

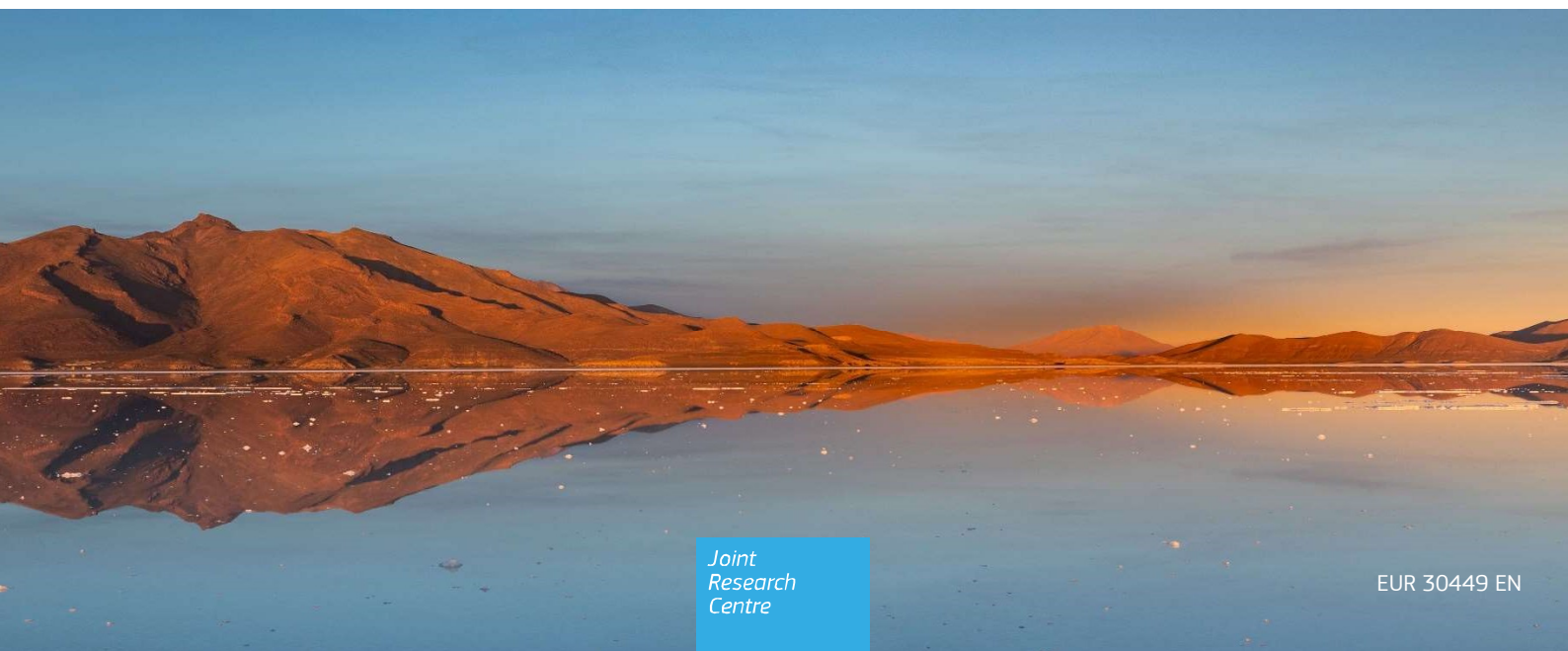
## JRC TECHNICAL REPORT

# EU Country profiles in the Raw Materials Information System (RMIS): Czechia

*Country-level key data and information related to non-food, non-energy raw materials*

Nita, V., Garbossa, E., Ciută, T., Bonollo, B., Mancini, L., Vidal-Legaz, B., Latunussa, C., Wittmer, D., Hamor, T., d'Elia, E. Unguru, M. and Manfredi, S.

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## **Foreword**

The Raw Materials Information System (RMIS), developed and hosted by the Joint Research Centre (JRC), is the EC's reference knowledge platform on non-food, non-energy raw materials from primary to secondary sources. The RMIS includes a number of thematic sections, covering a broad range of topics relevant to raw materials policy. Among them, EU Country Profiles provide data and indicators for EU countries.

This report mirrors the content of the profile developed for Czechia, as available online in the RMIS.

***Authors***

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## **Abstract**

The module European Country Profiles of the European Commission's Raw Materials Information System (RMIS) provides country-specific data and indicators related to non-food, non-energy raw materials. These data and indicators are derived from data from official sources and well-established data providers, or by their elaboration.

Each profile is structured into nine thematic sections: i) Key indicators; ii) Investment and regulatory framework; iii) research, development and innovation; iv) Resources and reserves; v) Supply; vi) Raw materials use; vii) Trade; viii) Environment; and ix) Social & Policy.

The current country report presents the data and indicators for Czechia, mirroring the EU Country Profile for Czechia included in the RMIS in May 2019, which is the reference month of the data used.

# 1 Introduction

The module European Country Profiles <sup>(1)</sup> of the European Commission's Raw Materials Information System (RMIS) aims to provide country-specific knowledge for non-food, non-energy raw materials. Seventeen EU countries profiles are currently accessible in the RMIS. For the remaining EU countries, work is ongoing.

These country profiles synthesize key data, information and indicators related to raw materials by either using data from established data providers (e.g., Eurostat, IMF, World Bank, UNIDO, UN Statistics) or by JRC elaboration based on the available official data (e.g., data on country's trade in raw materials at HS 6-digit level, country's exports of mining equipment, etc.).

Each profile is structured into nine thematic sections, as presented hereafter.

*Key Indicators* (section 1) and *Research, development and innovation* (section 3) include both selected economy-wide indicators (e.g., industrial competitiveness, contribution of mining sector to national economies, industry and manufacturing value added as share of GDP) and data on the economic performance of industrial sectors particularly relevant for raw materials – e.g. value added, employment, labour productivity, as well as magnitude of research and development expenditure.

Indicators of country-level and sectorial investments (e.g., share of total investment in GDP, foreign direct investments and exploration budget in metals and mining), as well the specificities of countries' mining legislative frameworks are presented in section 2, *Investment and regulatory framework*.

Data relating to country's estimated mineral resources and reserves are provided in section 4, *Resources and reserves*.

*Supply* section (section 5) presents data on country's volume of imported goods, domestic extraction by broad category of materials, production value of selected mining and manufacturing sectors, and country's production of non-food, non-energy minerals.

Section 6, *Raw material use*, focuses on utilization of raw materials, presenting data on country's volume of goods exported and domestic consumption by broad category of materials.

Section 7, *Trade*, presents country indicators and data on trade in non-food, non-energy raw materials, by relevant material category, product cluster, and Harmonized System chapter and subheading. Based on the methodology developed within the framework of Raw Materials Scoreboard <sup>(2)</sup>, this section also presents the country's exports of mining equipment.

*Environment* section (section 8) includes tables and charts of selected indicators of environmental performance of relevant industrial sectors, such as emissions of greenhouse gases and particulate matter and generation of waste.

Several social and policy indicators are displayed in the section 9, *Social & Policy*, such as governance quality, policy perception, country risk and occupational safety.

The current country report presents data and indicators for Czechia, as elaborated in the *EU Country Profiles* module in the RMIS. This country profile was developed in May 2019, which is the reference month of the data used (i.e., it includes the data available at that time).

Czechia's industry ranked 17th in the UNIDO's Competitive Industrial Performance Index in 2016. In 2017, industry's value added accounted for one third of Czechia's GDP, and manufacturing industry's almost a quarter.

Based on the share in the total manufacturing's value added, important raw material relevant manufacturing sectors are rubber and plastics products and fabricated metal products. From the selected raw material relevant sectors, manufacture of other non-metallic minerals and manufacture of basic metals contributed the most to the total value added and employment of the whole industry in 2016.

Two sectors, manufacture of rubber and plastic products and manufacture of other non-metallic mineral products, had the highest level of business expenditure on R&D in 2017 from the selected raw material relevant sectors.

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<sup>(1)</sup> <https://rmis.jrc.ec.europa.eu/?page=country-profiles#/>

<sup>(2)</sup> For more methodological details and the list of 21 six-digit HS codes covered by this indicator, Raw materials scoreboard 2018, Methodological notes, Mining equipment exports, <https://op.europa.eu/en/publication-detail/-/publication/117c8d9b-e3d3-11e8-b690-01aa75ed71a1>



Manufacture of basic metals, manufacture of other non-metallic minerals and manufacture of wood and wood products had high production value in 2016.

In 2017, Czechia's production of kaolin accounted for 9 percent of world's production; for other three industrial minerals – diatomite, bentonite and feldspar – the share of global production was between 1 and 2 percent.

Czechia was a net importer of two HS broad product groups (food and energy-related commodities included) - Raw Materials and Intermediate goods - and had trade surplus for the other two - Capital goods and Consumer goods - in 2017.

For the four raw materials relevant HS product clusters selected, Czechia was a net importer of Minerals and Metals, and a net exporter of Stone and Glass and Wood in 2017.

At the HS two-digit level, Czechia has high trade surplus for two HS chapters, i.e., Rubber (HS 40) and Wood and articles of wood (HS 44).

In 2017, exports of mining equipment rose by more than 60% as compared to the export level of 2010.

As far as the environmental performance of the raw material relevant industrial sectors is concerned, manufacture of basic metals and mining and quarrying had the highest greenhouse gas emission and PM 2.5 emission intensity over the period 2008-2016.

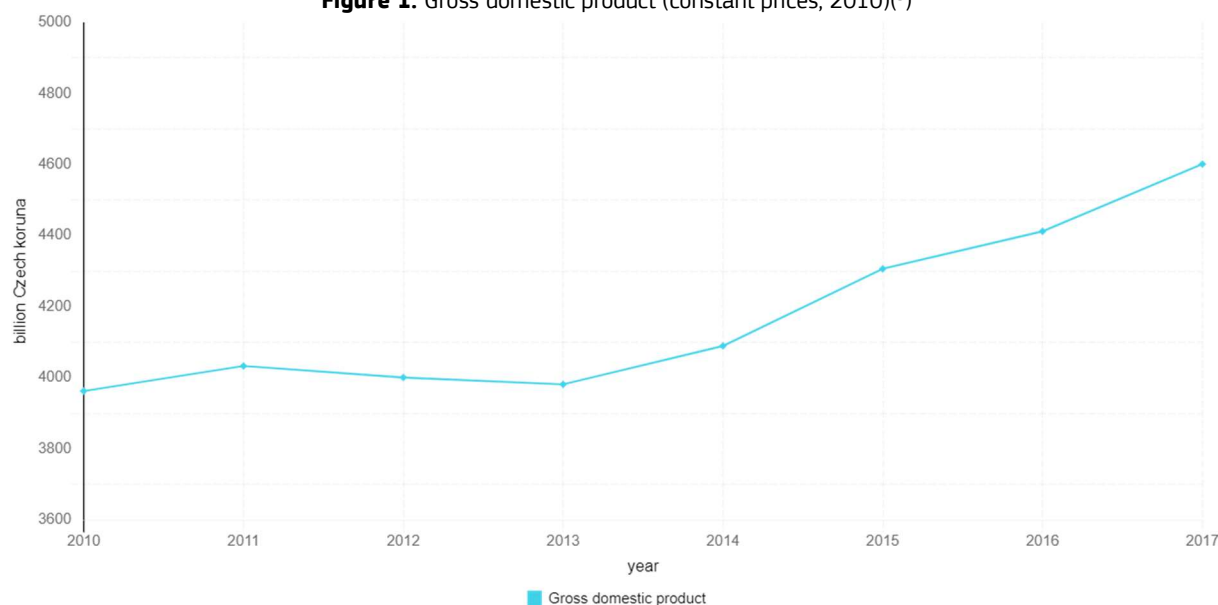
Czechia had above average scores for the six dimensions of governance in 2017, according to the Worldwide Governance Indicators, and a very low country risk, according to INFORM index.

## 2 Key indicators

### 2.1 Gross domestic product

**Definition:** GDP data are expenditure-based, in constant prices and billions of national currency units. Base year is country specific.

**Figure 1.** Gross domestic product (constant prices; 2010)<sup>(3)</sup>



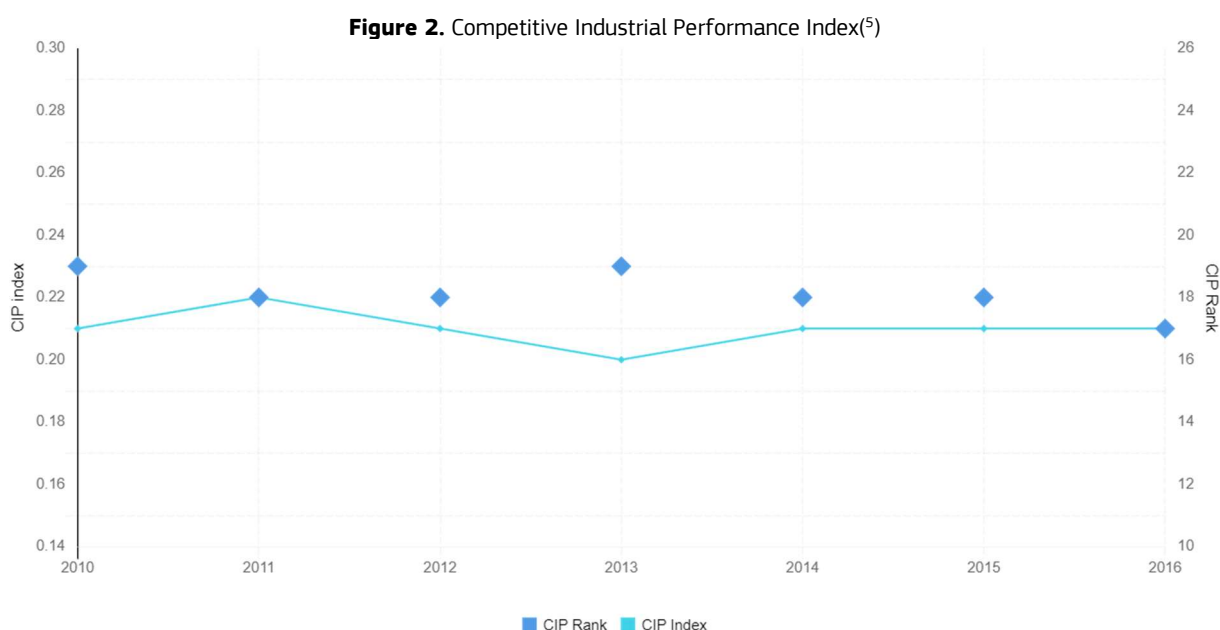
### 2.2 Competitive Industrial Performance Index

**Definition:** As calculated by UNIDO, Competitive Industrial Performance Index (CIP) aims at measuring the industrial performance of countries. CIP is a composite index based on eight indicators, grouped into three dimensions of industrial competitiveness: production and export capability; technology; and impact on global industrial production and trade.

The 2018 CIP report covers 150 economies <sup>(4)</sup>.

<sup>(3)</sup> IMF, World Economic Outlook Database, <https://www.imf.org/en/Publications/SPROLLs/world-economic-outlook-databases#sort=%40imfdate%20descending>

<sup>(4)</sup> UNIDO, Competitive Industrial Performance Report 2018, [https://www.unido.org/sites/default/files/files/2019-05/CIP\\_Report\\_2019.pdf](https://www.unido.org/sites/default/files/files/2019-05/CIP_Report_2019.pdf)



## 2.3 Mining Contribution Index

**Definition:** The Mining Contribution Index (MCI) quantifies the extent of mining sector's contribution to a country's economy. It is an index composed of four indicators, namely:

1. mineral and metal contribution to country's exports in 2016
2. change in export contribution of mining and metal exports over the period 2011-2016
3. mineral production value in 2016, expressed as a percentage of GDP
4. mineral rents as percentage of GDP.

**Table 1.** Mining Contribution Index 2018<sup>(6)</sup>

<b>Mining Contribution Index 2018</b>	<b>2018 MCI Score: 29.5</b>	<b>Rank: 141 (out of 182)</b>
---------------------------------------	-----------------------------	-------------------------------

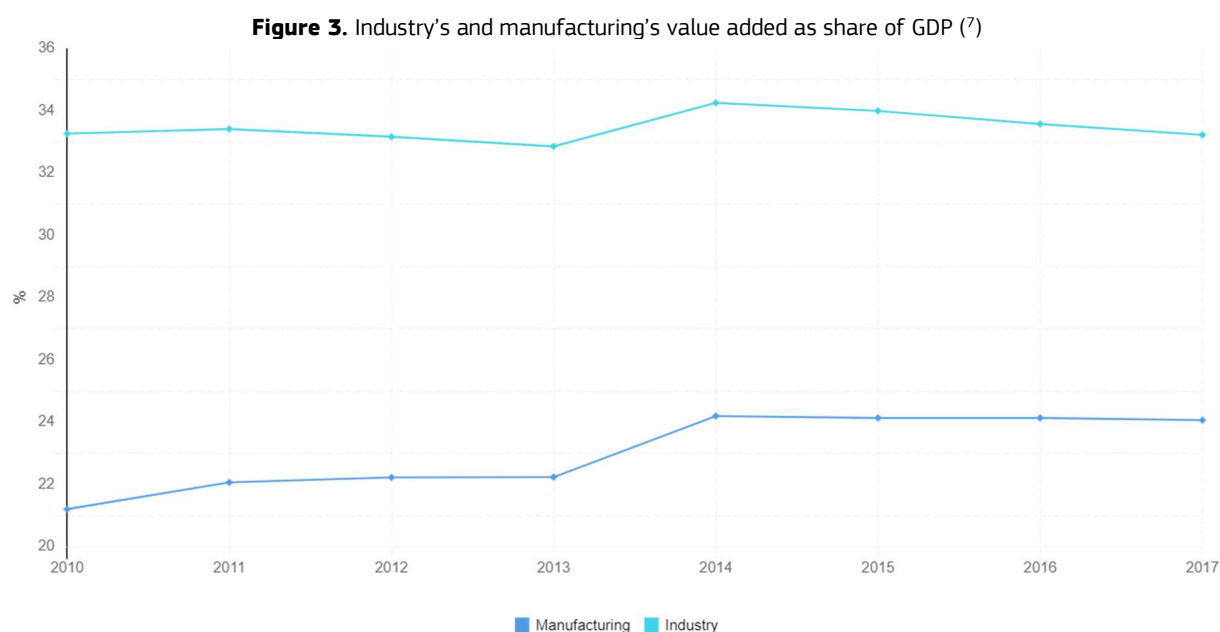
## 2.4 Industry's and manufacturing's value added as share of GDP

**Definition:** Value added is the net output of a sector. As defined by World Bank, industry covers here the International Standard Industrial Classification (ISIC) divisions 10-45. Industry's value added comprises value added in mining, manufacturing, construction, electricity, water, and gas.

Part of the industry, *manufacturing* covers the ISIC divisions 15-37.

<sup>(5)</sup> UNIDO, Competitive Industrial Performance Index, <https://stat.unido.org/>

<sup>(6)</sup> Source of data (and details on MCI calculation): International Council on Mining and Metals, Role of mining in national economies. Mining Contribution Index 2018 4th edition, <https://www.icmm.com/en-gb/society-and-the-economy/role-of-mining-in-national-economies/mining-contribution-index>



## 2.5 Main five manufacturing sectors

This indicator presents the country's leading five manufacturing sectors, based on their share in the total value added of manufacturing sector.

**Table 2.** Main five manufacturing sectors (share of value added;2017) <sup>(8)</sup>

Rank	Manufacturing sector (ISIC Rev. 3.0, 2 digits)	Share (%)
1	Motor vehicles, trailers, semi-trailers	21.5
2	Machinery and equipment n.e.c.	12.7
3	Fabricated metal products	11.8
4	Rubber and plastics products	8.4
5	Food and beverages	7.8

## 2.6 Value added of selected industrial sectors

**Definition:** As calculated by Eurostat, "Value added at factor costs is the gross income from operating activities after adjusting for operating subsidies and indirect taxes; value adjustments (such as depreciation) are not subtracted" <sup>(9)</sup>.

The figure includes data for the following NACE Rev.2 sectors relevant for industrial raw materials:

1. B07 Mining of metal ores
2. B08 Other mining and quarrying
3. B09.9 Support activities for other mining and quarrying
4. C16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
5. C17 Manufacture of paper and paper products

<sup>(7)</sup> World Bank, World Development Indicators. <https://data.worldbank.org/products/wdi>

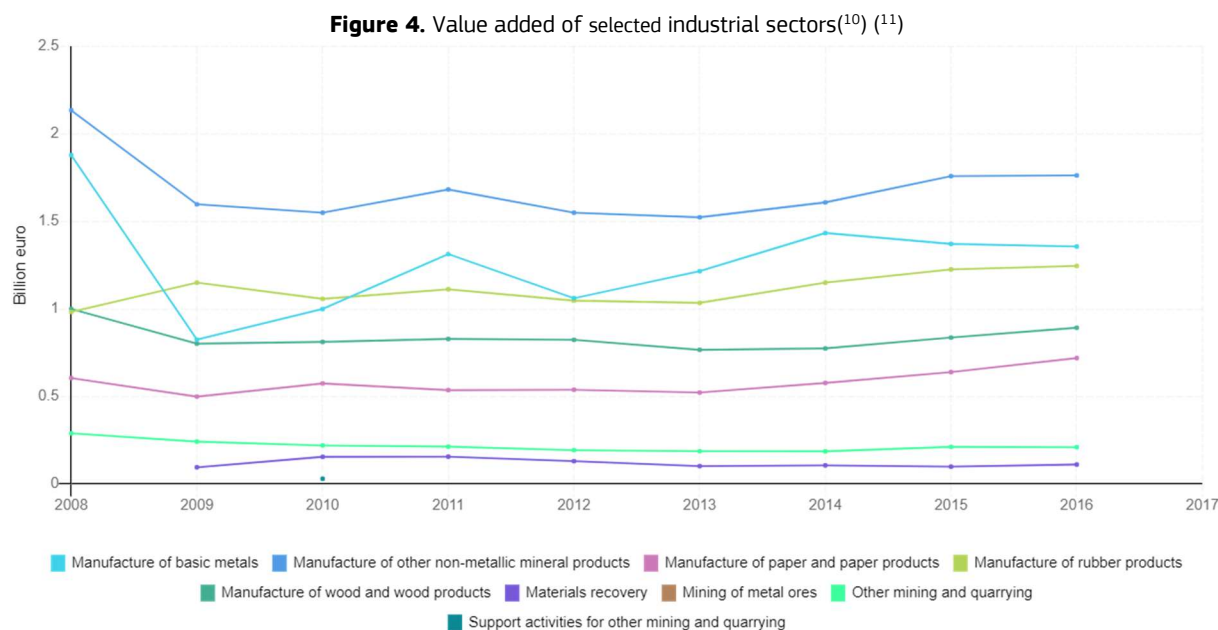
<sup>(8)</sup> UNIDO, Country profile, [http://stat.unido.org/?\\_ga=2.94848220.1164807116.1524737768-1906126199.1524492512](http://stat.unido.org/?_ga=2.94848220.1164807116.1524737768-1906126199.1524492512)

<sup>(9)</sup> Eurostat, metadata of Structural Business Statistics, [https://ec.europa.eu/eurostat/cache/metadata/en/sbs\\_esms.htm](https://ec.europa.eu/eurostat/cache/metadata/en/sbs_esms.htm)

6. C22.1 Manufacture of rubber products
7. C23 Manufacture of other non-metallic mineral products
8. C24 Manufacture of basic metals
9. E38.3 Materials recovery

As complete time series for value added were not available, the forestry-related sectors are not covered.

The contribution (percentage) of each sector to the total value added of industry (NACE sections B-E) is also presented in the figure.



## 2.7 Number of employees in selected industrial sectors

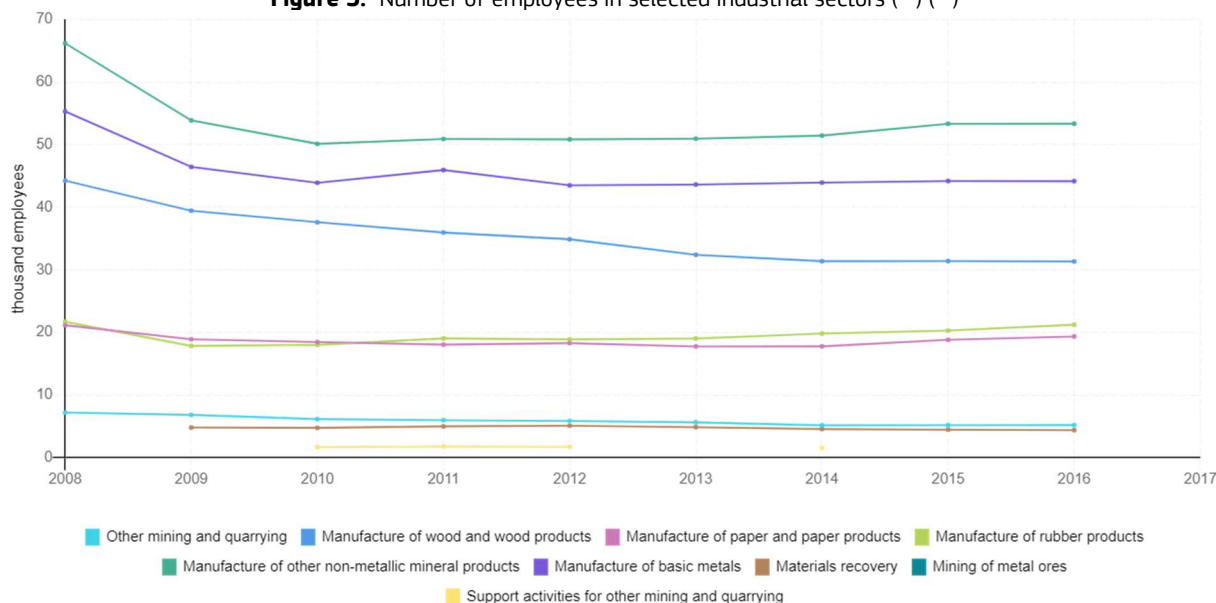
**Definition:** One of the indicators used for monitoring employment sectors is the *Number of employees*. This variable is defined by Eurostat as those persons who work for an employer and who have a contract of employment and receive compensation in the form of wages, salaries, fees, gratuities, piecework pay or remuneration in kind. A worker from an employment agency is considered to be an employee of that temporary employment agency and not of the unit (customer) in which they work.

The NACE Rev.2 sections used to collect data and calculate the sectoral percentage of employees in the total industry sectors are the following: B, Mining and quarrying; C: Manufacturing; D: Electricity, gas, steam and air conditioning supply; E: Water supply; sewerage, waste management and remediation activities.

<sup>(10)</sup> Value added at factor cost in raw materials sectors over time. It also shows the contribution of these activities to the value added of the whole industrial sector (including: mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply, sewerage, waste management and remediation activities).

<sup>(11)</sup> Eurostat, Structural Business Statistics, Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E), dataset code: sbs\_na\_ind\_r2, Value added at factor cost. [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs\\_na\\_ind\\_r2&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en)

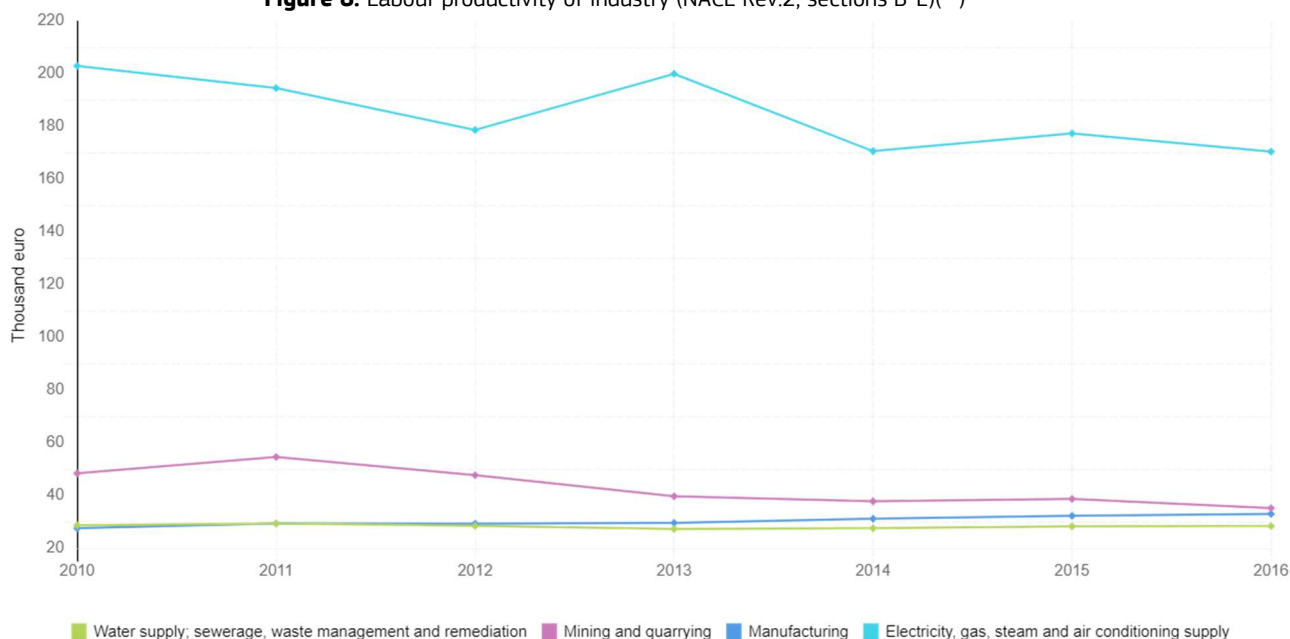
**Figure 5.** Number of employees in selected industrial sectors <sup>(12)</sup> <sup>(13)</sup>



## 2.8 Labour productivity of industry

This indicator presents the labour productivity of the four NACE Rev.2 sections of industry (B, Mining and quarrying; C, Manufacturing; D, Electricity, gas, steam and air conditioning supply; E, Water supply; sewerage, waste management and remediation activities), calculated by Eurostat as gross value added per employee.

**Figure 6.** Labour productivity of industry (NACE Rev.2, sections B-E)<sup>(14)</sup>



<sup>(12)</sup> Number of employees in the raw materials sectors over time. It also shows the contribution of these activities to the total number of jobs in the industrial sector (including: mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply, sewerage, waste management and remediation activities).

<sup>(13)</sup> Eurostat, Structural business statistics (sbs), Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E), dataset code: *sbs\_na\_ind\_r2, Employees - number*. [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs\\_na\\_ind\\_r2&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en)

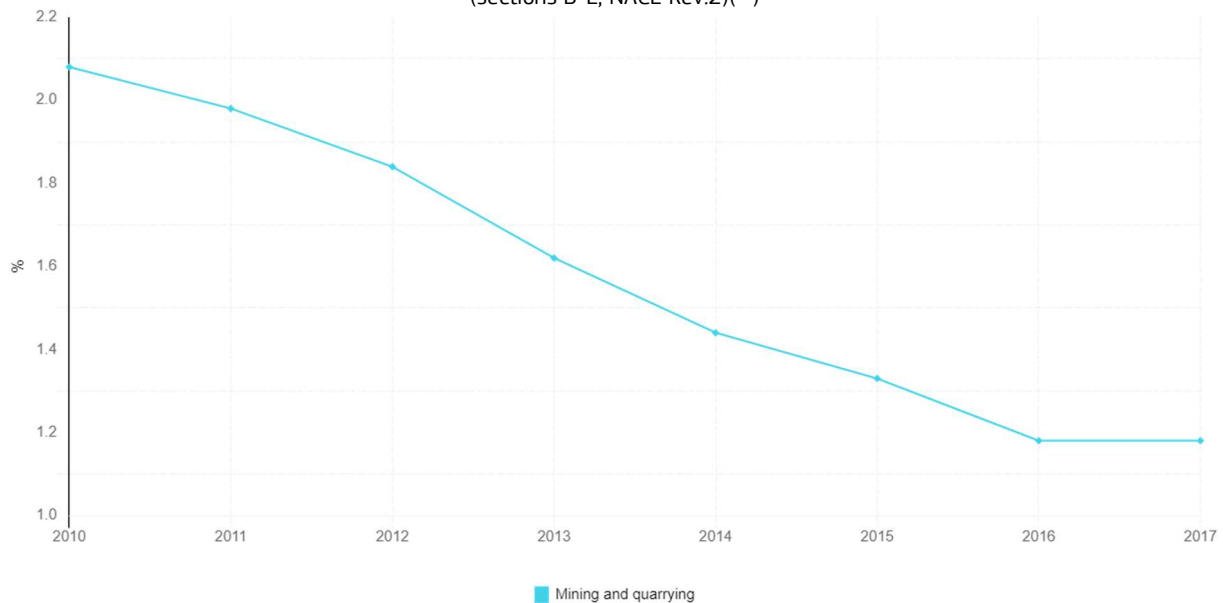
<sup>(14)</sup> Eurostat, Structural business statistics (sbs), Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E), dataset code: *sbs\_na\_ind\_r2, Gross value added per employee*. [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs\\_na\\_ind\\_r2&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en)

## 2.9 Production value of mining and quarrying as share in total industry

**Definition:** Production value measures “the amount produced based on sales and including changes in stocks and the resale of goods and services. It is calculated by Eurostat as turnover plus/minus the changes in stocks of finished products, work in progress and goods and services purchased for resale, minus the purchases of goods and services for resale, plus capitalized production, plus other operating income (excluding subsidies). Income and expenditure classified as financial or extraordinary in company accounts is excluded from production value”<sup>(15)</sup>.

Data provided in the chart for *Mining and quarrying sector* are calculated as share of total industry (i.e., sections B-E, NACE Rev.2).

**Figure 7.** Production value of mining and quarrying as share in total industry (sections B-E, NACE Rev.2)<sup>(16)</sup>



<sup>(15)</sup> Eurostat, Structural Business Statistics, Reference Metadata, [http://ec.europa.eu/eurostat/cache/metadata/en/sbs\\_esms.htm](http://ec.europa.eu/eurostat/cache/metadata/en/sbs_esms.htm)

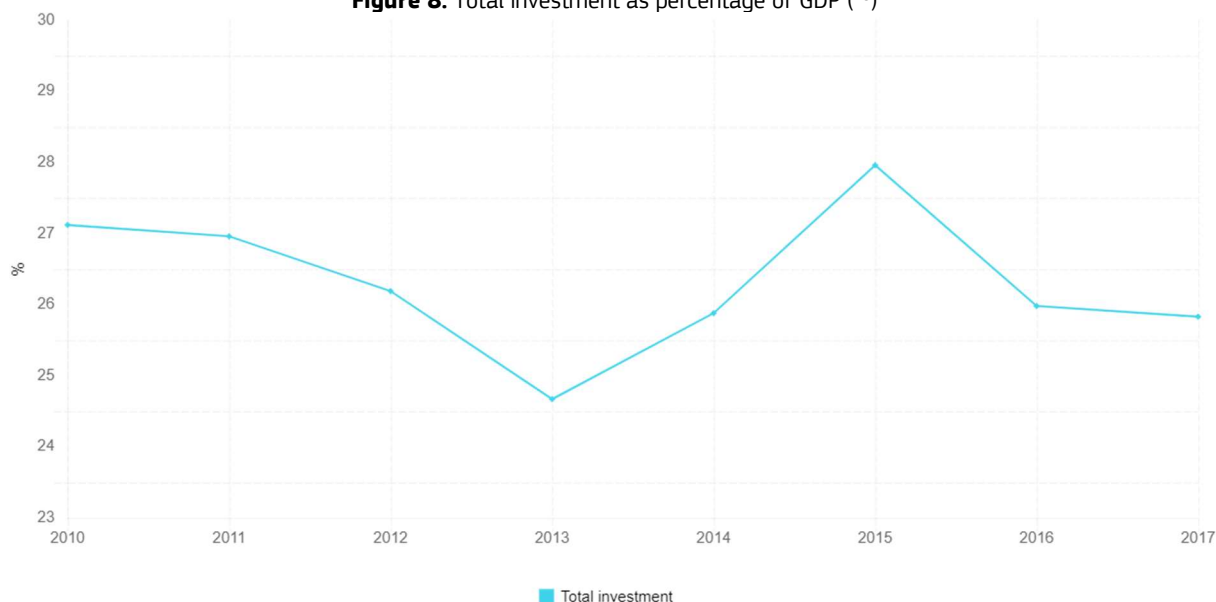
<sup>(16)</sup> Eurostat, Structural business statistics (sbs), Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E), dataset code: *sbs\_na\_ind\_r2*, Production value. [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs\\_na\\_ind\\_r2&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en)

### 3 Investments and regulatory framework

#### 3.1 Total investment as percentage of GDP

This indicator is calculated by the International Monetary Fund as a “ratio of total investment (in current local currency) and GDP (in current local currency). Investment or gross capital formation is measured by the total value of the gross fixed capital formation and changes in inventories and acquisitions less disposals of valuables”<sup>(17)</sup>

**Figure 8.** Total investment as percentage of GDP <sup>(18)</sup>



#### 3.2 Foreign direct investments: flows and stocks

As defined by UNCTAD in the *Methodological Note* accompanying the World Investment Report 2017<sup>(19)</sup>:

1. “flows of FDI comprise capital provided (either directly or through other related enterprises) by a foreign direct investor to an FDI enterprise, or capital received from an FDI enterprise by a foreign direct investor”,
2. “FDI stock is the value of the share of their capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprise”.

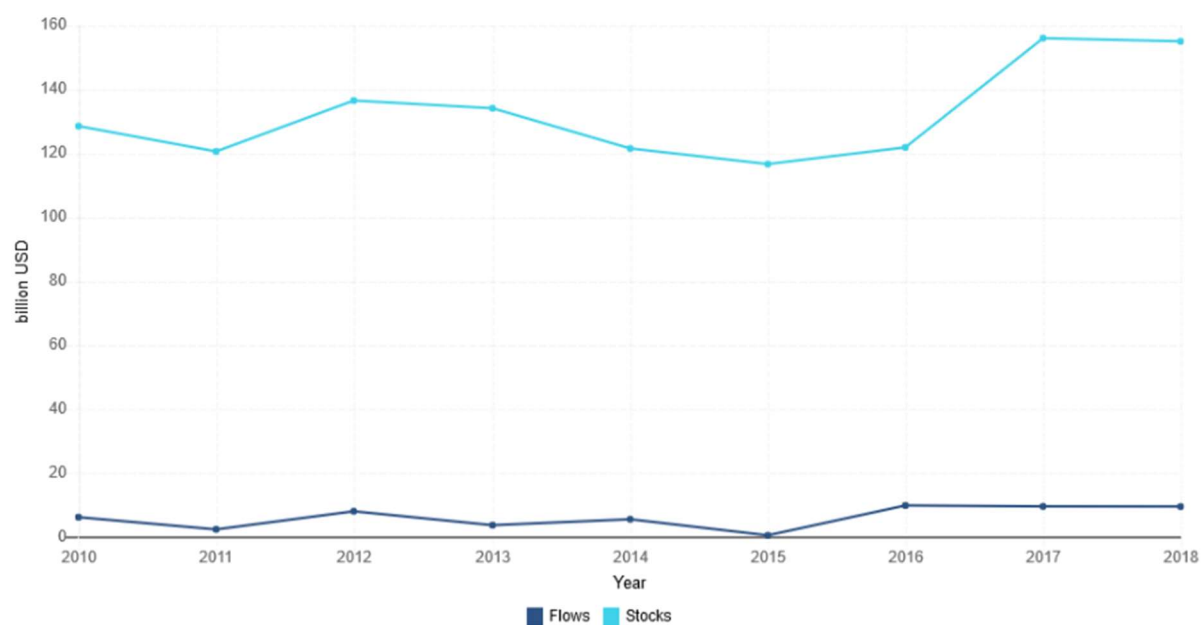
<sup>(17)</sup> IMF, World Economic Outlook Database, <https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx>

<sup>(18)</sup> IMF, World Economic Outlook Database, <https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases#sort=%40imfdate%20descending>

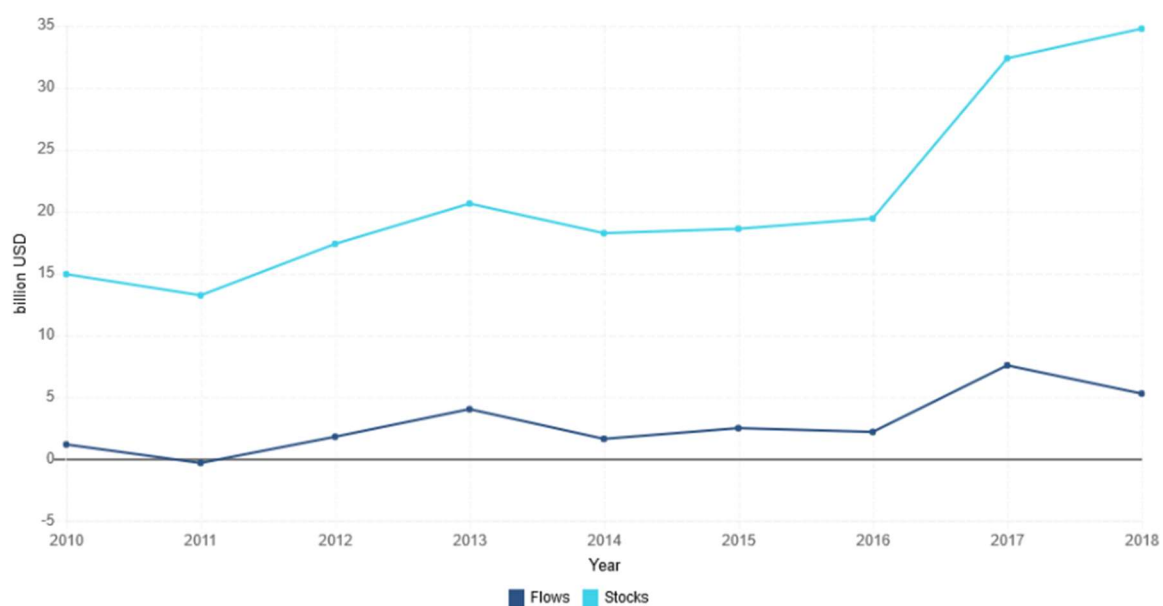
<sup>(19)</sup> [http://unctad.org/en/PublicationChapters/wir2017chMethodNote\\_en.pdf](http://unctad.org/en/PublicationChapters/wir2017chMethodNote_en.pdf)



**Figure 9.** Inward flows and stocks <sup>(20)</sup>



**Figure 10.** Outward flows and stocks <sup>(21)</sup>



<sup>(20)</sup> UNCTAD, Statistics Data Center, Foreign direct investments, [http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS\\_ChosenLang=en](http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en)

<sup>(21)</sup> UNCTAD, Statistics Data Center, Foreign direct investments, [http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS\\_ChosenLang=en](http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en)  
For detailed data see the FDI Stocks and Flows section in Economics & Trade module, <https://rmis.irc.ec.europa.eu/?page=fdi-stocks-and-flows-86abca#/>

### 3.3 Flows and stocks of foreign direct investment in mining and quarrying sector

**Table 3.** Flows and stocks of foreign direct investment in mining and quarrying sector (million USD) <sup>(22)</sup>

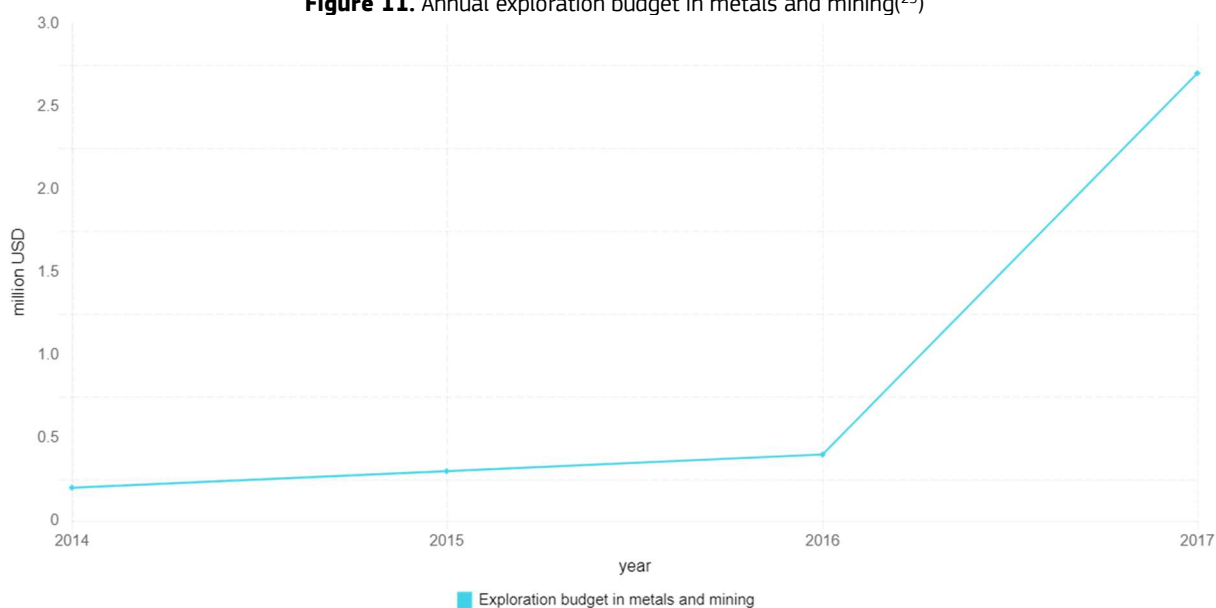
Mining and quarrying	2013	2014	2015	2016
Inward flows	-667.8	-272.8	-685.6	81.8
Inward stocks	2,274.4	1,838.0	880.9	584.6
Outward flows	NA	NA	-0.4	NA
Outward stocks	10.2	13.2	7.4	NA

### 3.4 Annual exploration budget in metals and mining

S&P Global Market Intelligence, based on the data reported by companies and its own estimates, is the data provider of these data on annual exploration budget in metals and mining, based on the data reported by companies and its own estimates.

The nonferrous exploration budgets covered by S&P Global Market Intelligence include spending for gold, base metals, platinum group metals, diamonds, U3O8, silver, rare earths, potash/phosphate, and many other hard-rock metals, but exclude exploration budgets for iron ore, coal, aluminum, oil and gas, and many industrial minerals (S&P Global Market Intelligence).

**Figure 11.** Annual exploration budget in metals and mining<sup>(23)</sup>



### 3.5 Business environment

*Doing Business* aims at measuring business regulation in economies by examining five dimensions:

1. Starting a business,
2. Getting a location,
3. Accessing finance,
4. Dealing with day-to-day operations,

<sup>(22)</sup> International Trade Center, Investment Map, <https://www.investmentmap.org/>

<sup>(23)</sup> S&P Global Market Intelligence, Country profile, Exploration Budget Trends

5. Operating in a secure business environment.

It contains 11 indicator sets: Starting a business; Labor market regulation; Dealing with construction permits; Getting electricity; Registering property; Getting credit; Protecting minority investors; Trading across borders; Paying taxes; Enforcing contracts; and Resolving insolvency (according to *Doing Business 2018. Reforming to Create Jobs*<sup>(24)</sup>).

**Table 4.** Business environment <sup>(25)</sup>

<b>Ease of doing Business index 2019</b>	<b>Rank:</b> 35 (out of 190)
--	------------------------------

### 3.6 Regulatory framework

The regulatory framework review is focusing on minerals ownership, major governing laws, permitting rules and competent authorities. This extract is based on the MINLEX report published by DG GROW<sup>(26)</sup>.

#### ***Legislation, ownership, and categories of minerals***

Mining legislation in the Czechia distinguishes between “reserved” minerals, which are state-owned, and “non-reserved” minerals which are owned by the landowner. All minerals, with the exception of construction minerals are “reserved” minerals. The primary legal basis of mineral extraction activity is the Mining Law. For prospecting and exploration for reserved minerals the most relevant law is the Geological Act.

#### ***Regulatory framework and permitting***

In the field of exploration of minerals, the Ministry of Environment is the most important authority, it lays down the exploration areas. For extraction, the District Mining Authorities are the most important state bodies which (eight in total) are part of the State Mining Administration, which is composed also by the Czech Mining Office in Prague (central mining authority), comprising a centralised permitting regime.

For prospecting and exploration, an application for “reserved” minerals is to be processed by the Ministry of the Industry and Trade with the approval of the Ministry of the Environment. An organisation can prospect and explore for “non-reserved” minerals upon agreement with the landowner. An application for the extraction of “reserved minerals” is managed by the Ministry of the Industry and Trade, consulting the Czech Mining Authority. First, the Ministry of Environment issues the certificate on the deposit of reserved minerals and lays down a deposit protection area. The “permission for mining activity” – opening, preparation and exploitation is issued by the District Mining Authorities. In the case of “non-reserved” minerals the essential conditions are the authorisation for mining activity, a zoning decision, and the permission for exploitation of deposit of non-reserved mineral. The zoning decision is issued by a building authority and the permission for exploitation of non-reserved deposit of minerals is issued by a District Mining Authority.

<sup>(24)</sup> <http://www.doingbusiness.org/reports/global-reports/doing-business-2019>

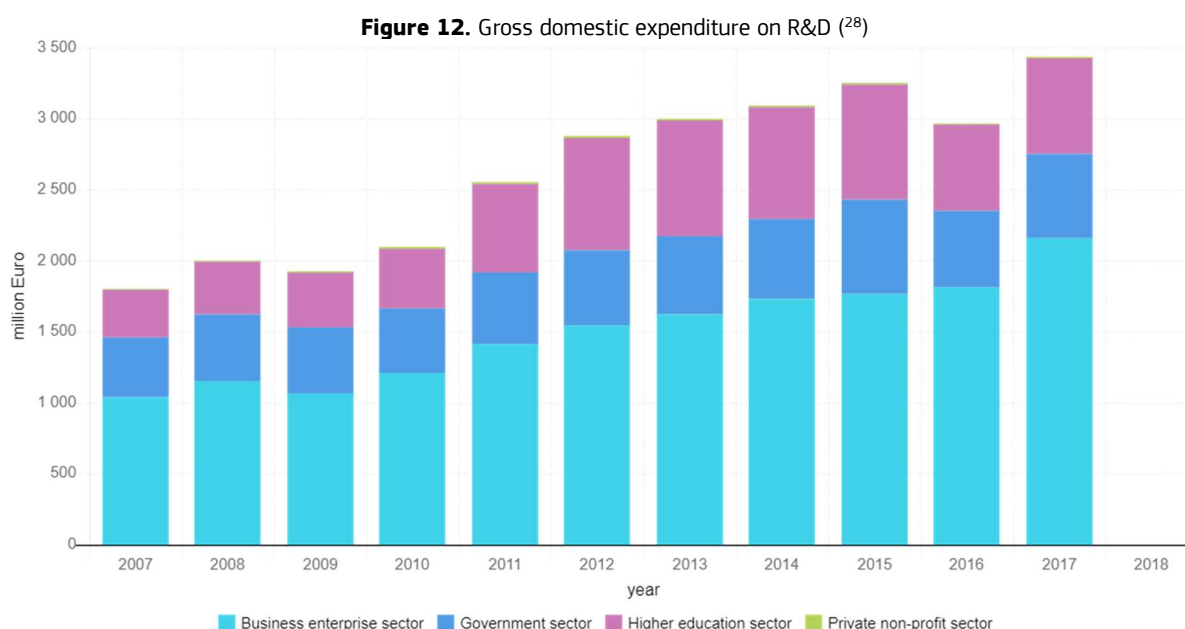
<sup>(25)</sup> World Bank, Doing Business. Measuring Business Regulations, <http://www.doingbusiness.org/>

<sup>(26)</sup> DG GROW, Legal framework for mineral extraction and permitting procedures for exploration and exploitation in the EU, final report of MINLEX project, 2017, <https://publications.europa.eu/en/publication-detail/-/publication/18c19395-6dbf-11e7-b2f2-01aa75ed71a1/language-en>.

## 4 Research, development, and innovation

### 4.1 Gross domestic expenditure on R&D

**Definition:** Gross domestic expenditure on R&D (GERD) includes expenditure on research and development by business enterprises (BERD), higher education institutions, as well as government and private non-profit organizations. For additional methodological details, see Eurostat, Statistics on research and development (rd)<sup>(27)</sup>.



### 4.2 Business expenditure on R&D by relevant NACE Rev. 2 sector

**Definition:** Expenditure on R&D in the business enterprise sector (BERD) includes all business R&D carried out on national territory. <sup>(29)</sup>

The figure includes data for the following NACE Rev.2 sectors:

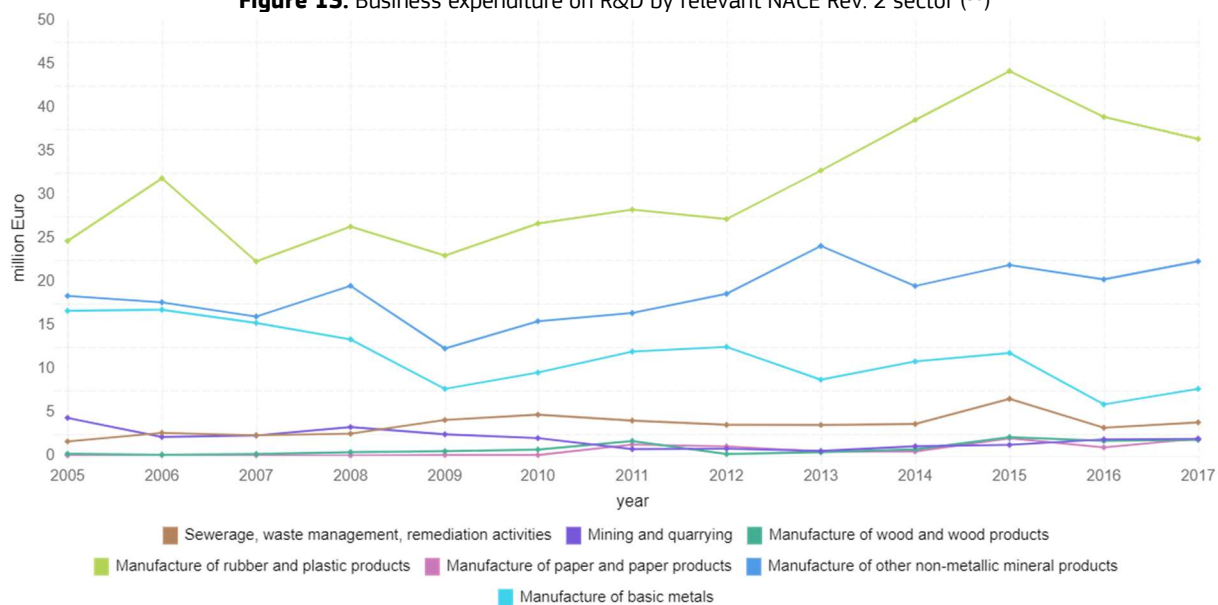
1. Mining and quarrying (B);
2. Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (C16);
3. Manufacture of paper and paper products (C17);
4. Manufacture of rubber and plastic products (C22);
5. Manufacture of other non-metallic mineral products (C23);
6. Manufacture of basic metals (C24);
7. Sewerage, waste management, remediation activities (incl. materials recovery) (E37-E39).

<sup>(27)</sup> [http://ec.europa.eu/eurostat/cache/metadata/en/rd\\_esms.htm](http://ec.europa.eu/eurostat/cache/metadata/en/rd_esms.htm)

<sup>(28)</sup> Eurostat, Gross domestic expenditure on R&D (GERD) by sectors of performance, dataset code: [rd\\_e\\_gerdtot](http://ec.europa.eu/eurostat/product?code=rd_e_gerdtot&language=en&mode=view), [http://ec.europa.eu/eurostat/product?code=rd\\_e\\_gerdtot&language=en&mode=view](http://ec.europa.eu/eurostat/product?code=rd_e_gerdtot&language=en&mode=view)

<sup>(29)</sup> DG EUROSTAT (2000): Structural business statistics. EU economy in the Triad with contrasted results. In: Statistics in focus, Theme 4, 23/2000

**Figure 13.** Business expenditure on R&D by relevant NACE Rev. 2 sector <sup>(30)</sup>



<sup>(30)</sup> Eurostat, Business expenditure on R&D (BERD) by NACE Rev. 2 activity, dataset code: [rd\\_e\\_berdindr2](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_berdindr2&lang=en), [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd\\_e\\_berdindr2&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_berdindr2&lang=en)

## 5 Resources and reserves

### 5.1 Estimated resources

**Definition:** The term is synonymously used for “mineral resource”, “inferred mineral resource”, “indicated mineral resource” and “measured mineral resource”. In this case, confidence in the existence of a resource is indicated by the geological knowledge and preliminary data, while at the same time the extraction would be legally, economically, and technically feasible.

Czech Geological Survey is responsible for collecting resource and reserve data while the Ministry of the Environment is responsible for collating this data. The data come from questionnaire, company submission, and personal communication, collected annually. The resource and reserve figures do not include any marine or offshore mineral deposits nor overseas territories. <sup>(31)</sup>

**Table 5.** Estimated resources <sup>(32)</sup>

Commodity	Sub-Commodity	Reporting code	Quantity	Unit	Ore grade	Classification
Aggregates and related materials	Crushed stone	National reporting code	227685	Thousand cubic meters		Potentially economic
			61357	Thousand cubic meters		P1
			408807	Thousand cubic meters		P2
Aggregates and related materials	Dimension stone	National reporting code	42545	Thousand cubic meters		Potentially economic
			5043	Thousand cubic meters		P1
			12701	Thousand cubic meters		P2
Aggregates and related materials	Dolomite	National reporting code	12212	Thousand tonnes		Potentially economic
			23946	Thousand tonnes		P1
Aggregates and related materials	Limestone	National reporting code	744752	Thousand tonnes		Potentially economic
			82489	Thousand tonnes		P1
			350957	Thousand tonnes		P2
Aggregates and related materials	Sand and gravel	National reporting code	461808	Thousand cubic meters		Potentially economic
			149027	Thousand cubic meters		P1
			946239	Thousand cubic meters		P2
Barytes		National reporting code	569	Thousand tonnes		Potentially economic
Bentonite		National reporting code	105151	Thousand tonnes		Potentially economic
			27017	Thousand tonnes		P1
			36361	Thousand tonnes		P2

<sup>(31)</sup> More detailed description of the reserves and resources definition is found in the following website: Mineral Commodity Summaries of the Czech Republic, accessible at <http://www.geology.cz/extranet-eng/publications/online/mineral-commodity-summaries>.

<sup>(32)</sup> Minerals4EU, accessible at <http://minerals4eu.brgm-rec.fr/m4eu-yearbook/>

Commodity	Sub-Commodity	Reporting code	Quantity	Unit	Ore grade	Classification
Clay	Brick clays and related minerals	National reporting code	211520	Thousand cubic meters		Potentially economic
			25691	Thousand cubic meters		P1
			245459	Thousand cubic meters		P2
Clay		National reporting code	347870	Thousand tonnes		Potentially economic
			331988	Thousand tonnes		P1
			38196	Thousand tonnes		P2
Copper		National reporting code	49	Thousand tonnes		Potentially economic
Diatomite		National reporting code	712	Thousand tonnes		Potentially economic
Feldspar		National reporting code	13480	Thousand tonnes		Potentially economic
			48530	Thousand tonnes		P1
			2033	Thousand tonnes		Potentially economic
Gemstones (other than diamond)	Moldavite (tectite) bearing rocks	National reporting code	3099	Thousand cubic meters		Potentially economic
			66000	Thousand cubic meters		P2
Gemstones (other than diamond)	Pyrope bearing rocks	National reporting code	3181	Thousand tonnes		Potentially economic
			749	Thousand tonnes		P2
Germanium		National reporting code	473	Tonnes	0.01%	Potentially economic
Gold		National reporting code	161516	Kg	0.00%	Potentially economic
			60221	Kg	N/A	P1
			52246	Kg	N/A	P2
Graphite		National reporting code	10447	Thousand tonnes		Potentially economic
			3997	Thousand tonnes		P1
			5279	Thousand tonnes		P2
			1505	Thousand tonnes		P3
Gypsum		National reporting code	82137	Thousand tonnes		Potentially economic
Kaolin	Kaolin (raw)	National reporting code	460027	Thousand tonnes		Potentially economic

Commodity	Sub-Commodity	Reporting code	Quantity	Unit	Ore grade	Classification
			25115	Thousand tonnes		P1
Lead	Lead (resources P1 and P2 for Pb-Zn Cu ores)	National reporting code	152	Thousand tonnes	0.67%	Potentially economic
			786	Thousand tonnes	N/A	P1
			5340	Thousand tonnes	N/A	P2
Lithium		National reporting code	112775	Tonnes	0.21%	Potentially economic
Manganese ore		National reporting code	138801	Thousand tonnes	11.29%	Potentially economic
Silica	Industrial sands - foundry sand	National reporting code	147412	Thousand tonnes		Potentially economic
			15157	Thousand tonnes		P1
			14723	Thousand tonnes		P2
Silica	Industrial sands - glass sand	National reporting code	145040	Thousand tonnes		Potentially economic
			14927	Thousand tonnes		P2
Silica	Silica minerals	National reporting code	4689	Thousand tonnes		Potentially economic
			4533	Thousand tonnes		P1
Silver		National reporting code	532	Tonnes	0.00%	Potentially economic
			33	Tonnes	N/A	P1
			4	Tonnes	N/A	P2
Tin	Tin (resources P1 and P2 for Sn-W ores)	National reporting code	164299	Tonnes for Sn; thousand tonnes for ores	0.22%	Potentially economic
			146177	Tonnes for Sn; thousand tonnes for ores	N/A	P1
			1007985	Tonnes for Sn; thousand tonnes for ores	N/A	P2
Tungsten		National reporting code	70253	Tonnes	0.80%	Potentially economic
Tungsten			3252	Tonnes	N/A	P1
Tungsten		National reporting code	10703	Tonnes	N/A	P2
Zinc		National reporting code	472	Thousand tonnes	1.66%	Potentially economic



## 5.2 Estimated reserves

**Definition:** The term is synonymously used for “mineral reserve”, “probable mineral reserve” and “proven mineral reserve”. In this case, confidence in the reserve is measured by the geological knowledge and data, while at the same time the extraction would be legally, economically, and technically feasible.<sup>(33)</sup>

The reserve figure was taken from Minerals4EU. Czech Geological Survey is responsible for collecting resource and reserve data while the Ministry of the Environment is responsible for collating this data. The data come from questionnaire, company submission, and personal communication, collected annually. The resource and reserve figures do not include any marine or offshore mineral deposits nor overseas territories.<sup>(34)</sup>

**Table 6.** Estimated reserves<sup>(35)</sup>

Commodity	Sub-commodity	Reporting Code	Quantity	Units	Ore grade	Code ReserveType
Aggregates and related materials	Crushed stone	National reporting code	1132155	Thousand cubic meters		Economic explored
		National reporting code	2046372	Thousand cubic meters		Economic prospected
Aggregates and related materials	Dimension stone	National reporting code	79671	Thousand cubic meters		Economic explored
		National reporting code	92539	Thousand cubic meters		Economic prospected
Aggregates and related materials	Dolomite	National reporting code	85316	Thousand tonnes		Economic explored
		National reporting code	348288	Thousand tonnes		Economic prospected
Aggregates and related materials	National reporting code	National reporting code	1710231	Thousand tonnes		Economic explored
		National reporting code	1776915	Thousand tonnes		Economic prospected
Aggregates and related materials	Sand and gravel	National reporting code	1209234	Thousand cubic meters		Economic explored
		National reporting code	2574742	Thousand cubic meters		Economic prospected
Bentonite		National reporting code	73703	Thousand tonnes		Economic explored
		National reporting code	128326	Thousand tonnes		Economic prospected
Clay	Brick clays and related minerals	National reporting code	265430	Thousand cubic meters		Economic explored
		National reporting code	750686	Thousand cubic meters		Economic prospected
Clay		National reporting code	176926	Thousand tonnes		Economic explored

<sup>(33)</sup> Minerals4EU, accessible at <http://minerals4eu.brgm-rec.fr/m4eu-yearbook/>

<sup>(34)</sup> More detailed description of the reserves and resources definition is found in the following website: Mineral Commodity Summaries of the Czech Republic, accessible at <http://www.geology.cz/extranet-eng/publications/online/mineral-commodity-summaries>.

<sup>(35)</sup> Minerals4EU, accessible at <http://minerals4eu.brgm-rec.fr/m4eu-yearbook/>

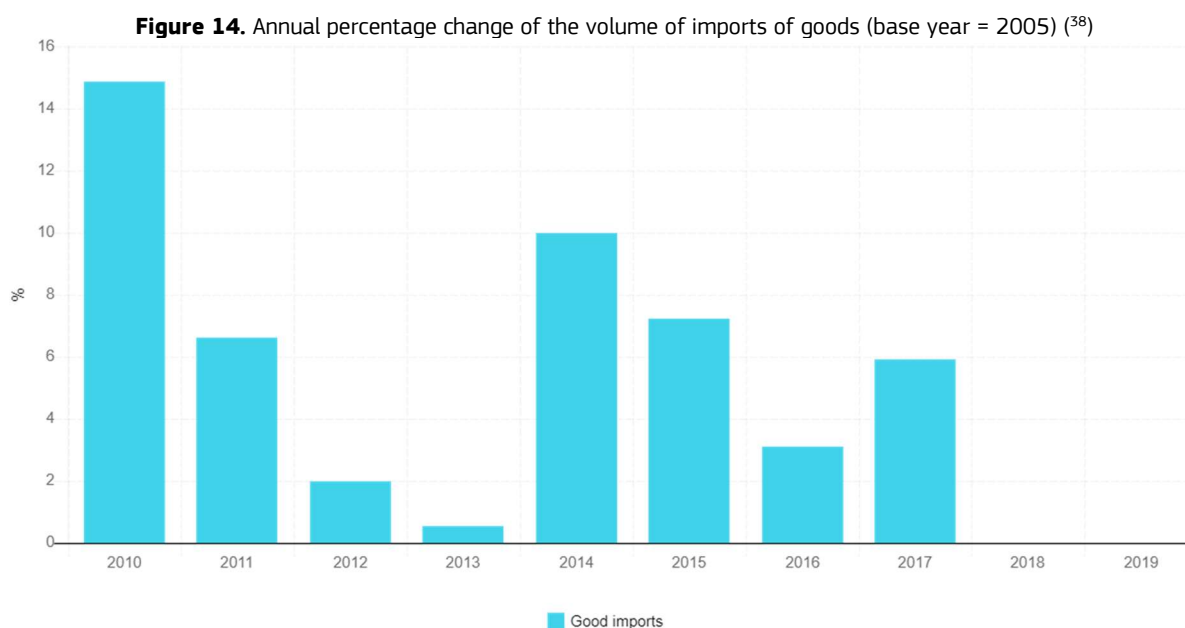
Commodity	Sub-commodity	Reporting Code	Quantity	Units	Ore grade	Code ReserveType
		National reporting code	399072	Thousand tonnes		Economic prospected
Diatomite		National reporting code	1808	Thousand tonnes		Economic explored
Feldspar		National reporting code	25889	Thousand tonnes		Economic explored
		National reporting code	30815	Thousand tonnes		Economic prospected
Gemstones (other than diamond)	Moldavite (tectite) bearing rocks	National reporting code	141638	Thousand cubic meters		Economic explored
		National reporting code	541854	Thousand cubic meters		Economic prospected
Gemstones (other than diamond)	Pyrope bearing rocks	National reporting code	3260	Thousand tonnes		Economic explored
		National reporting code	13002	Thousand tonnes		Economic prospected
Gold		National reporting code	48740	Kg	0.00019%	Economic explored
		National reporting code	28644	Kg	0.00019%	Economic prospected
Graphite		National reporting code	1106	Thousand tonnes		Economic explored
		National reporting code	2606	Thousand tonnes		Economic prospected
Gypsum		National reporting code	119100	Thousand tonnes		Economic explored
		National reporting code	302990	Thousand tonnes		Economic prospected
Kaolin	Kaolin (raw)	National reporting code	225092	Thousand tonnes		Economic explored
		National reporting code	506010	Thousand tonnes		Economic prospected
Silica	Industrial sands - foundry sand	National reporting code	127937	Thousand tonnes		Economic explored
		National reporting code	133377	Thousand tonnes		Economic prospected
Silica	Industrial sands - glass sand	National reporting code	84755	Thousand tonnes		Economic explored
		National reporting code	25077	Thousand tonnes		Economic prospected
Silica	Silica minerals	National reporting code	763	Thousand tonnes		Economic explored

Commodity	Sub-commodity	Reporting Code	Quantity	Units	Ore grade	Code ReserveType
		National reporting code	20297	Thousand tonnes		Economic prospected

## 6 Supply

### 6.1 Annual percentage change of the volume of imports of goods

As defined in the methodology of IMF's World Economic Outlook, October 2018, *Annual change of imports of goods* refers to the aggregate change in the quantity of imports of goods. This indicator measures the percentage change in the volume estimates of imports of goods from the base year, which is country specific<sup>(36)</sup>. According to the OECD's definition, trade in goods includes "all goods which add to, or subtract from, the stock of material resources of a country by entering its economic territory (imports) or leaving it (exports)"<sup>(37)</sup>. The goods commodity group aggregates commodity classes referring to the subheadings of the Harmonized System.



### 6.2 Domestic extraction by main category

**Definition:** Domestic extraction indicates the total amount of material extracted by resident units from the natural environment for further processing in the economy; the visualizations include three material categories (metals ores, non-metallic minerals, and woods).

The domestic extraction figure refers to the data provided by Eurostat Economy-wide material flow accounts (EW-MFA).

**Table 7.** Domestic extraction by main category (million tonnes)<sup>(39)</sup>

Material category	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metal ores (gross ores)	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0
Non-metallic minerals	94.0	83.4	75.5	78.5	69.9	68.5	72.5	79.5	76.4	77.4
Wood	9.5	9.1	9.9	9.2	9.0	9.1	9.2	9.6	10.4	11.4

<sup>(36)</sup> According to Export and Import Price Index Manual: Theory and Practice, Glossary; also <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx>

<sup>(37)</sup> <https://data.oecd.org/trade/trade-in-goods.htm#indicator-chart>

<sup>(38)</sup> IMF, World Economic Outlook Databases, <https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases#sort=%40imfdte%20descending>

<sup>(39)</sup> Eurostat, Material Flows and Resource Productivity, <https://ec.europa.eu/eurostat/web/environment/material-flows-and-resource-productivity>

### 6.3 Production of relevant industrial sectors

This section presents the gross output of selected raw materials related sectors in monetary terms (million Euro).

Sectoral data are taken from Eurostat, Structural Business Statistics. According to Eurostat's methodology, *Production value* is an output-related variable that "measures the amount produced based on sales and including changes in stocks and the resale of goods and services. Production value is calculated by Eurostat as turnover plus/minus the changes in stocks of finished products, work in progress and goods and services purchased for resale, minus the purchases of goods and services for resale, plus capitalized production, plus other operating income (excluding subsidies)"<sup>(40)</sup>.

**Table 8.** Production of relevant industrial sectors (million Euro; 2015) <sup>(41)</sup>

Sector	Production
Mining of metal ores (B07, NACE Rev.2)	NA
Other mining and quarrying (B08, NACE Rev.2)	605.7
Mining support service activities (B09, NACE Rev.2)	109.5
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (C16, NACE Rev.2)	3313.1
Manufacture of other non-metallic mineral products (C23, NACE Rev.2)	4983.0
Manufacture of basic metals (C24, NACE Rev.2)	6500.2

### 6.4 Production of primary minerals

**Definition:** Mineral Raw Materials are defined as mineral constituents of the earth's crust, which are of economic value, including output from mines as well as the output from processing at or near the mines.

The data related to mineral raw materials were obtained by WMD through evaluation of questionnaires sent to the National Committees of member countries of the World Mining Congress as well as to other bodies such as Embassies, Foreign Trade Representatives etc. In addition, WMD have also used, when available, official mining statistics such as BGS and USGS.

**Table 9.** Production of primary minerals in 2017 <sup>(42)</sup>

Commodity	Quantity	Unit	% of world production
Bentonite	254000	Tonnes	1.36
Diatomite	34000	Tonnes	1.67
Feldspar	368000	Tonnes	1.05
Gypsum	7000	Tonnes	0.00
Kaolin	3669000	Tonnes	9.04
Coking Coal	2337100	Tonnes	0.22

<sup>(40)</sup> Eurostat, Structural Business Statistics, Reference Metadata, [http://ec.europa.eu/eurostat/cache/metadata/en/sbs\\_esms.htm](http://ec.europa.eu/eurostat/cache/metadata/en/sbs_esms.htm)

<sup>(41)</sup> Eurostat, Structural business statistics (sbs), Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E), dataset code: *sbs\_na\_ind\_r2*, Production value [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs\\_na\\_ind\\_r2&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en)

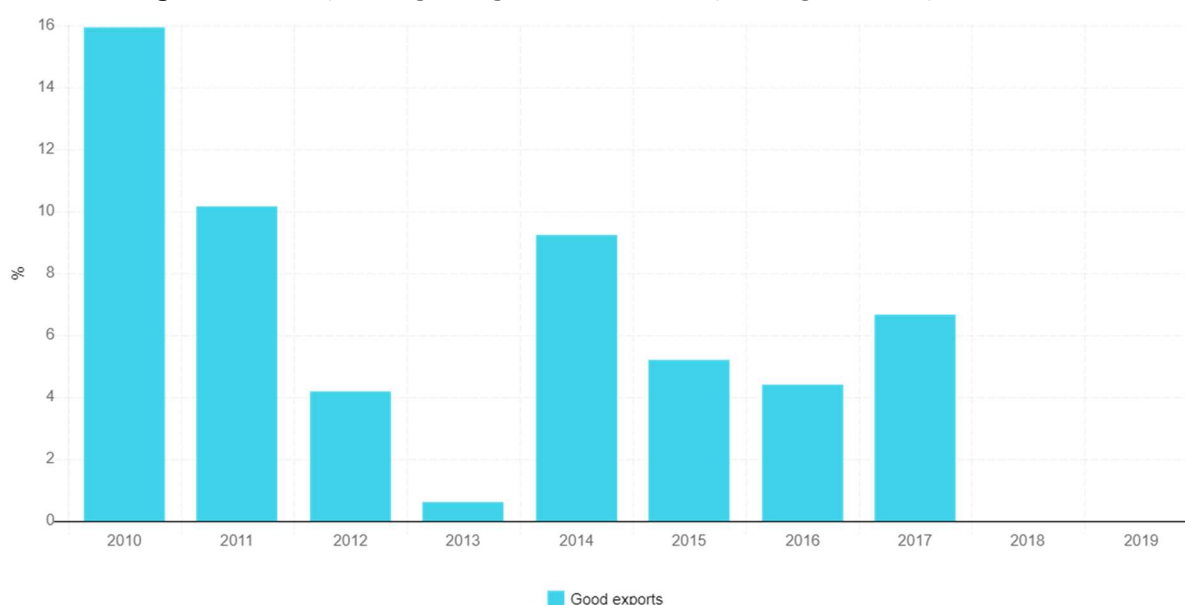
<sup>(42)</sup> The mineral raw materials production refer to the data provided by The World Mining Data (WMD). The production data reported by WMD indicate the content of recoverable valuable elements and compounds.

## 7 Raw material use

### 7.1 Annual percentage change of the volume of exports of goods

As defined in the methodology of IMF's World Economic Outlook, October 2017, *Annual change of exports of goods* refers to the aggregate change in the quantity of exports of goods. This indicator measures the percentage change in the volume estimates of exports of goods from the base year, which is country specific<sup>(43)</sup>. According to the OECD's definition, trade in goods includes "all goods which add to, or subtract from, the stock of material resources of a country by entering its economic territory (imports) or leaving it (exports)".<sup>(44)</sup> The goods commodity group aggregates commodity classes referring to the subheadings of the Harmonized System.

**Figure 15.** Annual percentage change of the volume of exports of goods (base year = 2005) <sup>(45)</sup>



### 7.2 Domestic material consumption by main category

**Definition:** Domestic material consumption (DMC), measures the total amount of materials directly used by an economy and is defined as the annual quantity of raw materials extracted from the domestic territory, plus all physical imports minus all physical exports.

**Table 10.** Domestic material consumption by main category (million tonnes) <sup>(46)</sup>

Category	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metal ores (gross ores)	6.1	3.1	4.8	5.4	3.5	4.0	4.5	5.0	4.5	4.4
Non-metallic minerals	94.1	83.2	75.5	77.4	68.8	68.1	72.0	78.9	75.6	76.4
Wood	5.4	5.6	6.5	5.6	5.7	5.7	5.5	6.0	5.5	6.1

<sup>(43)</sup> According to Export and Import Price Index Manual: Theory and Practice, Glossary; also <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx>

<sup>(44)</sup> <https://data.oecd.org/trade/trade-in-goods.htm#indicator-chart>

<sup>(45)</sup> IMF, World Economic Outlook Databases, <https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases#sort=%40imfdate%20descending>

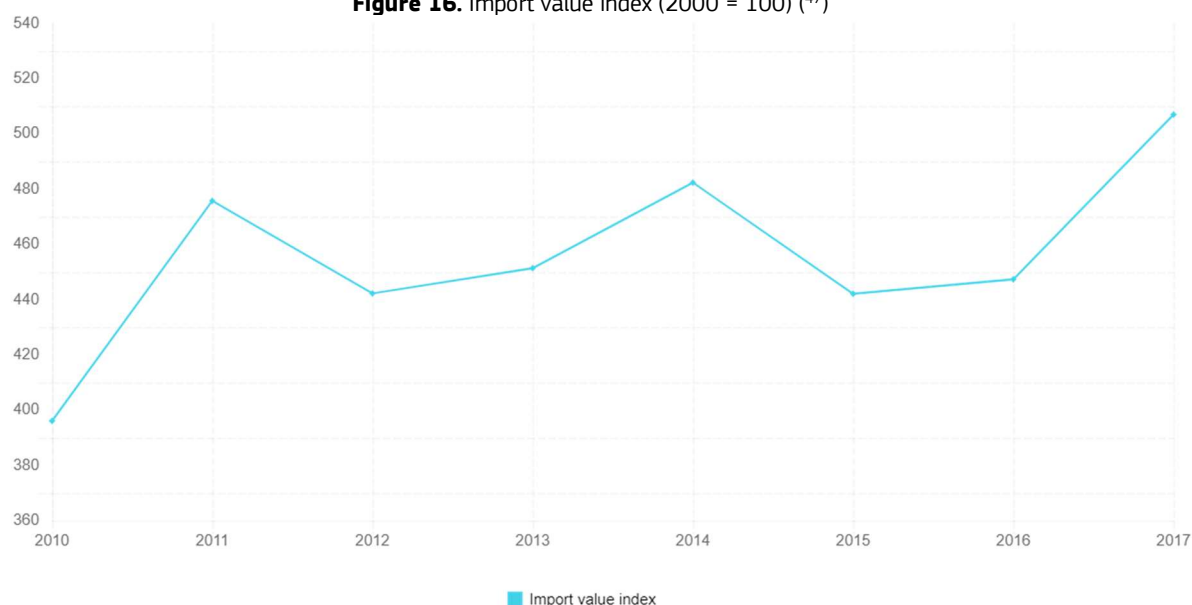
<sup>(46)</sup> Eurostat, Material Flows and Resource Productivity, <https://ec.europa.eu/eurostat/web/environment/material-flows-and-resource-productivity>

## 8 Trade

### 8.1 Import value index

**Definition:** Data are provided by World Bank, World Development Indicators, based on United Nations Conference on Trade and Development, Handbook of Statistics and data files, and International Monetary Fund, International Financial Statistics. For calculation of this index, import values are the current value of imports (f.o.b.) converted to U.S. dollars and expressed as a percentage of the average for the base period (year 2000).

**Figure 16.** Import value index (2000 = 100) <sup>(47)</sup>

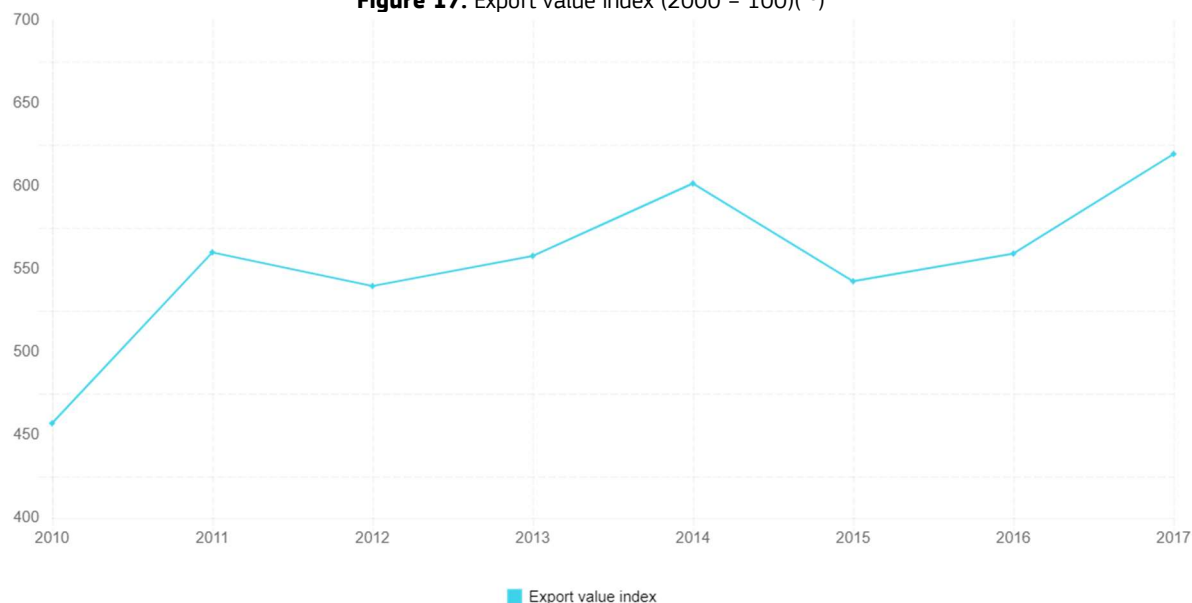


### 8.2 Export value index

**Definition:** Data are provided by World Bank, World Development Indicators, based on United Nations Conference on Trade and Development, Handbook of Statistics and data files, and International Monetary Fund, International Financial Statistics. For calculation of this index, export values are the current value of exports (f.o.b.) converted to U.S. dollars and expressed as a percentage of the average for the base period (year 2000).

<sup>(47)</sup> World Bank, World Development Indicators, <https://data.worldbank.org/indicator/TM.VAL.MRCH.XD.WD>

**Figure 17.** Export value index (2000 = 100)<sup>(48)</sup>



### 8.3 Raw materials' physical trade balance by selected material category

**Definition:** Physical trade balance is calculated as imports minus exports, by material category.

**Table 11.** Raw materials' physical trade balance by selected material category (million tonnes) <sup>(49)</sup>

Material category	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metal ores (gross ores)	5.9	3.0	4.6	5.3	3.4	3.9	4.4	4.9	4.4	4.4
Non-metallic minerals	0.1	-0.1	-0.1	-1.1	-1.1	-0.4	-0.5	-0.6	-0.8	-0.9
Wood	-4.1	-3.5	-3.4	-3.6	-3.3	-3.4	-3.7	-3.6	-4.9	-5.2

### 8.4 Exports, imports and trade balance by HS Standard Product Group

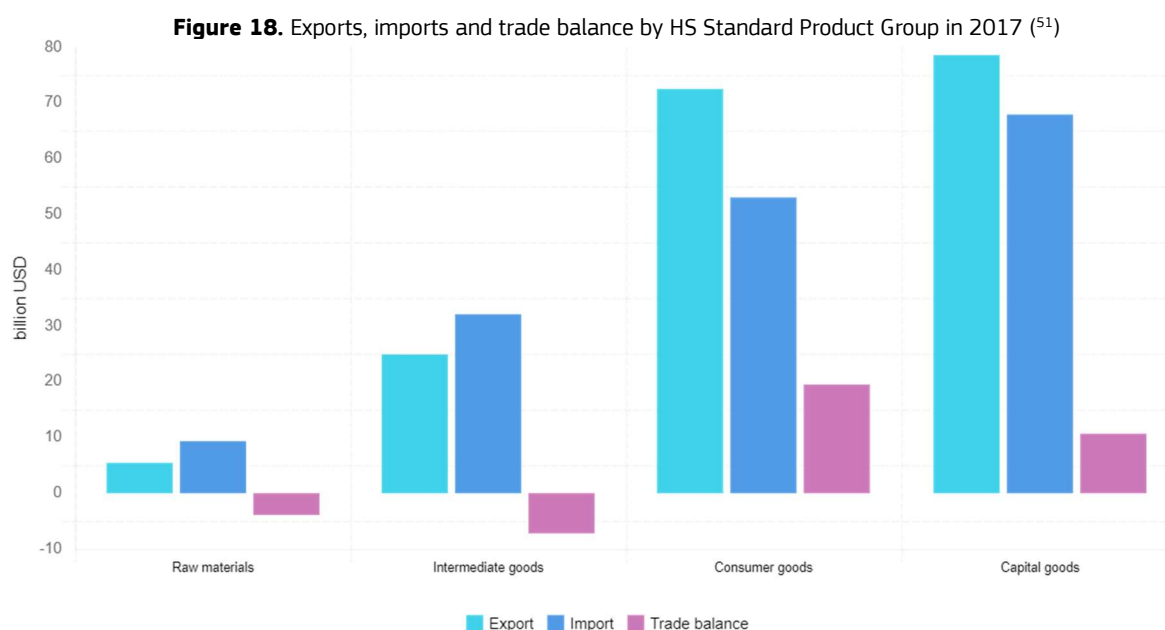
The four HS Standard Product Groups provided by UNCTAD - i.e. *Raw Materials (SoP1)*, *Intermediates (SoP2)*, *Consumer Goods (SoP3)* and *Capital Goods (SoP4)* – are commodity aggregates that also include food and energy-related products<sup>(50)</sup>. They are available in the predefined product clusters of the Advanced Query tool of the World Integrated Trade Solutions database (WITS).

<sup>(48)</sup> World Bank, World Development Indicators, <https://data.worldbank.org/indicator/TM.VAL.MRCH.XD.WD>

<sup>(49)</sup> Eurostat, Material Flows and Resource Productivity, <https://ec.europa.eu/eurostat/web/environment/material-flows-and-resource-productivity>

<sup>(50)</sup> WITS Reference Data, <https://wits.worldbank.org/referencedata.html>



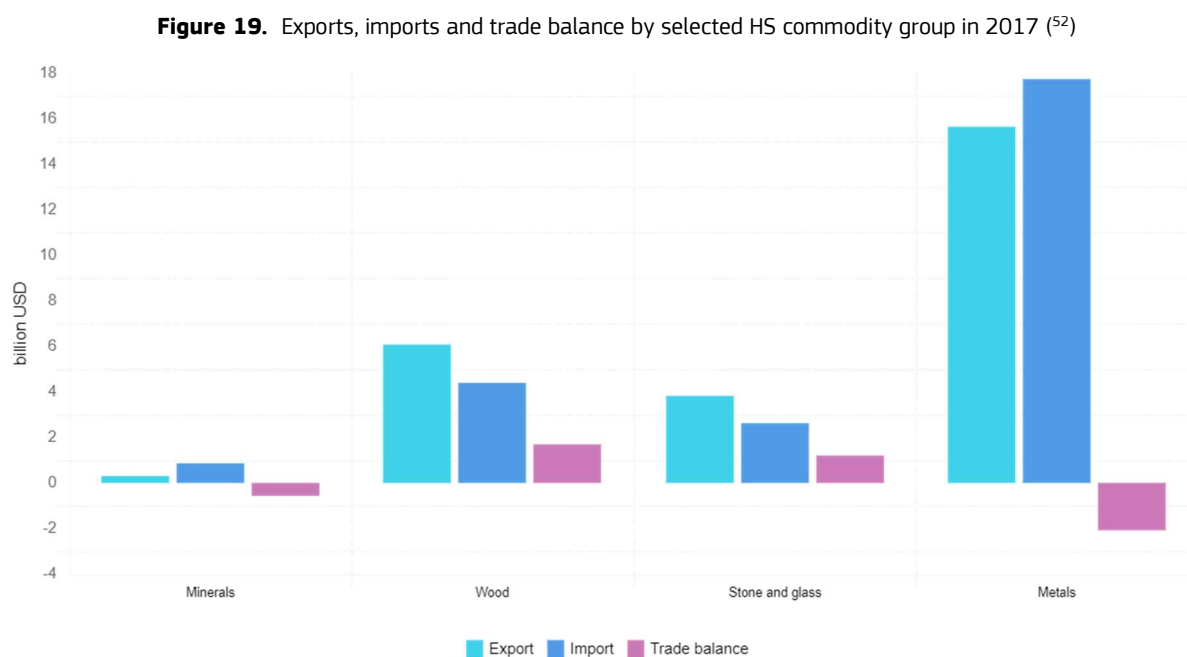


## 8.5 Exports, imports, and trade balance by selected HS commodity group

The selected HS commodity groups are:

1. Metals (HS chapters 72-83),
2. Minerals (HS chapters 25 and 26),
3. Stone and Glass (HS chapters 68-71)
4. Wood (HS chapters 44-49).

These selected commodity groups contain non-food, non-energy raw material commodities. They are available in the predefined product clusters of the Advanced Query tool of the World Integrated Trade Solutions database (WITS).



<sup>(51)</sup> World Integrated Trade Solution (WITS), <https://wits.worldbank.org/>

<sup>(52)</sup> World Integrated Trade Solution (WITS), <https://wits.worldbank.org/>

## 8.6 Exports, imports and trade balance by selected HS chapter

The selected HS chapter contain HS 6-digit non-food, non-energy raw material commodities.

**Table 12.** Exports, imports and trade balance by selected HS chapter in 2017 (million USD) <sup>(53)</sup>

HS chapter	HS chapter name	Export	Import	Trade balance
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	242.0	282.9	-40.8
26	Ores, slag and ash	54.3	582.1	-527.8
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	3265.3	8783.0	-5517.7
28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes	580.1	876.3	-296.2
31	Fertilisers	131.2	321.9	-190.7
40	Rubber	3905.3	2791.4	1113.9
44	Wood and articles of wood	2178.3	1073.1	1105.1
45	Cork and articles of cork	1.5	13.9	-12.5
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof	630.0	814.9	-184.9
72	Iron and steel	3764.0	5931.9	-2167.9
74	Copper and articles thereof	484.2	1330.8	-846.6
75	Nickel and articles thereof	60.8	189.2	-128.4
76	Aluminium and articles thereof	1887.9	2671.2	-783.3
78	Lead and articles thereof	141.1	407.7	-266.6
79	Zinc and articles thereof	64.1	170.8	-106.8
80	Tin and articles thereof	6.5	25.6	-19.2
81	Other base metals; cermets; articles thereof	141.8	168.6	-26.8

<sup>(53)</sup> World Integrated Trade Solution (WITS), <https://wits.worldbank.org/>

## 8.7 Top 20 non-food, non-energy raw material commodities

The Top 20 non-food, non-energy raw material commodities imported in 2017 and Top 20 non-food, non-energy raw material commodities exported in 2017 indicators present the country's top 20 HS 6-digit non-food, non-energy raw materials imported/exported in 2017, based on the database built in the of Raw Materials Information System's Economics & Trade module.<sup>(54)</sup>

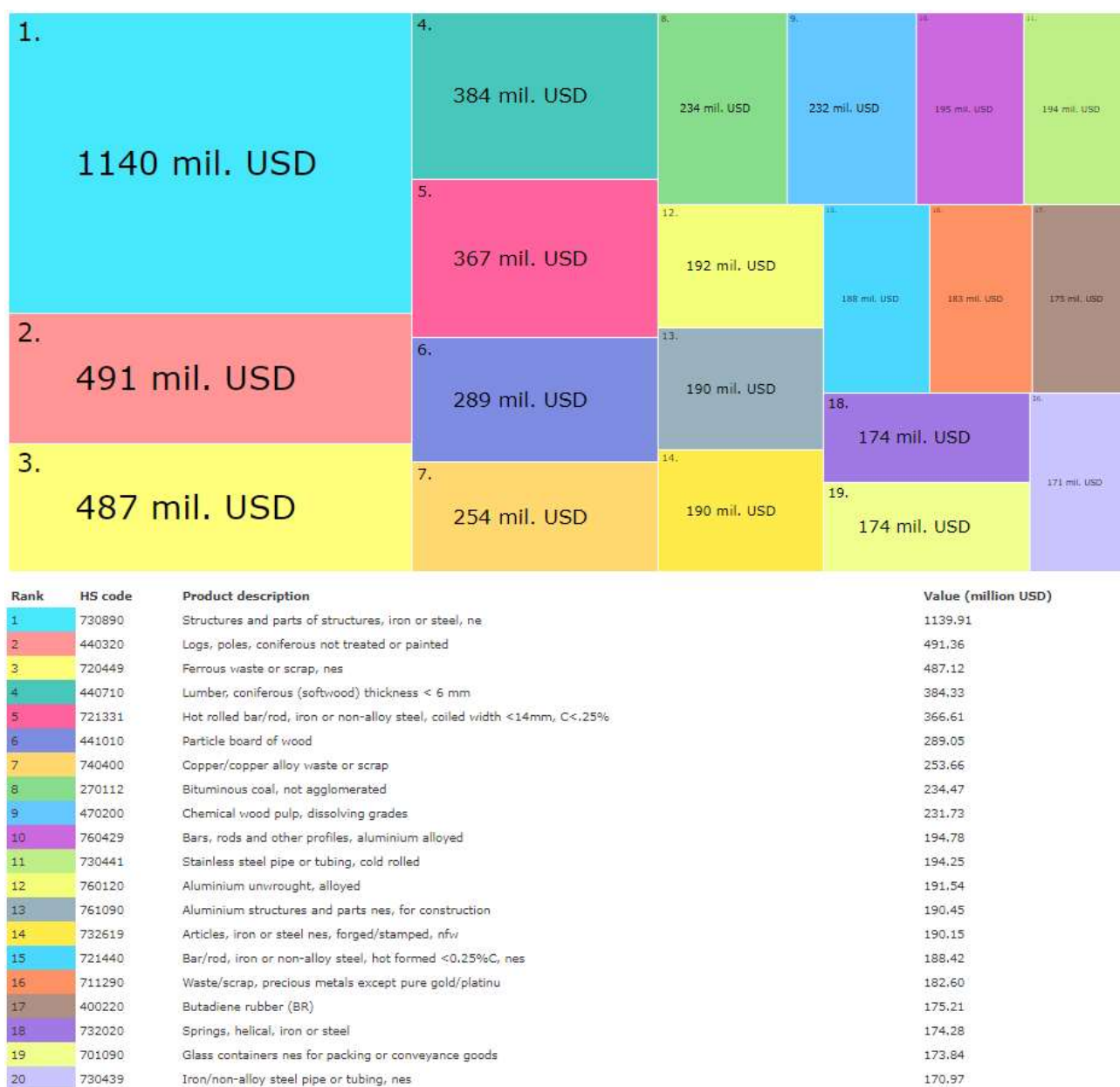
**Figure 20.** Top 20 non-food, non-energy raw material commodities imported in 2017 <sup>(55)</sup>



<sup>(54)</sup> For further details, see Raw Materials Information System, Methodological Overview section - <http://rmis.jrc.ec.europa.eu/?page=methodological-overview-f5f020>

<sup>(55)</sup> Raw Materials Information System, Economics & Trade module, Country section, <https://rmis.jrc.ec.europa.eu/?page=trade-flows#/>

**Figure 21.** Top 20 non-food, non-energy raw material commodities exported in 2017 <sup>(56)</sup>



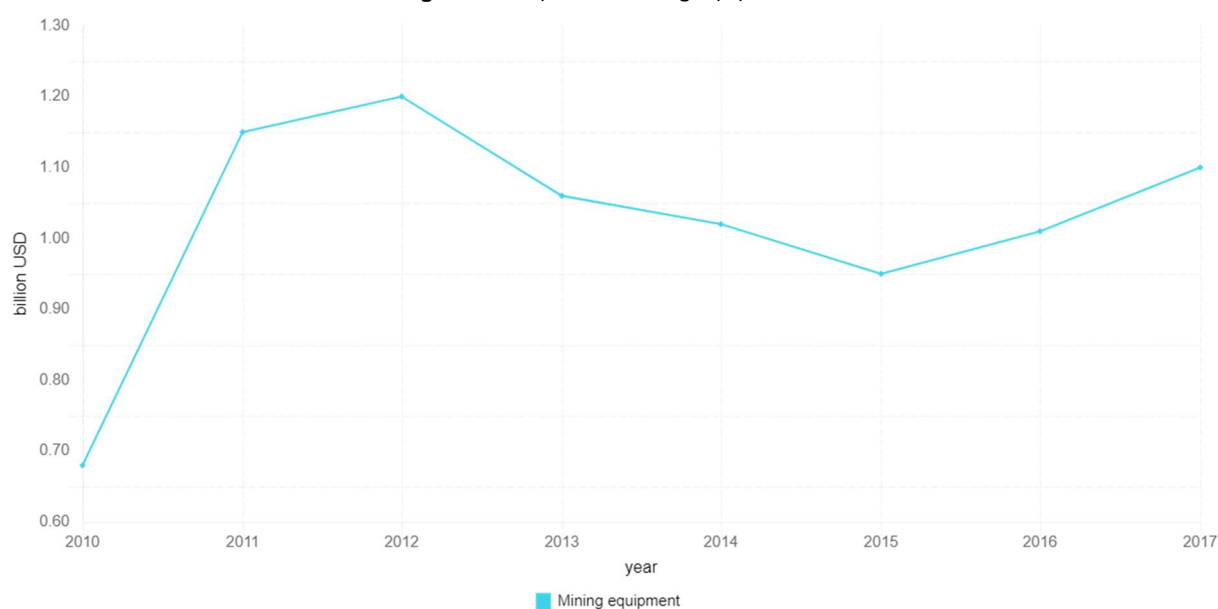
<sup>(56)</sup> Raw Materials Information System, Economics & Trade module, Country section, <https://rmis.jrc.ec.europa.eu/?page=trade-flows#/>

## 8.8 Exports of mining equipment

This indicator was developed by JRC, based on data from UN Comtrade, accessed via World Bank's World Integrated Trade Solution. The starting point for identifying the mining-equipment-related commodities were the products covered by the 4-digit NACE class 28.92, Manufacture of machinery for mining, quarrying and construction.

For more methodological details and the list of 21 six-digit HS codes covered by this indicator, see *Raw materials scoreboard 2018*, Methodological notes, Mining equipment exports.<sup>(57)</sup>

**Figure 22.** Exports of mining equipment<sup>(58)</sup>



<sup>(57)</sup> <https://publications.europa.eu/en/publication-detail/-/publication/117c8d9b-e3d3-11e8-b690-01aa75ed71a1>

<sup>(58)</sup> World Integrated Trade Solution (WITS), <https://wits.worldbank.org/>

## 9 Environment

### 9.1 Land used by mining sites and other activities

**Definition:** Mineral extraction sites (category 1.3.1): Areas with open-pit extraction of industrial minerals (sandpits, quarries) or other minerals (opencast mines). Includes flooded gravel pits, except for river-bed extraction. Urban areas refers to the sum of *continuous urban fabric* (land use category 1.1.1) and *discontinuous urban fabric* (land use category 1.1.2), which cover, respectively, land where buildings, roads and artificially surfaced area cover almost all the ground, and land where buildings, roads and artificially surfaced areas associated with vegetated areas and bare soil, which occupy discontinuous but significant surfaces. Agricultural areas are the sum of categories 2.1.1-2.4.4, which include arable land, rice fields, permanent crops, pastures, and heterogeneous agricultural areas. Forests cover broad-leaved forest (category 3.1.1), coniferous forest (category 3.1.2) and mixed forest (category 3.1.3). The percentage of the total area related to the official country area as reported by the Eurostat <sup>(59)</sup>. The net change refers to the area of each land use in 2012 minus the area in 2006, divided by area in 2006.

**Table 13.** Land used by mining sites and other activities <sup>(60)</sup>

	Area (Km <sup>2</sup> ) 2012	Percentage of country area 2012	Net change 2006-2012
<b>Mineral extraction sites</b>	169	0.2%	2.3%
Construction sites	11	0.01%	-53.3%
Urban	3833	4.9%	1.11%
Agricultural areas	44993	57%	-0.27%
Forests	26311	33.3%	0.45%

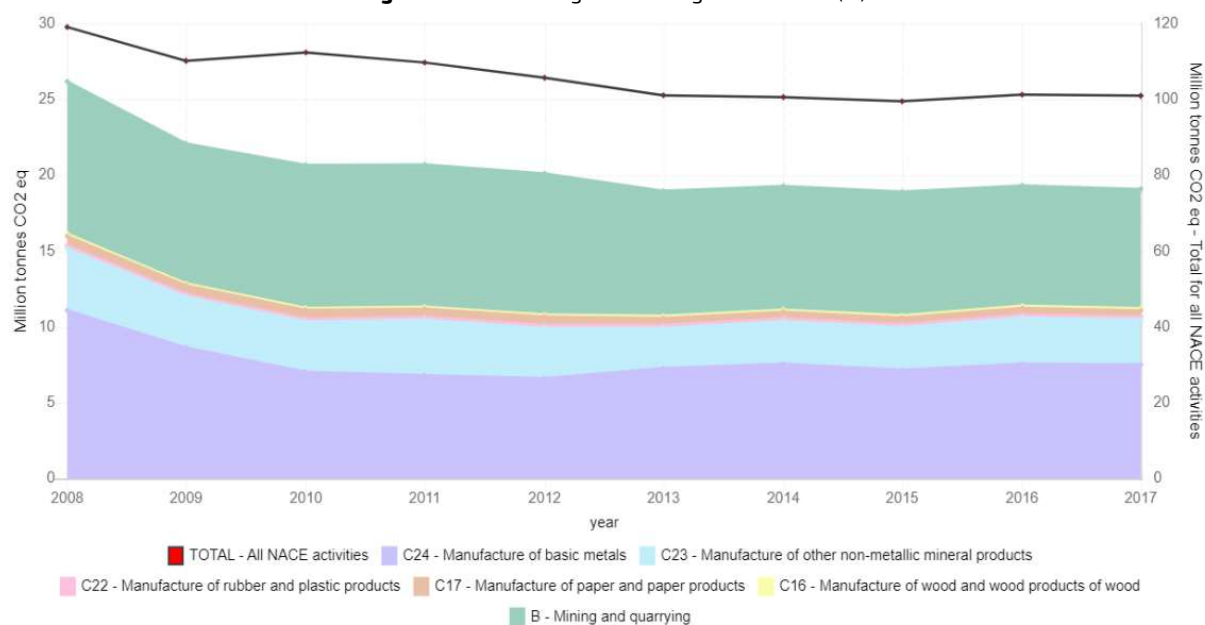
### 9.2 Greenhouse gas emissions and emissions intensity by raw materials sector

**Definition:** Greenhouse gas emissions refer to absolute emissions covering CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>, measured in CO<sub>2</sub> equivalent). Emissions intensity presents intensity-ratios relating emissions to economic parameters, in this case gross value added, chain linked volumes (2010). Data are displayed for a selection of raw materials sectors (following the NACE Rev.2 classification). For absolute emissions, data are presented also for the sum of all economic activities. For emission intensity, average emission intensity for all NACE activities is also displayed. Concepts and principles are the same as in national accounts.

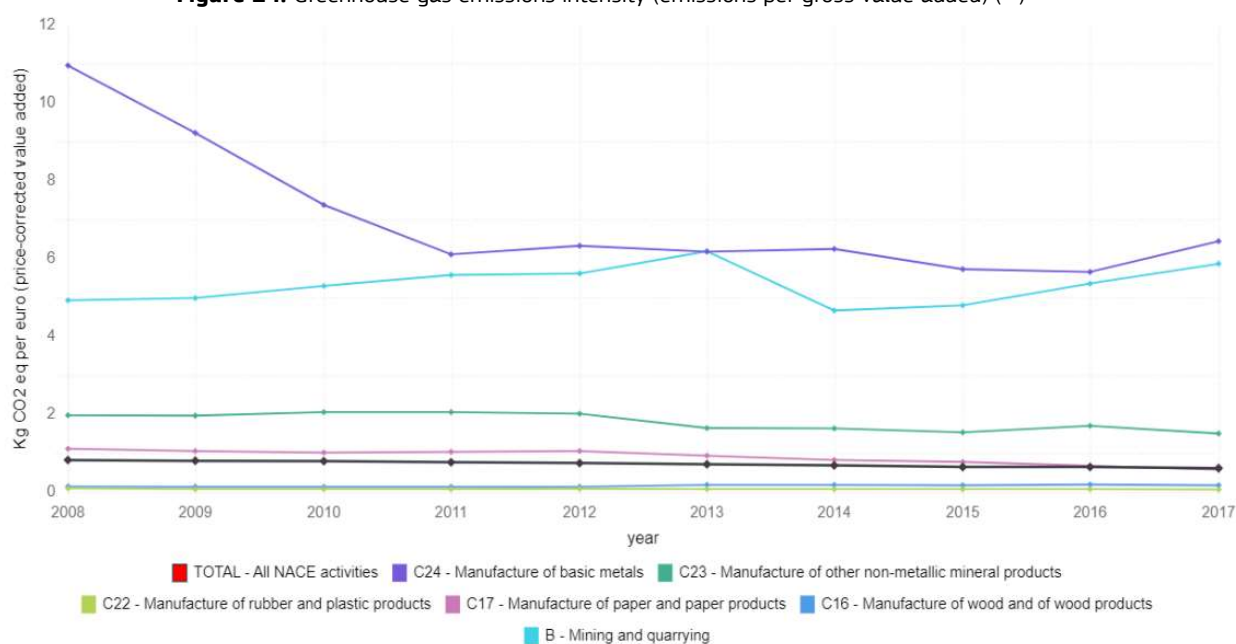
<sup>(59)</sup> <https://europa.eu/european-union/about-eu/countries/member-countries/>

<sup>(60)</sup> JRC calculation based on data from European Environment Agency, CORINE land cover 2012 and 2006, <https://land.copernicus.eu/pan-european/corine-land-cover>

**Figure 23.** Absolute greenhouse gas emissions <sup>(61)</sup>



**Figure 24.** Greenhouse gas emissions intensity (emissions per gross value added) <sup>(62)</sup>



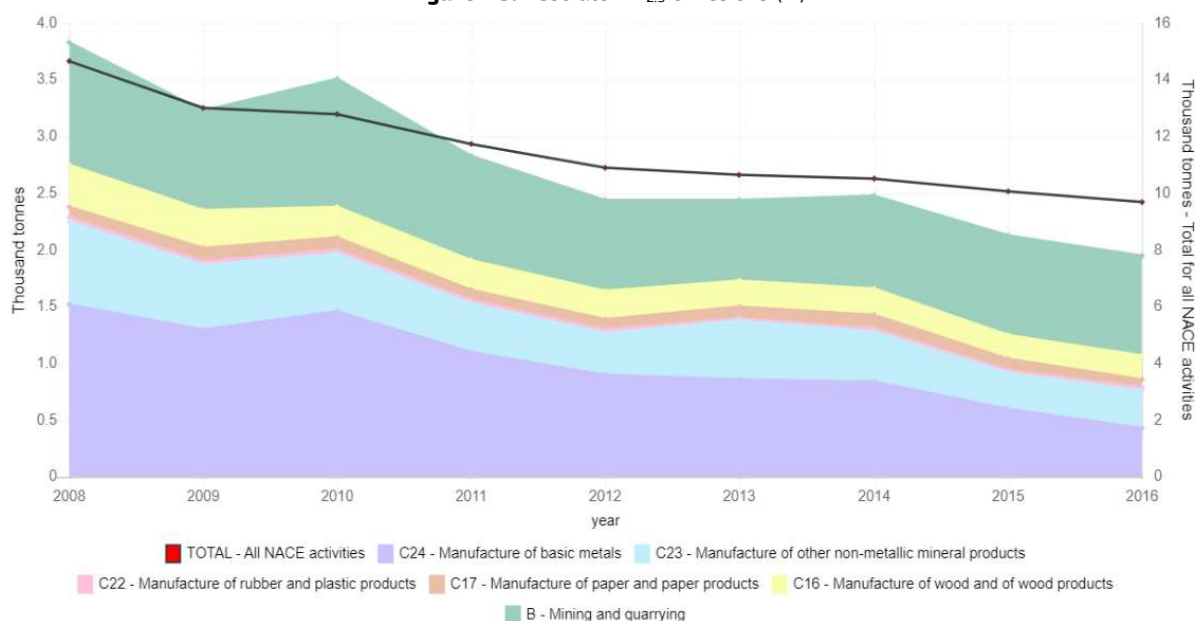
<sup>(61)</sup> Eurostat, Air emissions accounts by NACE Rev. 2 activity, code: *env\_ac\_ainah\_r2*

<sup>(62)</sup> Eurostat, Air emissions intensities by NACE Rev. 2 activity, code: *env\_ac\_aeint\_r2*

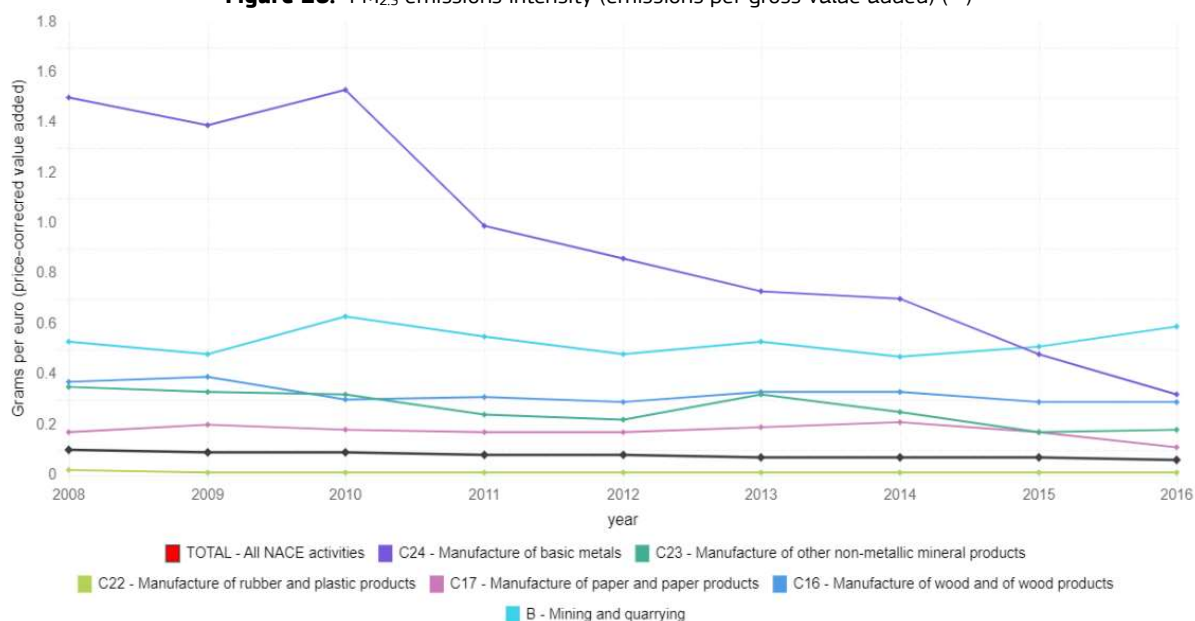
### 9.3 PM<sub>2.5</sub> emissions and emissions intensity by raw materials sector

**Definition:** Particulate matter is a complex mixture of microscopic solid or liquid matter in the air, and a key pollutant affecting human health. PM<sub>2.5</sub> emissions refer to absolute emissions of PM<sub>2.5</sub>, which refers to the fraction of particulate matter with a size up to 2.5µm, which are responsible for damages to human health given their higher potential to enter much deeper in the respiratory system. PM<sub>2.5</sub> emissions intensity presents intensity-ratios relating emissions to economic parameters, in this case gross value added, in chain linked volumes (2010). Data are displayed for a selection of raw materials sectors (following the NACE Rev.2 classification). For absolute emissions, data are presented also for the sum of all economic activities. For emission intensity, average emission intensity for all NACE activities is also displayed. Concepts and principles are the same as in national accounts.

**Figure 25.** Absolute PM<sub>2.5</sub> emissions <sup>(63)</sup>



**Figure 26.** PM<sub>2.5</sub> emissions intensity (emissions per gross value added) <sup>(64)</sup>



<sup>(63)</sup> Eurostat, Air emissions accounts by NACE Rev. 2 activity, code: *env\_ac\_ainah\_r2*

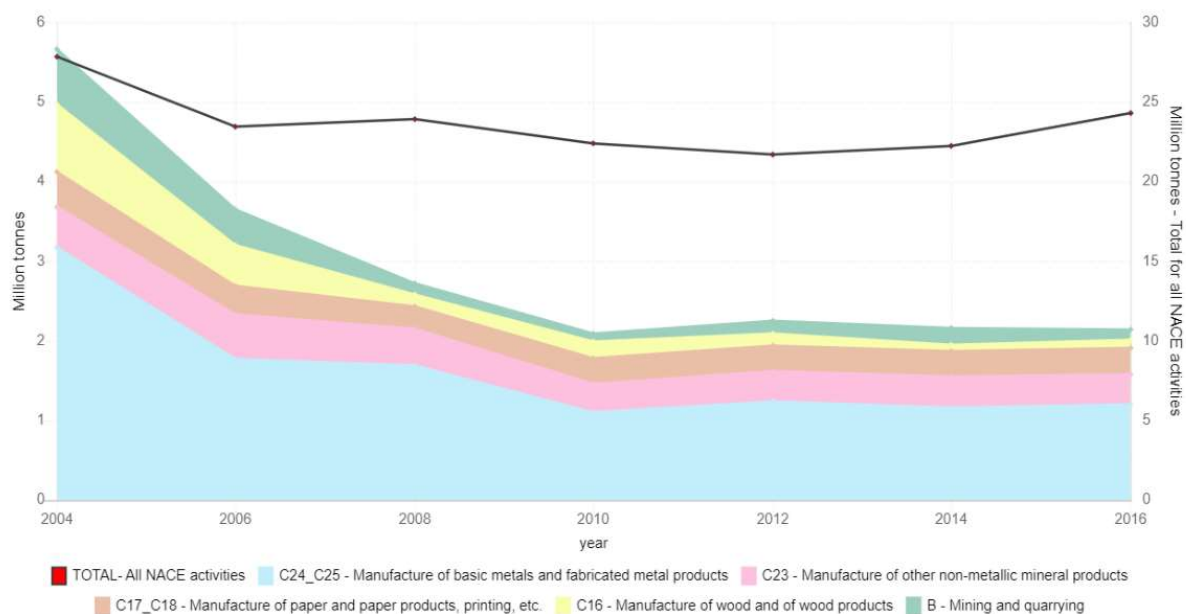
<sup>(64)</sup> Eurostat, Air emissions intensities by NACE Rev. 2 activity, code: *env\_ac\_aeint\_r2*



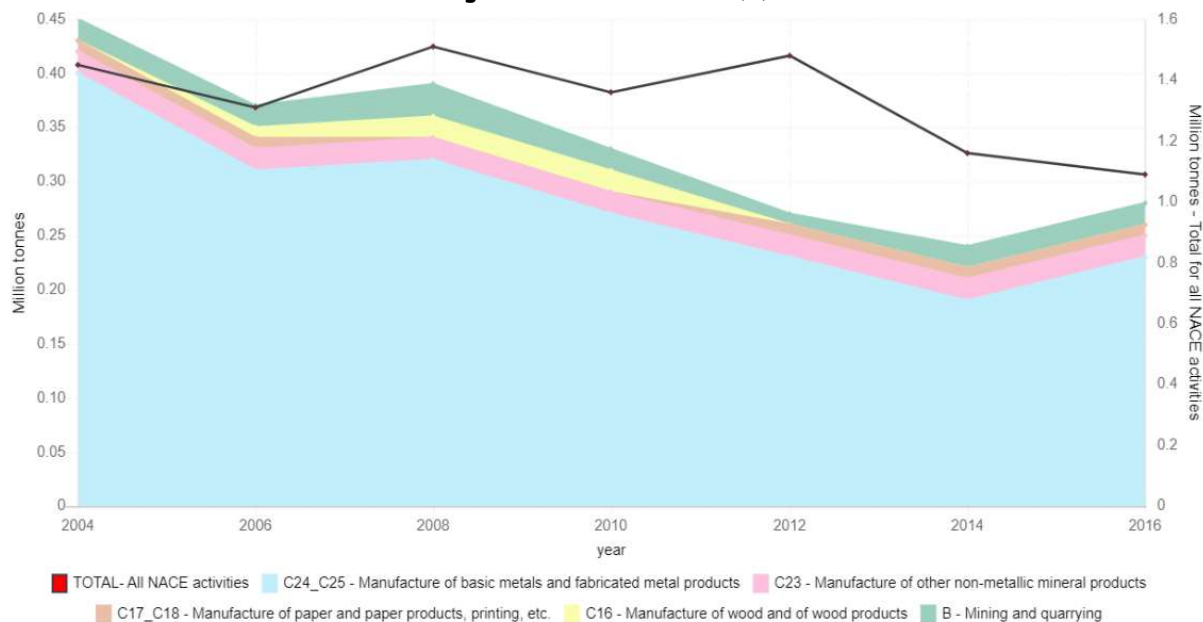
## 9.4 Generation of waste by raw materials sector

**Definition:** Generation of waste by economic sector following the NACE Rev.2 classification as reported by Member States. Waste is considered as any substance or object that the holder discards or intends or is required to discard. The sludges (including the dredging spoils) are measured in dry matter. These data include all typologies of hazardous and non-hazardous waste.

**Figure 27. Non-hazardous waste <sup>(65)</sup>**



**Figure 28. Hazardous waste <sup>(66)</sup>**



## 9.5 Waste of Electrical and Electronic Equipment (WEEE) management

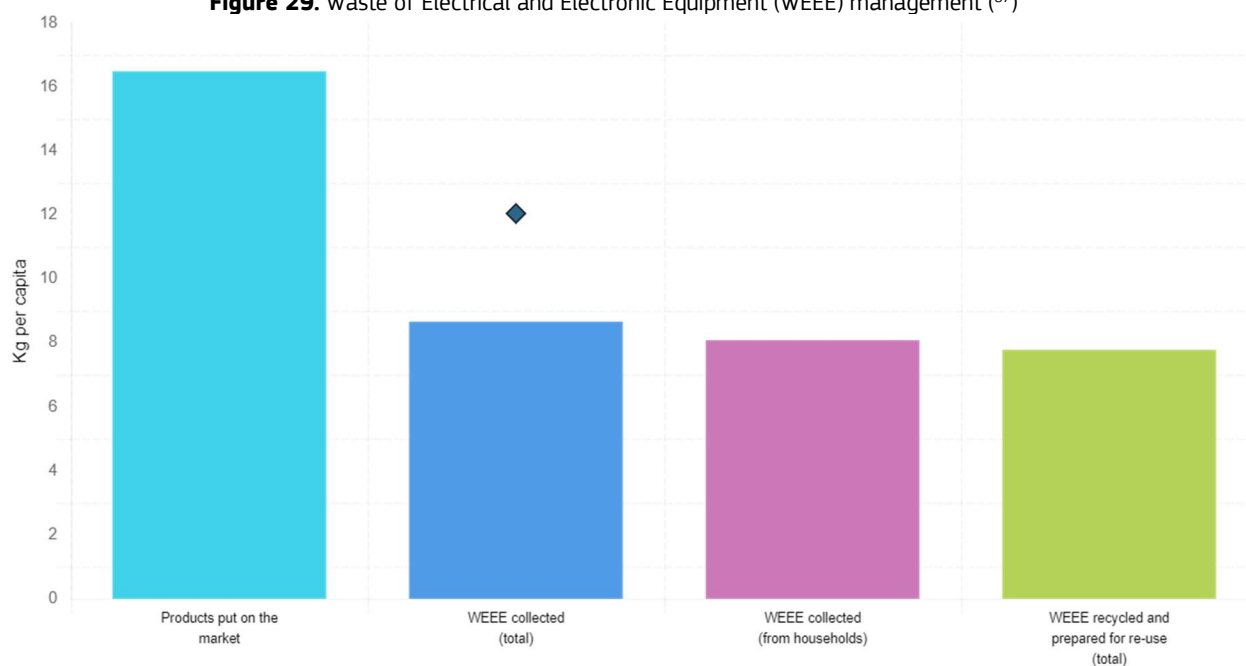
Eurostat reports statistics of on WEEE collected (total and from households) based on data reported by Member States. Statistics also include the amounts of total WEEE 'recycled and prepared for re-use', and the detail of

<sup>(65)</sup> Eurostat, Generation of waste by waste category, hazardousness and NACE Rev. 2 activity, dataset code *env\_wasgen*

<sup>(66)</sup> Eurostat, Generation of waste by waste category, hazardousness and NACE Rev. 2 activity, dataset code *env\_wasgen*

WEEE prepared for re-use. Target on WEEE collection from households: the Directive 2012/19/EU on WEEE established (article 7) that, from 2016, the minimum collection rate in a given year in a Member State shall be 45 % of the EEE placed on the market, expressed as a percentage of the average weight of EEE placed on the market in the three preceding years in that Member State.

**Figure 29.** Waste of Electrical and Electronic Equipment (WEEE) management <sup>(67)</sup>



<sup>(67)</sup> Eurostat, Waste electrical and electronic equipment (WEEE) by waste operations [*env\_waselee*].

## 10 Social & Policy

### 10.1 Worldwide Governance Indicators

**Definition:** The *Worldwide Governance Indicators* cover over 200 countries and territories, measuring six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. The aggregate indicators are based on several hundred individual underlying variables, taken from a wide variety of existing data sources. The data reflect the views on governance of survey respondents and public, private, and NGO sector experts worldwide. The WGI also explicitly report margins of error accompanying each country estimate. These reflect the inherent difficulties in measuring governance using any kind of data. Even after taking these margins of error into account, the WGI permit meaningful cross-country and over-time comparisons.<sup>(68)</sup>

**Table 14.** Worldwide Governance Indicators (2017) <sup>(69)</sup>

Indicator	Score*	Percentile rank
Voice and accountability	0.97	76.85
Political Stability and Absence of Violence/Terrorism	1.02	84.29
Government Effectiveness	1.02	81.25
Regulatory Quality	1.23	86.06
Rule of Law	1.12	83.65
Control of Corruption	0.57	70.67

\*Highest performance: +2.5; Lowest performance: -2.5

Percentile range: ■ 0-10th ■ 10-25th ■ 25-50th ■ 50-75th ■ 75-90th ■ 90-100th

### 10.2 Policy Perception Index

**Definition:** The Policy Perception Index assesses the public regulatory framework that affects investment, i.e. how government policy affects attitudes towards exploration investment in each mining jurisdiction, ranking jurisdictions based on the responses to the Annual Survey of Mining Companies done by the Fraser Institute<sup>(70)</sup>.

Czechia: n.a.

### 10.3 Country risk: INFORM index

**Definition:** INFORM is a global, open-source risk assessment for humanitarian crises and disasters. It is developed by JRC and can support decisions about prevention, preparedness, and response. It builds up a picture of risk by bringing together around 50 different indicators that measure three dimensions of risk:

1. Hazard and exposure (events that could occur, and the people or assets potentially affected by them);
2. Vulnerability (the susceptibility of communities to those hazards);
3. Lack of capacity (lack of resources available that can help absorb the shock).

<sup>(68)</sup> Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <https://ssrn.com/abstract=1682130>

<sup>(69)</sup> World Bank (2017): Worldwide Governance Indicators. Internet: <http://info.worldbank.org/governance/wgi/#reports>

<sup>(70)</sup> <https://www.fraserinstitute.org/sites/default/files/annual-survey-of-mining-companies-2019.pdf>

**Table 15.** Country risk: INFORM index (2019) <sup>(71)</sup>

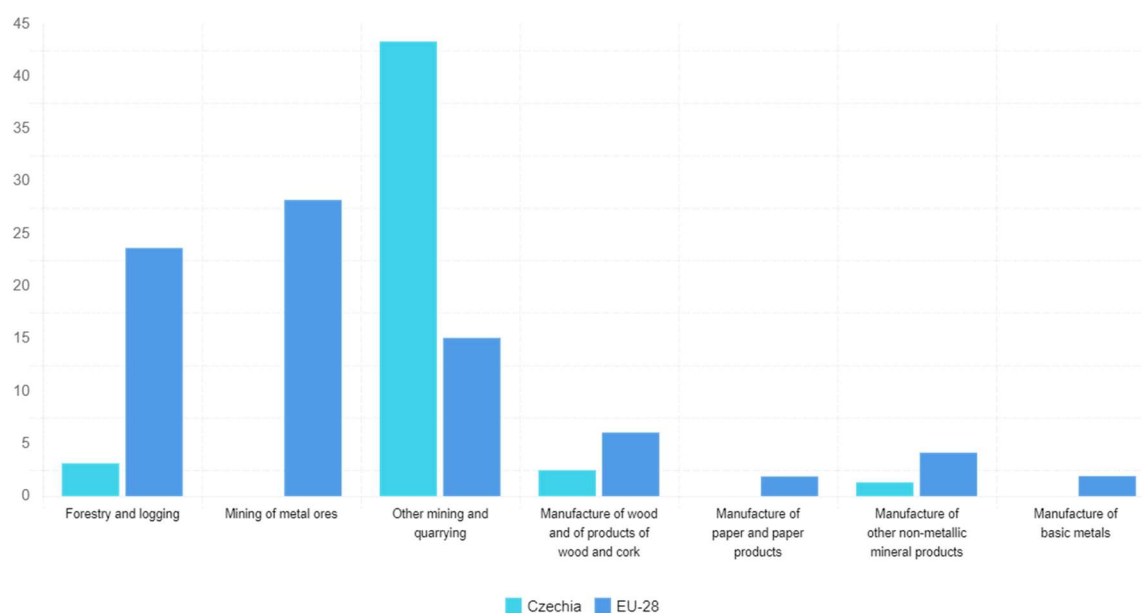
Components	Score*	Risk class
INFORM index	1.1	Very Low
Hazard and exposure	1.1	
Vulnerability	2.1	
Lack of capacity	1.4	

\* a lower value (closer to 0) represents a lower risk and a higher value (closer to 10) represents a higher risk.

## 10.4 Occupational safety: rate of fatal accidents at work

**Definition:** The incidence rates express the number of accidents at work in relation to the number of persons employed, in economic activities related to raw materials sectors.

**Figure 30.** Occupational safety: rate of fatal accidents at work (incidents per 100k employees;2016) <sup>(72)</sup>



<sup>(71)</sup> <https://ec.europa.eu/jrc/en/scientific-tool/index-risk-management-inform> ; <http://www.inform-index.org/> Czechia country profile: [http://www.inform-index.org/Portals/0/InfoRM/2019/Country\\_Profiles/CZE.pdf](http://www.inform-index.org/Portals/0/InfoRM/2019/Country_Profiles/CZE.pdf)

<sup>(72)</sup> Eurostat, Accidents at work (ESAW, 2008 onwards) (hsw\_acc\_work), [hsw\_n2\_02] [https://ec.europa.eu/eurostat/cache/metadata/en/hsw\\_acc\\_work\\_esms.htm](https://ec.europa.eu/eurostat/cache/metadata/en/hsw_acc_work_esms.htm)

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