2008	2009	2010	2011
Average import prices	CZK/t	9 031	8 363	10 451	10 114	10 440
Average export prices	CZK/t	–	–	14 286	19 512	29 110

##### 250860 – Mullite

		2007	2008	2009	2010	2011
Import	kt	1	1	1	1	1
Export	kt	0.1	0.003	0.007	0.004	0.05

##### 250860 – Mullite

		2007	2008	2009	2010	2011
Average import prices	CZK/t	17 498	21 702	29 097	23 495	23 726
Average export prices	CZK/t	8 691	25 714	22 069	40 000	60 000

## Asbestos

### Foreign trade

#### 2524 – Asbestos

		2007	2008	2009	2010	2011
Import	t	1	1	0	3	2
Export	t	0	0	0	0	0

#### 2524 – Asbestos

		2007	2008	2009	2010	2011
Average import prices	CZK/t	48 864	53 750	868 853	10 333	20 000
Average export prices	CZK/t	–	–	–	–	–

## Magnesite

### Foreign trade

#### 251910 – Natural magnesium carbonate (magnesite)

		2007	2008	2009	2010	2011
Import	t	9 935	4 193	3 460	7 108	4 579
Export	t	39	29	10	8	4

#### 251910 – Natural magnesium carbonate (magnesite)

		2007	2008	2009	2010	2011
Average import prices	CZK/t	4 921	5 357	4 498	5 426	7 534
Average export prices	CZK/t	44 996	55 414	189 740	200 870	68 241

#### 251990 – Magnesia, fused, dead-burned, other magnesium oxides

		2007	2008	2009	2010	2011
Import	t	52 631	54 301	38 046	38 891	40 982
Export	t	3 930	1 107	3 718	3 803	7 093

#### 251990 – Magnesia, fused, dead-burned, other magnesium oxides

		2007	2008	2009	2010	2011
Average import prices	CZK/t	6 678	7 405	8 434	8 771	8 329
Average export prices	CZK/t	8 014	10 502	8 131	10 501	9 457

## Perlite

### Foreign trade

#### 25301010 – Perlite

		2007	2008	2009	2010	2011
Import	t	7 585	5 782	4 528	0	0
Export	t	83	99	114	0	0

#### 25301010 – Perlite

		2007	2008	2009	2010	2011
Average import prices	CZK/t	3 471	4 227	3 966	–	–
Average export prices	CZK/t	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

		2007	2008	2009	2010	2011
Import	t	563 061	610 959	711 503	960 330	865 911
Export	t	19 324	15 674	40 055	51 290	41 680

#### 2501 – Salt (inclusive table and denaturated salt), and pure sodium chloride; also in water solution

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 421	1 336	1 459	1 480	1 439
Average export prices	CZK/t	3 345	3 879	3 133	2 900	3 152

## Sulphur

### Foreign trade

#### 2503 – Sulphur of all kinds, other than sublimed, precipitated and colloidal

		2007	2008	2009	2010	2011
Import	t	55 066	46 371	20 986	14 761	14 947
Export	t	5 579	16 670	20 153	12 227	949

#### 2503 – Sulphur of all kinds, other than sublimed, precipitated and colloidal

		2007	2008	2009	2010	2011
Average import prices	CZK/t	3 479	5 587	5 703	9 314	11 068
Average export prices	CZK/t	1 028	2 752	765	977	4 886

#### 2802 – Sulphur, sublimed or precipitated; colloidal sulphur

		2007	2008	2009	2010	2011
Import	t	57 411	65 242	71 032	82 355	93 461
Export	t	132	658	83	429	316

#### 2802 – Sulphur, sublimed or precipitated; colloidal sulphur

		2007	2008	2009	2010	2011
Average import prices	CZK/t	912	1 917	602	1 136	2 684
Average export prices	CZK/t	56 139	11 846	51 361	11 813	19 335

#### 2807 – Sulphuric acid

		2007	2008	2009	2010	2011
Import	t	47 271	57 751	33 519	34 206	35 531
Export	t	59 839	69 071	56 145	43 778	46 371

#### 2807 – Sulphuric acid

		2007	2008	2009	2010	2011
Average import prices	CZK/t	1 356	1 658	1 055	1 379	1 421
Average export prices	CZK/t	1 188	2 203	1 091	1 743	1 896



## Talc

### Foreign trade

#### 2526 – Natural steatite; talc

		2007	2008	2009	2010	2011
Import	t	13 061	10 986	9 406	9 570	12 754
Export	t	340	386	182	169	297

#### 2526 – Natural steatite; talc

		2007	2008	2009	2010	2011
Average import prices	CZK/t	6 705	6 907	7 089	6 639	5 851
Average export prices	CZK/t	8 363	7 322	14 726	16 148	13 094

## Other raw materials used in industrial fertilizers production

### Foreign trade

#### 3102 – Nitrogenous fertilizers

		2007	2008	2009	2010	2011
Import	t	175 089	211 841	429 687	556 146	652 708
Export	t	165 156	160 971	540 846	579 923	582 234

#### 3102 – Nitrogenous fertilizers

		2007	2008	2009	2010	2011
Average import prices	CZK/t	13 085	19 856	4 426	4 388	5 599
Average export prices	CZK/t	14 934	21 176	4 678	4 010	5 593

#### 2510 – Natural phosphates

		2007	2008	2009	2010	2011
Import	t	33 954	20 928	559	15 021	13 165
Export	t	732	1 023	817	1	0.1

#### 2510 – Natural phosphates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 443	6 032	7 242	4 802	7 251
Average export prices	CZK/t	32 360	33 871	27 807	N	55 944

#### 2809 – Phosphoric oxides and acids

		2007	2008	2009	2010	2011
Import	t	7 534	2 270	3 328	3 091	3 289
Export	t	21 623	20 781	34 028	46 290	51 186

#### 2809 – Phosphoric oxides and acids

		2007	2008	2009	2010	2011
Average import prices	CZK/t	14 731	45 382	20 132	20 068	19 504
Average export prices	CZK/t	25 190	50 672	17 621	14 054	16 446

**3103 – Phosphatic fertilizers**

		2007	2008	2009	2010	2011
Import	t	7 313	8 036	10 848	17 269	17 769
Export	t	779	1 136	895	1 098	920

**3103 – Phosphatic fertilizers**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	18 488	34 998	6 375	6 419	7 963
Average export prices	CZK/t	13 061	11 039	5 735	8 948	14 261

**3104 – Potassic fertilizers**

		2007	2008	2009	2010	2011
Import	t	82 110	81 060	41 560	87 735	90 669
Export	t	1 708	1 751	7 027	4 234	4 707

**3104 – Potassic fertilizers**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	6 998	14 701	14 129	7 949	8 843
Average export prices	CZK/t	25 960	37 809	15 532	19 122	19 349

**3105 – Fertilizers containing several elements**

		2007	2008	2009	2010	2011
Import	t	159 934	154 615	53 757	100 466	116 802
Export	t	36 671	18 995	17 494	18 031	15 497

**3105 – Fertilizers containing several elements**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	6 903	11 954	9 446	8 713	10 677
Average export prices	CZK/t	7 243	11 578	9 445	8 214	11 141

## METALLIC ORES

### Aluminium

#### Foreign trade

##### 2606 – Aluminium ores and concentrates

		2007	2008	2009	2010	2011
Import	kt	27	18	10	34	33
Export	kt	0.6	0.5	0.6	0.08	0.1

##### 2606 – Aluminium ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	3 461	5 427	4 971	3 386	2 937
Average export prices	CZK/t	7 410	8 617	14 321	31 915	6 420

##### 281820 – Aluminium oxide (other than synthetic corundum)

		2007	2008	2009	2010	2011
Import	kt	29	28	6	7	8
Export	kt	0.1	0.2	3.0	4.0	3.8

##### 281820 – Aluminium oxide (other than synthetic corundum)

		2007	2008	2009	2010	2011
Average import prices	CZK/t	12 850	11 552	21 717	21 361	22 540
Average export prices	CZK/t	38 616	24 076	6 385	6 464	8 499

**281830 – Aluminium hydroxide**

		2007	2008	2009	2010	2011
Import	kt	8	7	6	10	10
Export	kt	0.05	0.05	0.09	0.08	0.03

**281830 – Aluminium hydroxide**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	7 906	8 676	9 328	7 034	7 013
Average export prices	CZK/t	21 920	18 480	13 036	15 120	21 611

**7601 – Raw (unwrought) aluminium**

		2007	2008	2009	2010	2011
Import	kt	204	194	171	223	239
Export	kt	54	54	60	51	54

**7601 – Raw (unwrought) aluminium**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	59 422	49 285	37 064	43 649	49 480
Average export prices	CZK/t	219 009	148 602	152 127	131 969	48 021

**7602 – Aluminium waste and scrap**

		2007	2008	2009	2010	2011
Import	kt	64	59	50	62	87
Export	kt	61	58	49	72	90

**7602 – Aluminium waste and scrap**

		2007	2008	2009	2010	2011
Average import prices	CZK/t	40 045	30 822	20 709	31 521	32 353
Average export prices	CZK/t	61 006	53 998	28 766	38 804	32 593

## Beryllium

### Foreign trade

#### 811212 – Unwrought beryllium, beryllium powders

		2007	2008	2009	2010	2011
Import	kg	0	9	0	1	0
Export	kg	0	0	0	0	0

#### 811212 – Unwrought beryllium, beryllium powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	37 778	–	2 000	–
Average export prices	CZK/kg	–	–	–	–	–

## Bismuth

### Foreign trade

#### 81060010 – Unwrought bismuth, including waste and scrap, powders

		2007	2008	2009	2010	2011
Import	kg	63 999	59 569	50 557	94 522	267 387
Export	kg	1	437	51	17 945	2 295

#### 81060010 – Unwrought bismuth, including waste and scrap, powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	707	460	315	375	214
Average export prices	CZK/kg	1 000	412	686	277	392

#### 81060090 – Wrought bismuth, articles of bismuth, excluding unwrought bismuth, waste, scrap and powders

		2007	2008	2009	2010	2011
Import	kg	13 392	18 073	2 142	11 452	1 708
Export	kg	2 599	2 832	407	1 087	1 188

#### 81060090 – Wrought bismuth, articles of bismuth, excluding unwrought bismuth, waste, scrap and powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	953	780	699	506	2 405
Average export prices	CZK/kg	1 848	1 820	1 484	1 339	2 183



## Cadmium

### Foreign trade

#### 810720 – Unwrought cadmium, cadmium powders

		2007	2008	2009	2010	2011
Import	kg	1	24 133	43	67	697
Export	kg	0	0	0	0	< 1

#### 810720 – Unwrought cadmium, cadmium powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	1 000	6	2 674	3 015	264
Average export prices	CZK/kg	–	–	–	–	1 000

## Chromium

### Foreign trade

#### 2610 – Chromium ores and concentrates

		2007	2008	2009	2010	2011
Import	t	14 045	13 039	8 244	7 975	8 032
Export	t	800	508	369	764	1 410

#### 2610 – Chromium ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	7 926	11 336	9 191	9 164	11 210
Average export prices	CZK/t	9 225	12 009	5 912	4 336	7 534

#### 811881 – Unwrought chromium

		2007	2008	2009	2010	2011
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

#### 811881 – Unwrought chromium

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	–	–	–	–
Average export prices	CZK/kg	–	–	–	–	–

## Cobalt

### Foreign trade

#### 2605 – Cobalt ores and concentrates

		2007	2008	2009	2010	2011
Import	kg	591	1 110	426	3 428	600
Export	kg	23 687	11 319	7 000	0	0

#### 2605 – Cobalt ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	1 010	1 052	937	357	1 535
Average export prices	CZK/kg	26	33	43	–	–

#### 8105 – Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap

		2007	2008	2009	2010	2011
Import	t	127	201	220	60	60
Export	t	5	11	10	9	17

#### 8105 – Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap

		2007	2008	2009	2010	2011
Average import prices	CZK/t	886 025	511 596	167 820	939 289	1 038 238
Average export prices	CZK/t	1 315 493	1 227 362	706 335	694 102	567 321

## Gallium

### Foreign trade

#### 81129289 – Unwrought gallium, gallium powders

		2007	2008	2009	2010	2011
Import	kg	1	4	9	4	11
Export	kg	0	0	1	0	0

#### 81129289 – Unwrought gallium, gallium powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	1 800	3 175	1 267	2 200	27 090
Average export prices	CZK/kg	–	–	2 300	–	–

## Indium

### Foreign trade

#### 81129281 – Unwrought indium, indium powders

		2007	2008	2009	2010	2011
Import	kg	2	25	2	9	97
Export	kg	0	0	0	0	96

#### 81129281 – Unwrought indium, indium powders

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	4 000	11 720	1 500	9 556	12 990
Average export prices	CZK/kg	–	–	–	–	12 534

## Magnesium

### Foreign trade

#### 810411 – Unwrought magnesium, containing at least 99.8 % by weight of magnesium

		2007	2008	2009	2010	2011
Import	t	2 168	1 634	892	1 992	1 449
Export	t	73	138	179	0.2	0

#### 810411 – Unwrought magnesium, containing at least 99.8 % by weight of magnesium

		2007	2008	2009	2010	2011
Average import prices	CZK/t	49 393	77 317	55 579	55 849	57 946
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

		2007	2008	2009	2010	2011
Import	t	1 336	2 119	545	754	647
Export	t	9 709	10 545	5 486	5 914	7 699

#### 810419 – Unwrought magnesium, containing less than 99.8 % by weight of magnesium

		2007	2008	2009	2010	2011
Average import prices	CZK/t	54 932	82 402	95 232	87 246	85 681
Average export prices	CZK/t	45 822	57 221	55 809	47 030	48 092

## Mercury

### Foreign trade

#### 280540 – Mercury

		2007	2008	2009	2010	2011
Import	kg	6 450	3 565	4 319	2 561	4 385
Export	kg	12 671	6 283	6 521	1 241	19

#### 280540 – Mercury

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	160	170	247	162	356
Average export prices	CZK/kg	477	1 004	993	598	770

## Nickel

### Foreign trade

#### 2604 – Nickel ores and concentrates

		2007	2008	2009	2010	2011
Import	t	13	10	7	7	14
Export	t	166	135	180	254	268

#### 2604 – Nickel ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	616 824	484 370	319 651	400 000	376 438
Average export prices	CZK/t	7 452	N	N	N	3 407

#### 7502 – Unwrought nickel

		2007	2008	2009	2010	2011
Import	t	3 803	3 812	2 165	2 560	3 757
Export	t	174	776	228	126	273

#### 7502 – Unwrought nickel

		2007	2008	2009	2010	2011
Average import prices	CZK/t	717 844	428 321	386 745	450 766	432 625
Average export prices	CZK/t	332 162	278 533	230 220	352 907	471 424



## Thallium

### Foreign trade

#### 811251 – Unwrought thallium

		2007	2008	2009	2010	2011
Import	kg	1	0	0	1	< 1
Export	kg	0	0	0	0	0

#### 811251 – Unwrought thallium

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	13 000	–	–	4 000	17 000
Average export prices	CZK/kg	–	–	–	–	–

## Thorium

### Foreign trade

#### 28443061 – Thorium bars, rods, angles, shapes, sections, wire, sheets, strips

		2007	2008	2009	2010	2011
Import	kg	0	0	41 959	4	0
Export	kg	0	0	360	0	0

#### 28443061 – Thorium bars, rods, angles, shapes, sections, wire, sheets, strips

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	–	46	3 250	–
Average export prices	CZK/kg	–	–	47	–	–

#### 28443069 – Thorium other, not crude, waste, scrap, bars, rods, shapes, wire, sheets

		2007	2008	2009	2010	2011
Import	kg	1	0	1	0	< 1
Export	kg	1	0	0	0	0

#### 28443069 – Thorium other, not crude, waste, scrap, bars, rods, shapes, wire, sheets

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	4 000	–	5 000	–	6 000
Average export prices	CZK/kg	1 000	–	–	–	–

**28443099 – Thorium salts**

		2007	2008	2009	2010	2011
Import	kg	0	0	0	0	0
Export	kg	0	0	0	0	0

**28443099 – Thorium salts**

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	–	–	–	–
Average export prices	CZK/kg	–	–	–	–	–

## Titanium

### Foreign trade

#### 2614 – Titanium ores and concentrates

		2007	2008	2009	2010	2011
Import	t	179 322	198 758	140 394	155 505	146 778
Export	t	745	641	452	2 378	504

#### 2614 – Titanium ores and concentrates

		2007	2008	2009	2010	2011
Average import prices	CZK/t	2 863	3 269	3 395	3 236	3 876
Average export prices	CZK/t	16 267	15 793	20 254	5 935	23 369

#### 8108 – Titanium and products of it, including waste and scrap

		2007	2008	2009	2010	2011
Import	t	1 097	1 124	925	1 030	1 341
Export	t	148	118	340	359	268

#### 8108 – Titanium and products of it, including waste and scrap

		2007	2008	2009	2010	2011
Average import prices	CZK/t	728 262	560 583	564 007	541 650	645 106
Average export prices	CZK/t	407 330	174 542	110 433	90 892	133 014

## Vanadium

### Foreign trade

#### 81129291 – Unwrought vanadium, vanadium powders, excluding waste and scrap

		2007	2008	2009	2010	2011
Import	kg	0	0	0	0	0
Export	kg	628	0	236	0	0

#### 81129291 – Unwrought vanadium, vanadium powders, excluding waste and scrap

		2007	2008	2009	2010	2011
Average import prices	CZK/kg	–	–	–	–	–
Average export prices	CZK/kg	545	–	297	–	–

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