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# European Union's trade flows of non-food and non-energy raw material commodities

*Basic facts and figures*

Viorel Nita, Elisa Garbossa and Theodor Ciuta

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## **Abstract**

The first objective of this report is to get a detailed picture of the most important EU-28's aggregate trade flows of non-energy and non-food raw materials commodities (NFNERM) over the period 2011-2016, by identifying its most traded products and main supplying and destination countries.

In addition to presenting EU-28 aggregated data, we also zoomed in on the EU-28 trade bloc and analyzed the trade flows in raw materials of the leading five importing/exporting EU-28 countries.

Finally, for illustrating the diversity of products containing raw materials across a specific raw material value chain, in the last section of this study we selected one raw material critical to the EU - i.e., borates - and analyzed the EU-28's trade flows of the commodities incorporating it, as identified in trade statistics.

## Introduction

Business economy<sup>1</sup> is the traditional user of metals and minerals and intermediates made of them for producing a variety of final and intermediate goods. Differences between countries in raw materials endowment, high concentration of global production and supply for some materials, as well as the continuous emergence of technology-induced products have made raw materials more important in recent years.

The fragmentation and diversification of global value chains, recognized also in the new EU trade strategy<sup>2</sup>, has resulted in increasingly diversified import and export flows of commodities. Since this applies to the trade of raw-material-containing commodities as well, it entails accounting for them in an as detailed manner as made possible by the available data.

The first objective of this report focusing on the EU-28's trade in raw materials is *to get a detailed picture of the most important EU-28's trade flows of non-energy and non-food<sup>3</sup> raw materials commodities (NFNERM) over the period 2011-2016, by identifying its most traded products and main supplying and destination countries* (section 2.1-2.3). This is justified by the particular trade status of raw materials and NFNERM among the other broad categories of EU-28's goods, i.e., being the only broad categories of traded goods with negative trade balance in terms of value (Figure 1, section 2.1).

In addition to presenting EU-28 aggregated data, we also zoomed in on the EU-28 trade bloc and analysed the trade flows in raw materials of leading importing/exporting EU countries over the period 2011-2016, namely of those five countries that account for the highest annual values of NFNERM trade in the EU-28 (section 2.4).

Accounting for raw materials trade flows requires the statistical translation of products incorporating them into commodity-specific statistical codes as much as possible. In order to illustrate how this translation can be done and the diversity of products containing raw materials across a specific raw material supply chain, in the last section of this study we selected one raw material critical to the EU – i.e., borates – and analysed the EU-28's trade flows of the HS 6-digit commodities incorporating borates, using the codes identified in trade statistics. The criteria of selecting borates were the more detailed code breakdown in Harmonized System and the higher value-chain coverage in trade statistics.

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<sup>1</sup> As defined by Eurostat, non-financial business economy includes the economic activities covered by NACE Rev.2 sections B-J and L-N, plus S95, *Repair of computers and personal and household goods*. For a detailed sector composition of business economy, see Eurostat, *Business economy by sector - NACE Rev. 2*, [http://ec.europa.eu/eurostat/statistics-explained/index.php/Business\\_economy\\_by\\_sector\\_-\\_NACE\\_Rev\\_2](http://ec.europa.eu/eurostat/statistics-explained/index.php/Business_economy_by_sector_-_NACE_Rev_2)

<sup>2</sup> European Commission, "Trade for all. Towards a more responsible trade and investment policy", [http://trade.ec.europa.eu/doclib/docs/2015/october/tradoc\\_153846.pdf](http://trade.ec.europa.eu/doclib/docs/2015/october/tradoc_153846.pdf)

<sup>3</sup> By food-related raw material commodities we refer to the HS 6-digit codes belonging to the HS 2-digit sections 01-24, as follows: I. Live animals; Animal products (2-digit chapters 01-05); II. Vegetable products (2-digit chapters 06-14); III. Animal and vegetable fats, oils and waxes (2-digit chapter 15); IV. Prepared foodstuffs, beverages and tobacco (2-digit chapters 16-24). UNCTAD provides HS Standard Product Groups, among which also SOP1, Raw materials (<https://wits.worldbank.org/referencedata.html>).



# 1 Data and methodology

Most of the charts and tables presented in this study build upon a dataset of trade in non-food, non-energy raw materials, first developed by the authors of this study within the framework of constructing the Raw Materials Information System's *Economics & Trade* module, with data for 2014<sup>4</sup>.

First, starting from the UNCTAD's two product groupings, i.e., *UNCTAD-SoP1, Raw materials* and *UNCTAD-SoP2, Intermediate goods*<sup>5</sup>, around 830 HS 2007 6-digit non-energy and non-food raw materials commodities (referred further as NFNERM) were selected. Since these two UNCTAD classifications also cover food- and fuel-related commodities, only primary and intermediate NFNERM HS 6-digit commodities were retained in the NFNERM database. In addition to the primary and intermediate commodities containing some materials (e.g., lead, zinc, tin and molybdenum), the finished products containing them, covered by HS chapter 78-81 (e.g., *Beryllium & articles thereof; Tin & articles thereof; Molybdenum & articles thereof, Titanium & articles thereof, etc.*), were also included. Commodities such as *Bismuth & articles thereof, incl. waste & scrap, Manganese & articles thereof, incl. waste & scrap*) were also included to their lack of a HS code breakdown by production stage.

All these HS2007 6-digit commodities selected in the NFNERM database incorporate minerals, metals and wood, at both primary and intermediate stage of production, as well as waste and scrap. The complete HS commodity composition of the NFNERM database is presented in Table 1.

**Table 1.** List of non-food, non-fuel raw material commodities included in the NFNERM database

Section	Chapter	HS 2007 6-digit products
V. Mineral products	25, Salt; sulphur; earths and stone; plastering materials, lime and cement	All
	26, Ores, slag and ash	All
	27, Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	270112*
VI. Products of the chemical or allied industries	28, Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes	All, excluding: 284410; 284420; 284430; 284440; 284450; 284510; 284590
	31, Fertilizers	310100; 310420; 310430; 310490; 310510; 310520; 310530; 310540; 310551; 310559; 310560; 310590
VII. Plastic and articles thereof; Rubber and articles thereof	40, Rubber and articles thereof.	400110; 400121; 400122; 400129
IX. Wood and articles of wood; wood charcoal; cork and articles of cork; manufacture of straw, of esparto or of other plaiting materials; basket ware and wickerwork	44, Wood and articles of wood; wood charcoal	440121-441300; 442010;
	45, Cork and articles of cork	450110; 450190; 450200;
XIV. Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and	71, Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with	710110-711229

<sup>4</sup> Raw Materials Information System, Economic and Trade, Country section, Raw Materials Trade Flows subsection, <http://rmis.jrc.ec.europa.eu/>

<sup>5</sup> World Integrated Trade Solutions, Reference data, <https://wits.worldbank.org/referencedata.html>

articles thereof; imitation jewellery; coin	precious metal and articles thereof; imitation jewellery; coin	
XV. Base metals and articles of base metals	72, Iron and steel	All
	73, Articles of iron or steel	730110-732619
	74, Copper and articles thereof	740100-741820
	75, Nickel and articles thereof	750100-750620
	76, Aluminium and articles thereof	760100-761490
	78, Lead and articles thereof	All
	79, Zinc and articles thereof	All
	80, Tin and articles thereof.	All
	81, Other base metals; cermet; articles thereof	All

\* HS 270112, *Bituminous coal, whether or not pulverised but not agglomerated*, was selected because it covers coking coal, used in steel making.

Second, import and export data for these NFNERM were collected from UN Comtrade database<sup>6</sup>. Since the reference year of the NFNERM dataset developed within the framework of Raw Materials Information System was 2014, for the purpose of this study further annual data on trade flows of NFNERM at both EU28 and EU country level were added to the study's dataset, namely for 2011-2013, 2015 and 2016<sup>7</sup>. When not referred otherwise, all charts presented in this study have this extended NFNERM dataset as data source.

<sup>6</sup> DESA/UNSD, United Nations Comtrade database.

<sup>7</sup> Currently UN Comtrade provides data at country level up to 2016, but only up to 2015 for the EU-28 aggregate.

## 2. Results

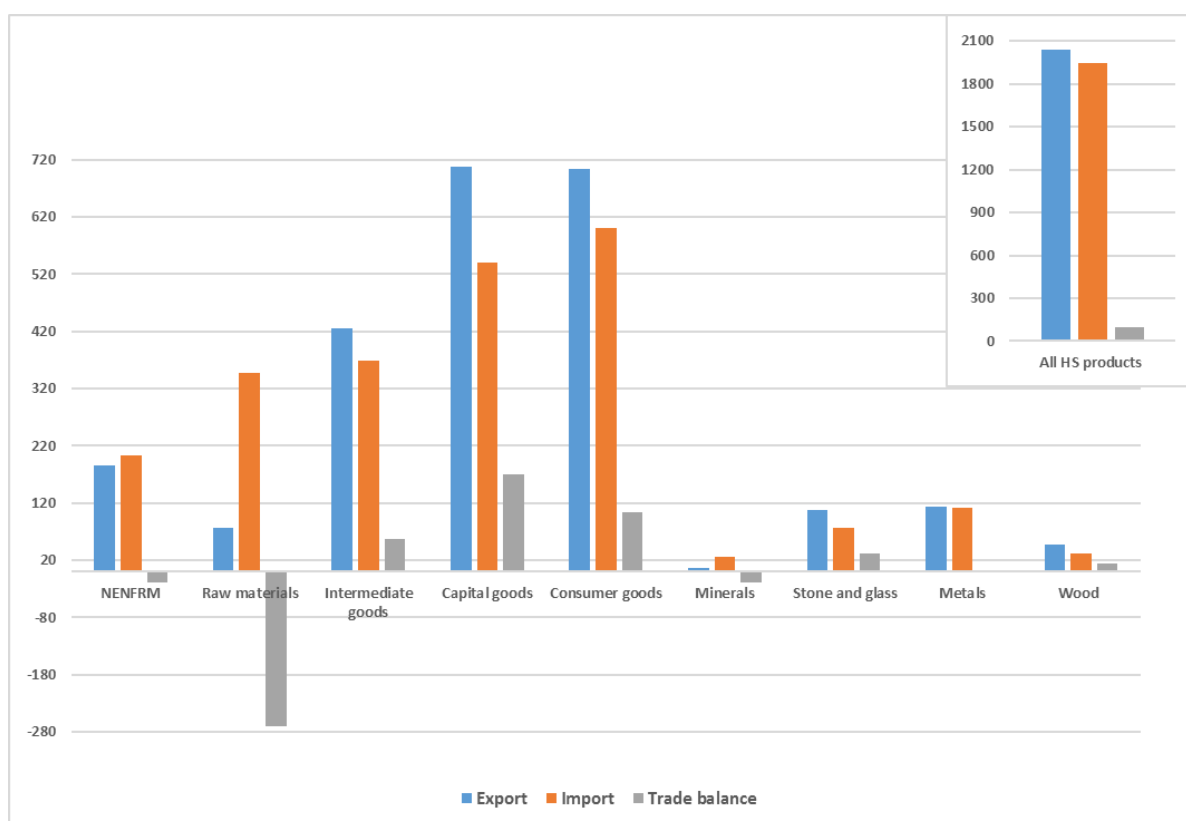
### 2.1 EU-28's aggregated import and export flows of raw material commodities and its leading trading partners

The purpose of this section is to look at the EU-28's main NFNERM aggregated trade flows over the period 2011-2015.

In order to spot the *particular trade status of raw materials* among the other broad categories of EU-28's traded goods, Figure 1 shows the EU-28's trade flows and trade balance of several broad product groupings - i.e., Consumer goods; Capital goods; Intermediate goods; Metals; Minerals; Raw materials; Stone and glass; Wood; NFNERM - in 2015.

Whereas the EU-28 trade balance is positive for the other broad product groupings, the total import value of *All raw materials* (which include food- and fuel-related raw materials), *NFNERM* and *Minerals* product groupings exceeds, in each case, that of exports, thus resulting in negative trade balances.

**Figure 1.** EU-28's aggregate value of imports, exports and trade balance of several product groupings in 2015 (extra-EU trade; billion USD)



*Source:* Excepting for the NFNERM product grouping, for which the aggregates were calculated by us based on DESA/UNSD, United Nations Comtrade, data on trade flows of the other product groupings were extracted from World Integrated Trade Solution<sup>8</sup>.

*Note:* *Raw materials* product grouping includes food- and fuel-related raw materials, as provided by UNCTAD-SoP1: *Raw materials*<sup>9</sup>.

EU-28's trade balance of NFNERM decreased substantially in 2015, as compared with 2011, from around -73 billion USD to around -18 billion USD, brought about by the decline of both exports and imports - by 23.5 % and 35.5% respectively.

<sup>8</sup> <https://wits.worldbank.org/Default.aspx?lang=en>

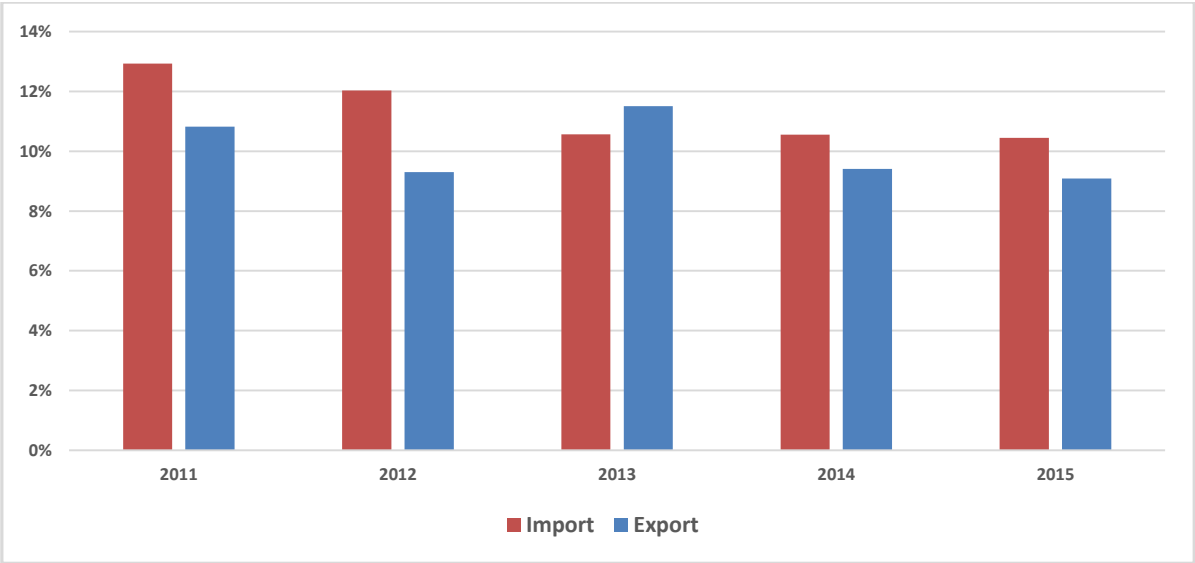
<sup>9</sup> World Integrated Trade Solutions, Reference data, <https://wits.worldbank.org/referencedata.html>

**Figure 2.** Evolution of EU-28’s imports, exports and trade balance of total NFNERM over the period 2011-2015 (bil USD)



The share of NFNERM in the total value of EU-28’s total imports and total exports decreased slightly in 2015 as compared with 2011: from around 13 to around 10.5 per cent for imports and from around 11 to around 9 per cent for exports.

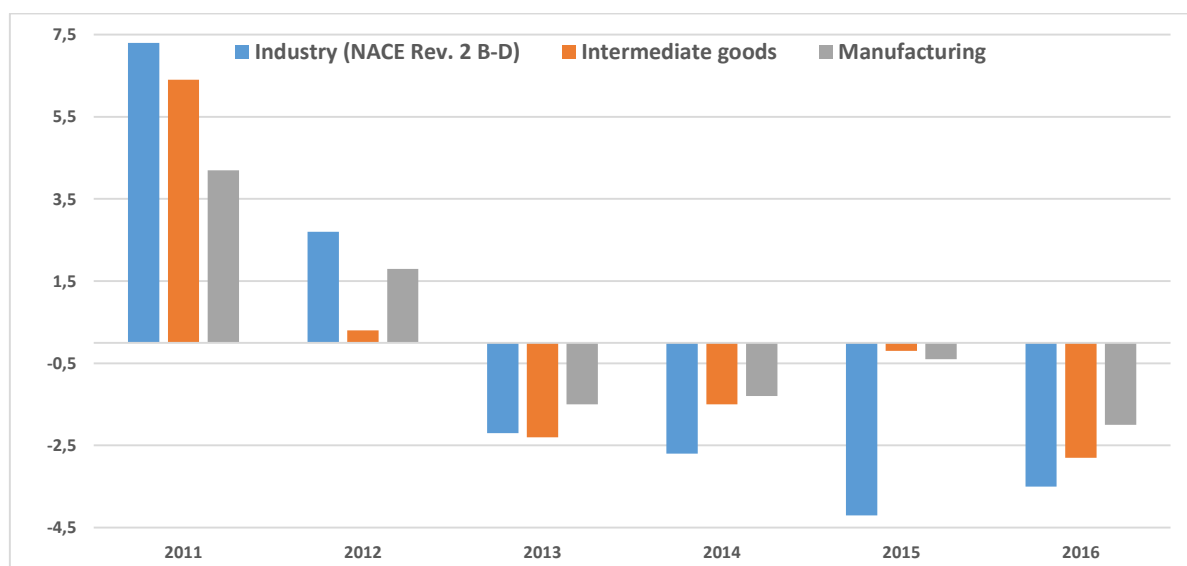
**Figure 3.** Share of total value of NFNERM in the total value of all HS commodities imported and exported by the EU-28 over the period 2011-2015



Source: NFNERM dataset; DESA/UNSD, United Nations Comtrade database, for the annual values of all HS commodities imported/exported by the EU-28.

One explanation of the significant reduction of the EU-28 NFNERM imports in terms of value and of their share in total imports can lie in the continuous decline of import prices for material inputs purchased by the European industry after 2011. In this respect, Figure 4 shows the evolution of industrial import price indices in the period 2011-2015. Even if the chart’s data do not cover all EU-28 countries, the Euro-area-limited (i.e., only 19 EU countries) industrial import indices presented in Figure 4 are highly significant due to the high share of EU-19 in the EU-28’s total imports of goods (i.e., around 74 per cent in 2014).

**Figure 4.** Evolution of industrial import price indices in the Euro area's industry (Euro area; percentage change compared to the previous year)<sup>10</sup>



Source: Eurostat, Short-term business statistics, Import prices in industry - annual data<sup>11</sup>

This downtrend of import price indices in the Euro area's industry was accompanied by the constant price decline of many industrial and precious metals over the analysed period<sup>12</sup>.

**EU-28 imports of NFNERM.** As far as *the aggregate sources of EU-28's total NFNERM imports*<sup>13</sup> over the period 2011-2015 are concerned, the leading supplying countries were *Canada, China, Russian Federation, Switzerland and USA* (Figure 5). The prominence of these five countries together in the EU-28 total NFNERM imports increased slightly, from an aggregate share of around 41 per cent in 2011 to one of around 45 per cent in 2015. Excepting in 2012, Russian Federation was the first-ranking supplier of NFNERM to the EU-28 in the analysed period.

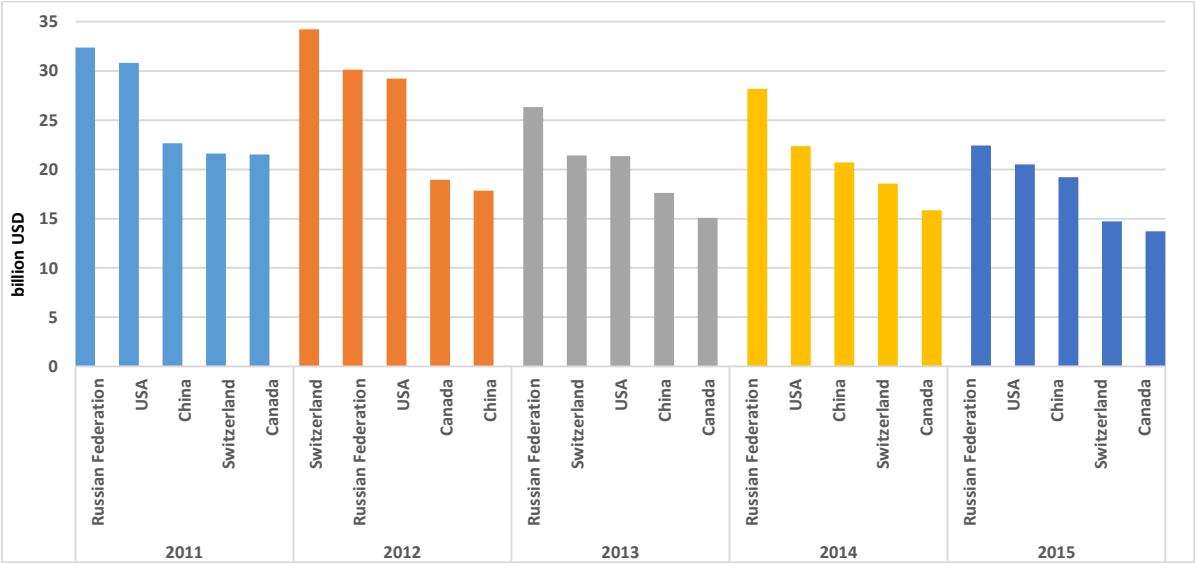
<sup>10</sup> "Industry" covers three NACE Rev. 2 sections: Mining and quarrying (B), Manufacturing (C) and Electricity, gas, steam and air conditioning supply (D). "Intermediate goods" is one of Manufacturing's Main Industrial Groupings. For details, [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Main\\_industrial\\_grouping\\_\(MIG\)](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Main_industrial_grouping_(MIG))

<sup>11</sup> <http://ec.europa.eu/eurostat/web/short-term-business-statistics/data/database>

<sup>12</sup> See data on annual process indices for Gold, Silver and other minerals, ores and metals, provided by UNCTAD Data Centre, section *Commodity price long term trends*, [http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS\\_ChosenLang=en](http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en)

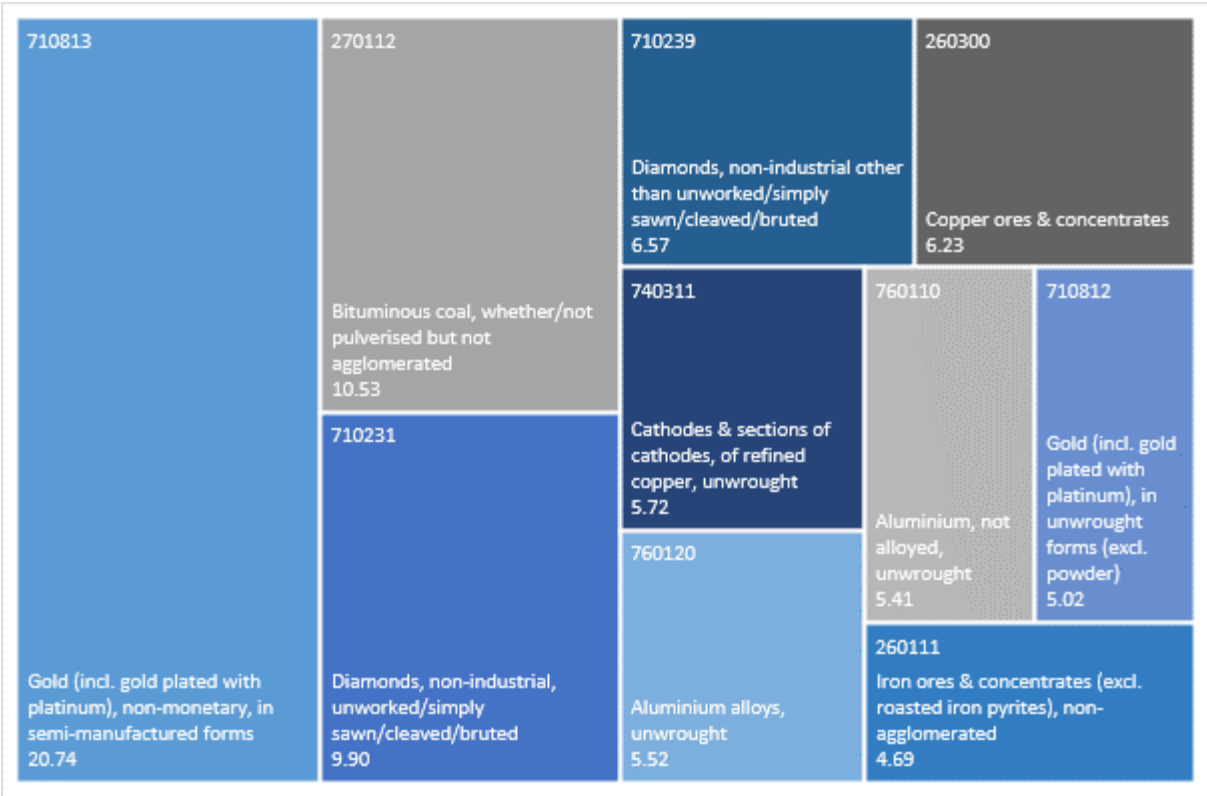
<sup>13</sup> Calculated as extra-EU imports.

**Figure 5.** Main five source countries of NFNERM imported by EU-28 over the period 2011-2015 (billion USD)



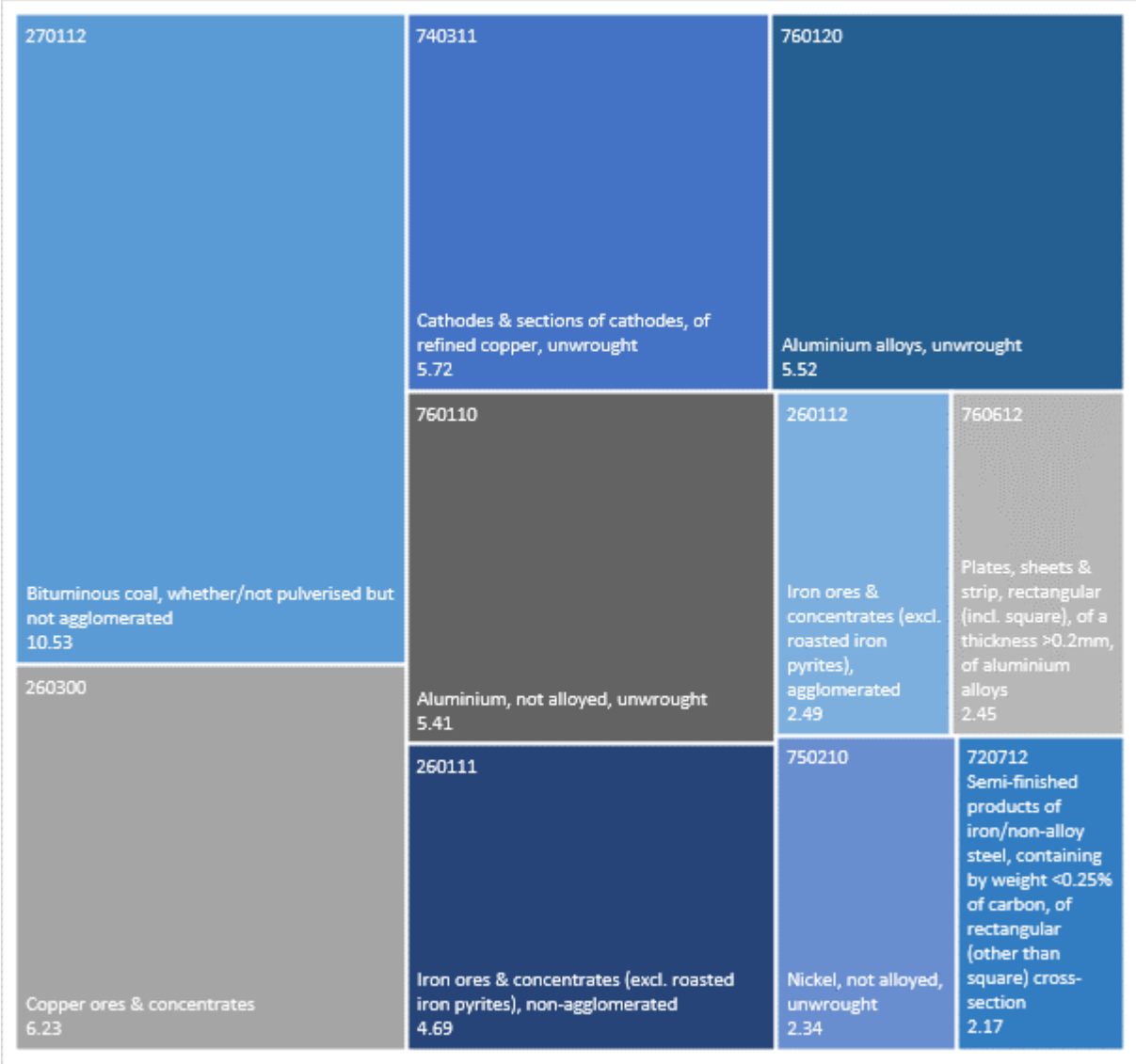
In order to zoom in on the NFNERM imported by the EU-28 in 2015, Figure 6 presents the top ten HS 6-digit NFNERM imported. Several gold-, diamond-, copper-, aluminium- and iron- and nickel-incorporating products are among the highest-ranking NFNERM commodities imported by the EU-28 in 2015 in terms of value.

**Figure 6.** Top ten HS 6-digit NFNERM commodities imported by the EU-28 in 2015 (billion USD)



Due to the high unit value of gold- and diamond-containing commodities, Figure 7 excludes them from the top ten HS 6-digit NFNERM commodities imported by the EU-28. Copper-, aluminium-, iron- and nickel-incorporating commodities, at various production stages, are among the commodities that appear in the EU-28's top ten HS 6-digit imported products without gold- and diamond-containing commodities.

**Figure 7.** Top ten HS 6-digit NFNERM imported by the EU-28 in 2015 (billion USD; gold-and diamond-containing commodities not included)



**EU-28 exports of NFNERM.** As to the leading destinations of the EU-28’s total NFNERM exported between 2011 and 2015, they were Switzerland (first ranking), China, India, Turkey and USA (Figure 8). The importance of these five countries for EU-28 total exports of NFNERM increased slightly over the analysed period, from an aggregate share of 56 per cent in 2011 to approximately 58 per cent in 2015.

**Figure 8.** Main five destinations of NFNERM exported by the EU-28 (2011-2015; billion USD)

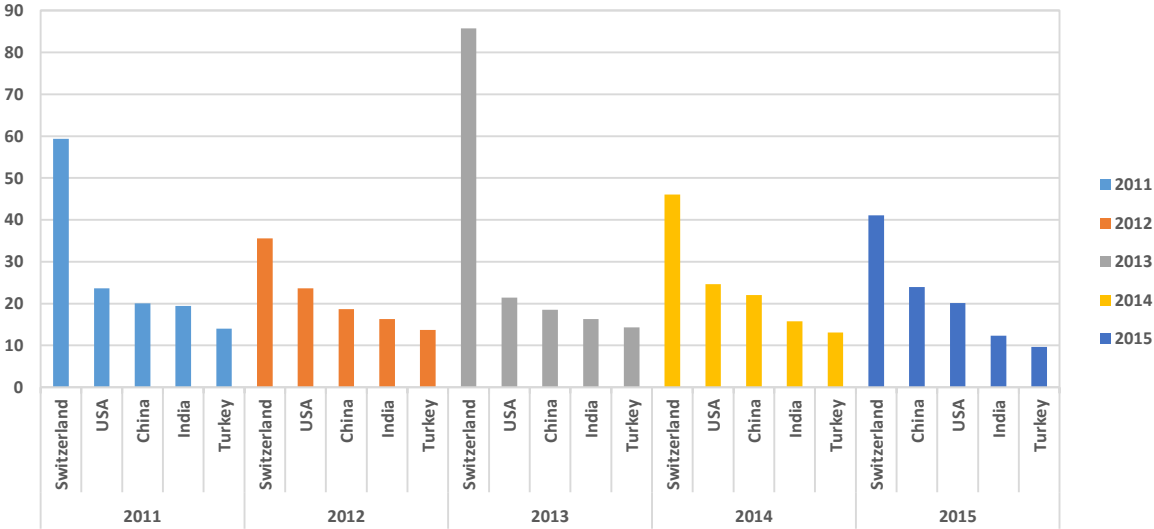
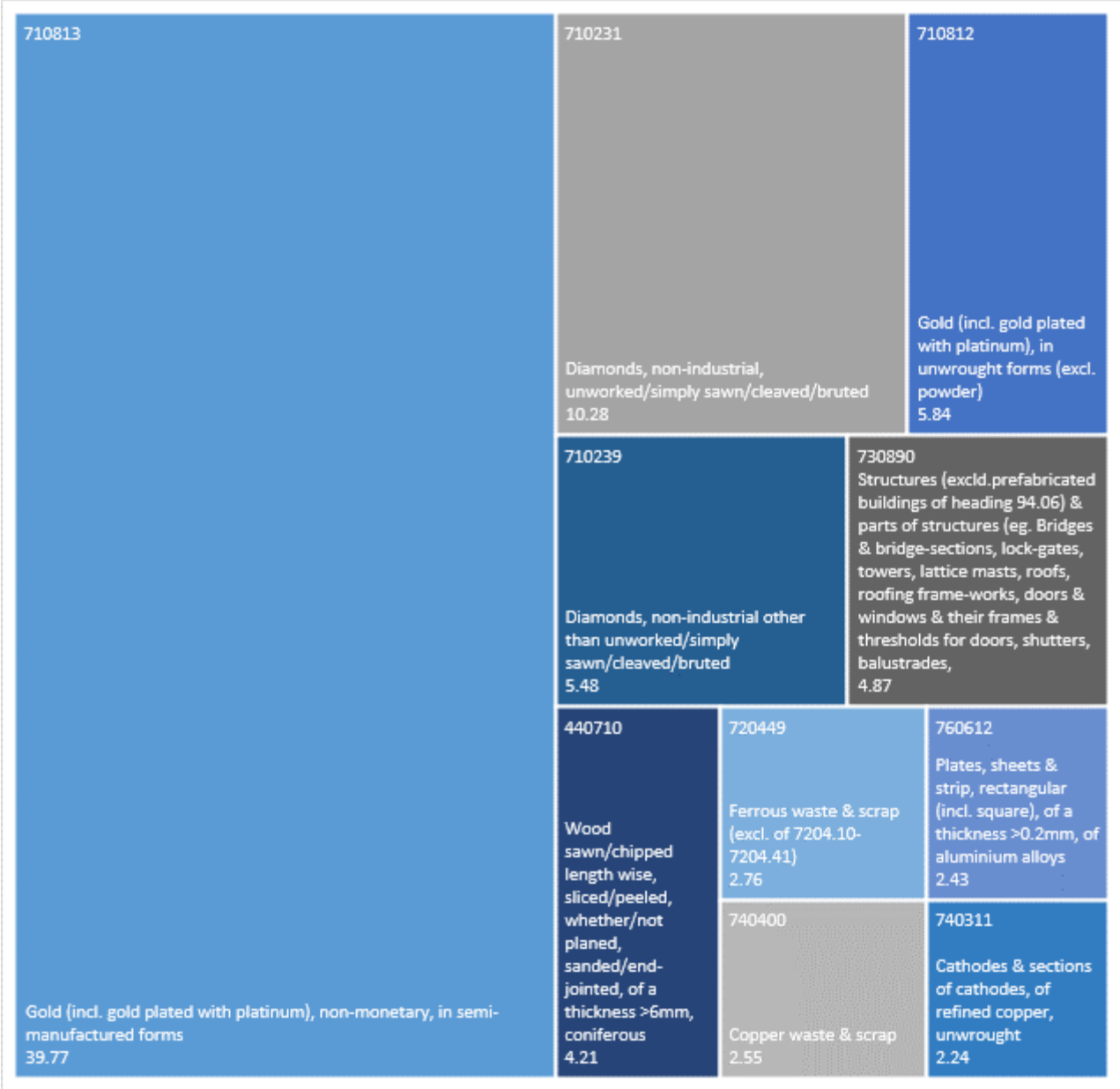


Figure 9 presents the top ten HS 6-digit NFNERM exported by the EU-28 in 2015. Several gold-, diamond-, wood-, copper-, aluminium- and iron- and iron-incorporating products are the highest-ranking NFNERM commodities exported by the EU-28 in 2015 in terms of value.

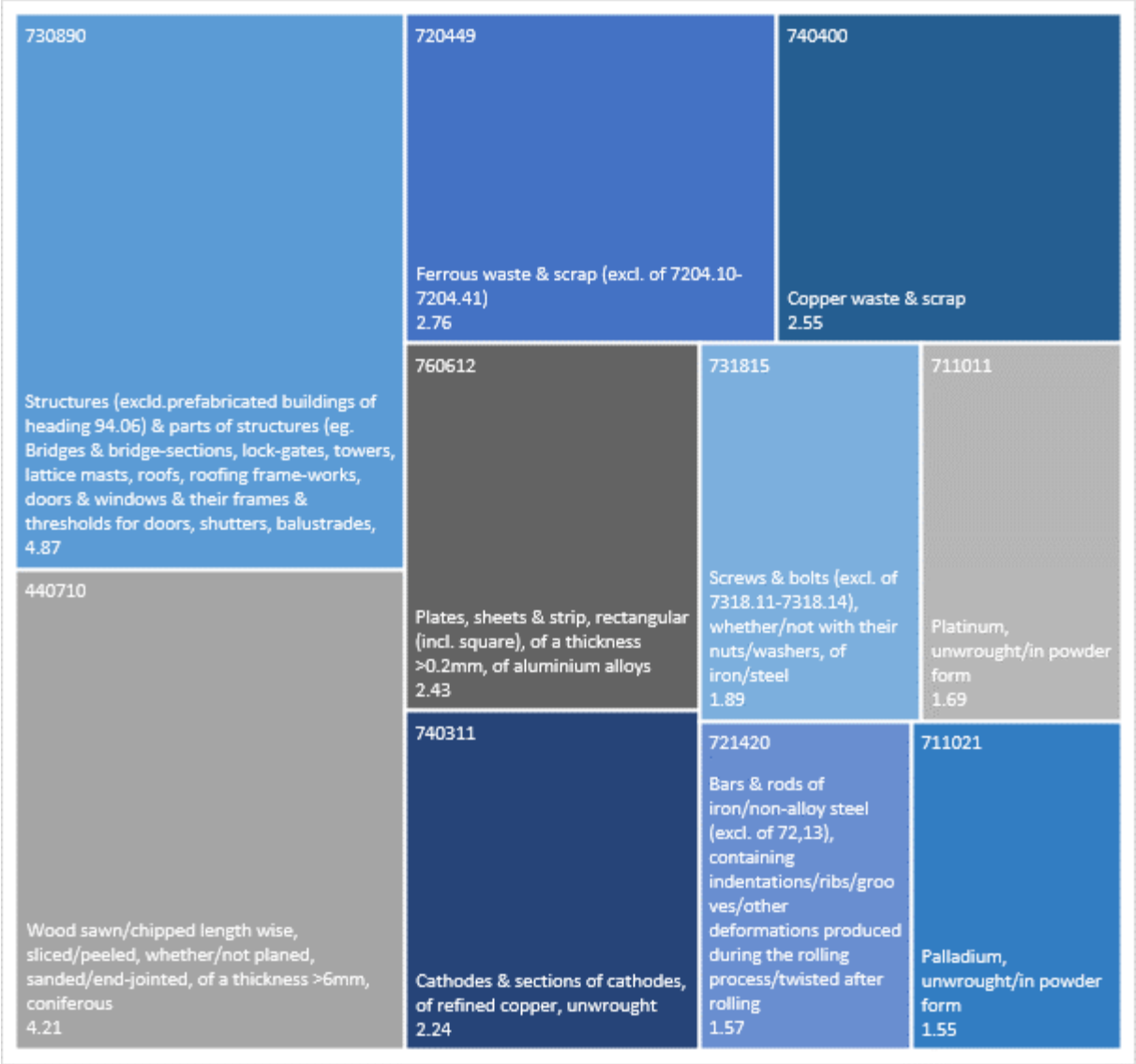


**Figure 9.** Top ten NFNERM exported by the EU-28 in 2015 (billion USD)



Due to the high unit value of gold-and diamond-containing commodities, Figure 10 does not include any of them in the top ten HS 6-digit NFNERM exported by the EU-28 in 2015. HS 6-digit product composition of the EU-28’s top five HS 6-digit products (excluding gold-and diamond-containing commodities) exported in 2015 is by far more heterogeneous, including not only primary and intermediate commodities containing iron, wood, aluminium, copper, platinum and palladium at different production stage, but also ferrous and copper waste and scrap.

**Figure 10.** Top ten NFNERM exported by the EU-28 in 2015, excluding diamond- and gold-containing commodities (billion USD)



**Summary of the section**

- Raw material commodities had a particular trade status among the other broad categories of EU-28’s trade of goods in 2015: whereas the EU-28’s trade balance is positive for the other broad product categories, it was negative for raw-material-related product groupings such as *All raw materials* (which includes food- and fuel-related raw materials), *NFNERM* and *Minerals*.
- As compared with 2011, EU-28’s NFNERM trade balance decreased substantially in 2015 by around 75 percent, brought about by reduction of both exports and imports value - by 23.5 % and 35.5% respectively.
- Share of NFNERM in the total annual value of EU-28’s total imports and exports only decreased slightly in 2015 as compared with 2011.
- The significant reduction of the EU-28 NFNERM imports in terms of value over the period 2011-2015 was possibly influenced by the constant decline of the EU’s industrial import price indices as well as of the prices of many minerals, ores and industrial and precious metals over the same period.

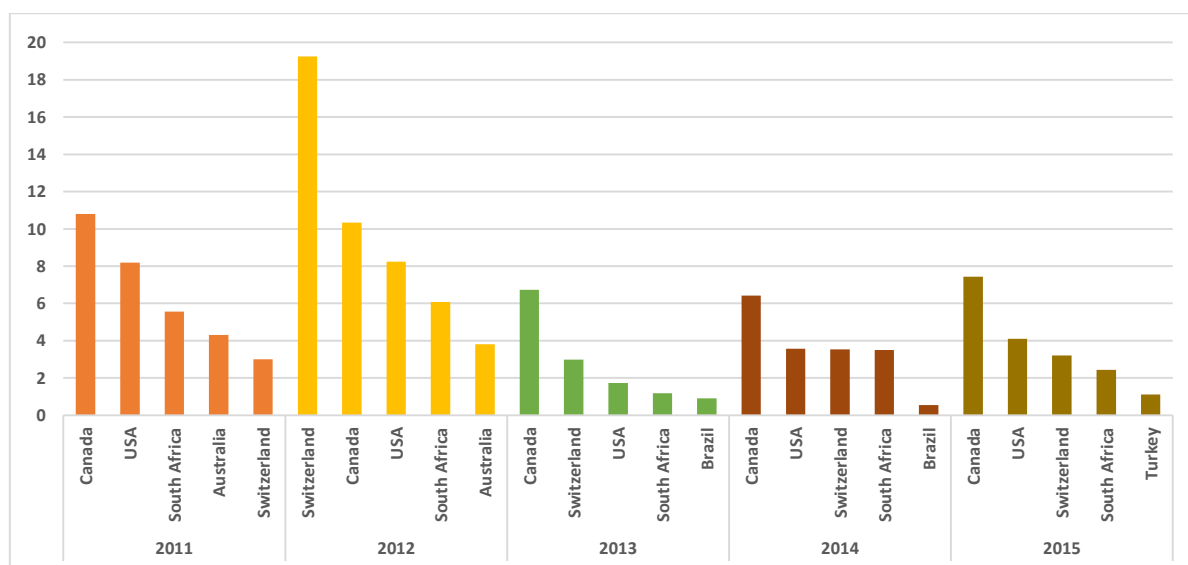
- China, Switzerland and USA are major trade partners of the EU-28's trade in NFNERM, these three countries being present among EU-28's both top five importers and top five exports of NFNERM over the entire period 2011-2015.
- The main five supplying countries of NFNERM to the EU-28 were Russian Federation (excepting in 2012, it was the first-ranking EU-28' supplier of NENFRM), Canada, China, Switzerland and USA.
- Copper-, aluminium-, iron- and nickel-incorporating commodities, at various production stages, are among the commodities that are listed in the EU-28's top ten HS 6-digit imported products (without gold- and diamond-containing commodities).
- The main five destinations of the EU-28's total NFNERM exported between 2011 and 2015 were Switzerland, China, India, Turkey and USA. These five countries received together 58 per cent of the total value of the EU-28's NFNERM exports in 2015.
- Due especially to their high unit value, gold- and diamond-containing commodities dominate the EU-28's top ten HS 6-digit products imported and top ten HS 6-digit products exported in 2015.
- Product composition of the EU-28's top 20 HS 6-digit products (excluding gold- and diamond-containing commodities) exported in 2015 is heterogeneous: iron-, wood-aluminium-, copper- platinum- and palladium-containing primary and intermediate commodities, at different production stage, appear in the list.

## 2.2 Analysis of supplying countries of top ten raw material commodities imported by the EU-28

This section presents the top-five suppliers of each of the ten product groups listed in the top 10 NFNERM imported by the EU-28 in 2015 (Figure 6).

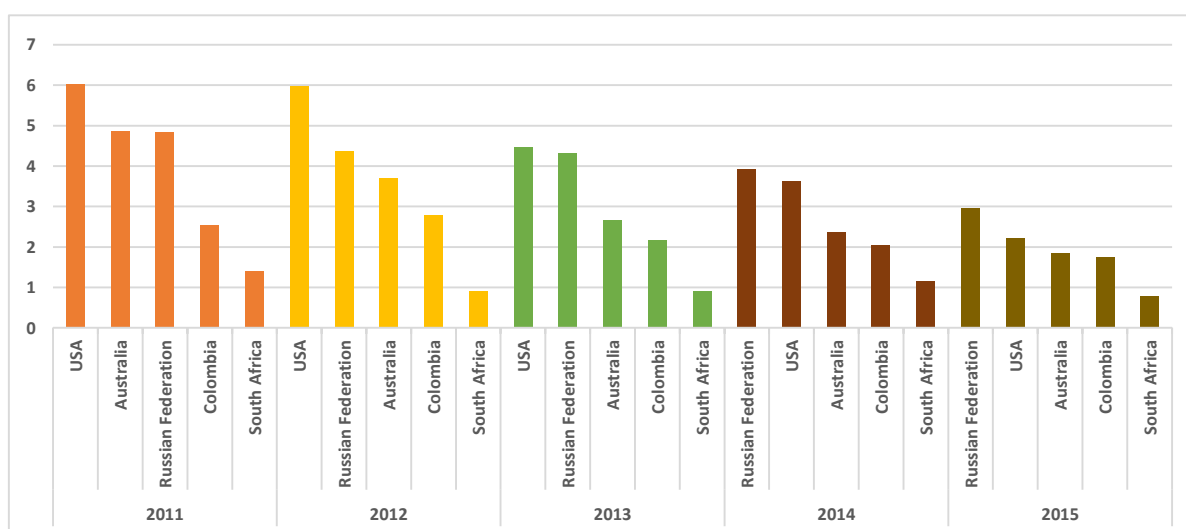
1. As far as the sources of EU-28's imports of the first-ranking product group, *Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms* (HS 710813), are concerned, Canada, South Africa, Switzerland and USA were constantly the main suppliers over the entire period 2011-2015, together accounting for 77 per cent of EU-28 imports of this product group over the whole period and around 83 percent in 2015.

**Figure 11.** EU-28 top five import sources of *Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms* (HS 710813; billion USD; 2011-2015)



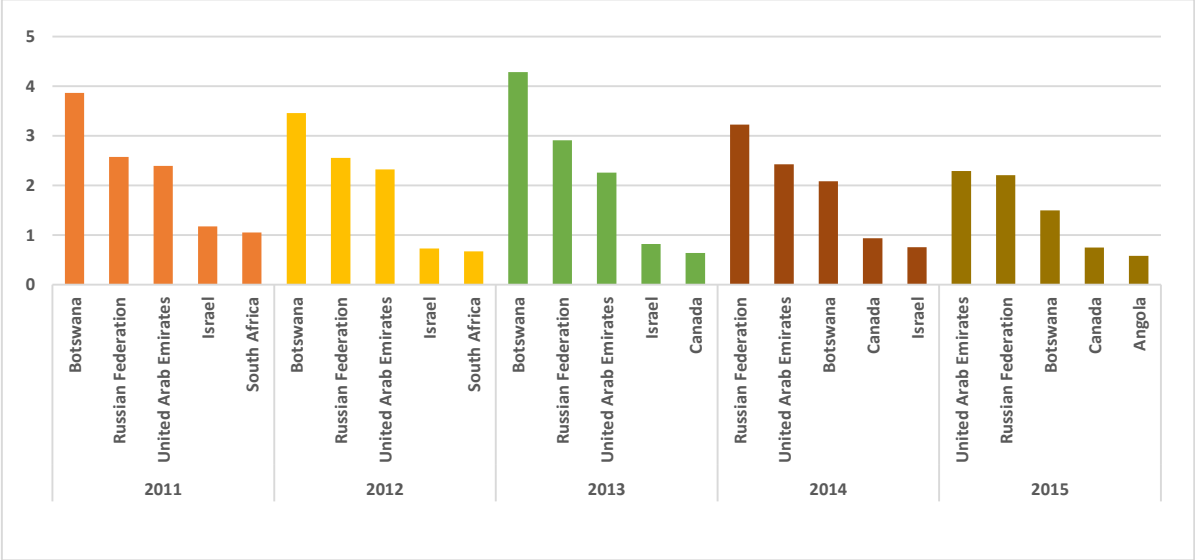
2. Australia, Colombia, Russian Federation, South Africa and USA were constant suppliers of *Bituminous coal, whether/not pulverised but not agglomerated* (HS 270112). Starting from 2012, Russian Federation and USA became the most important suppliers of this product group to the EU-28. In 2015, they accounted for together around half of EU-28's imports.

**Figure 12.** EU-28 top five import sources of *Bituminous coal, whether/not pulverised but not agglomerated* (HS 270112; billion USD; 2011-2015)



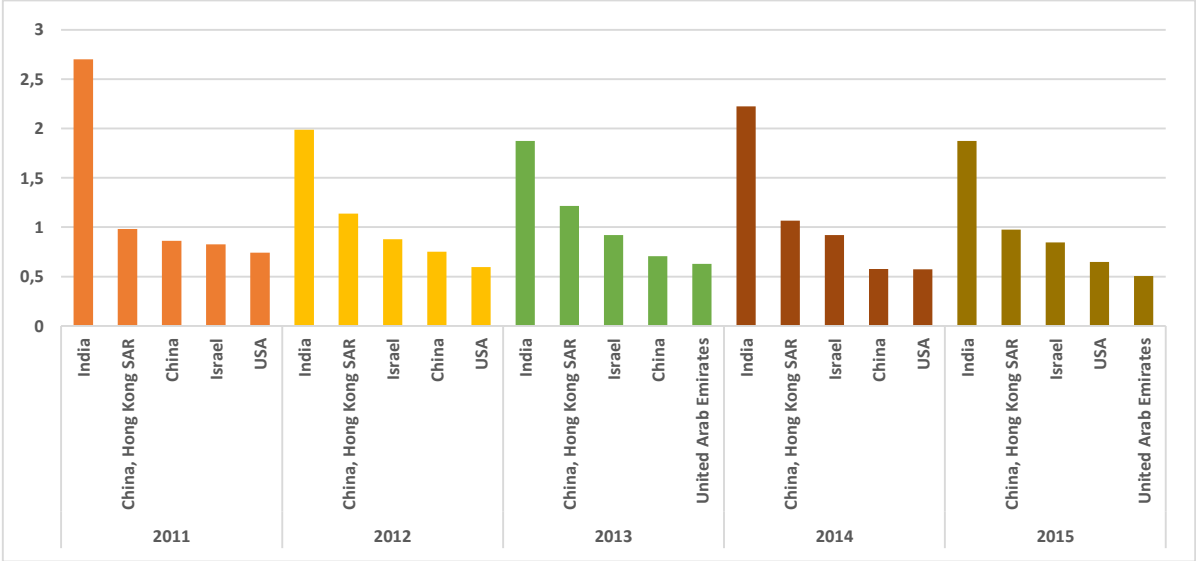
3. Botswana, Russian Federation and United Arab Emirates were constantly the three main suppliers of *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231) to the EU-28 over the period 2011-2015, together accounting for 62 per cent of EU-28 total five-year imports of this product group. Canada replaced South Africa in 2013 in the list of top five suppliers, and Angola took the place of Israel in 2015. The EU-28's imports from Botswana decreased significantly across the period, from a share around 27 per cent in 2011 to 15 per cent in 2015.

**Figure 13.** EU-28 top five import sources of *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231; billion USD; 2011-2015)



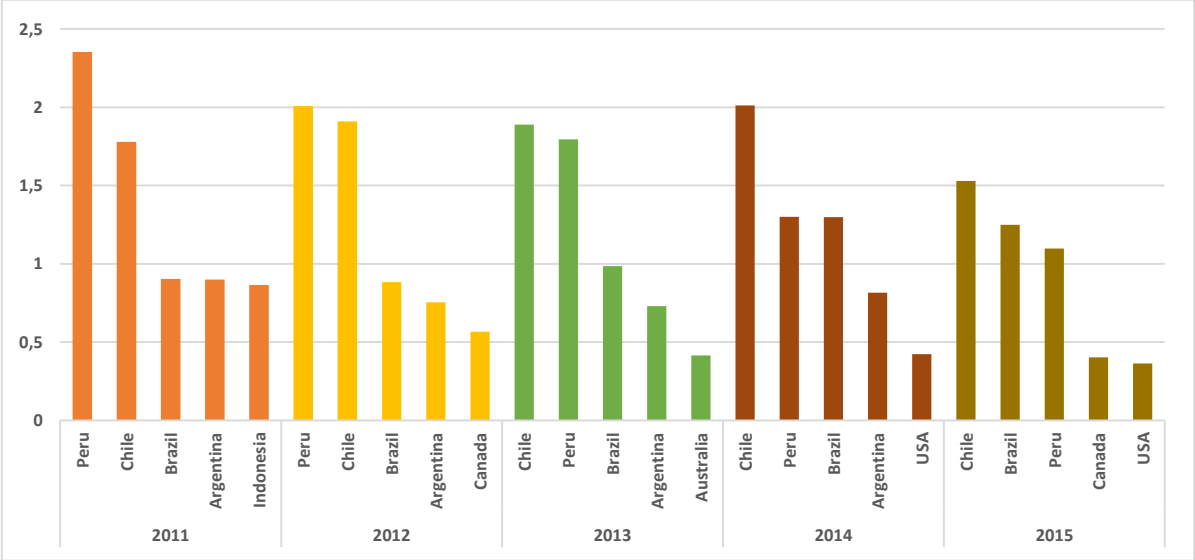
4. India, Israel and Hong Kong were the main suppliers of the third-ranking product group, *Diamonds, non-industrial, other than unworked/simplely sawn/cleaved/bruted* (HS 710239), providing together approximately 53 per cent of EU-28's total imports over the period 2011-2015. India was by far the leading supplier to the EU-28, with a share of 28 per cent. China's annual exports to the EU-28 decreased constantly since 2011 and stopped being among the top-five supplier in 2015.

**Figure 14.** EU-28 top five import sources of *Diamonds, non-industrial, other than unworked/simplely sawn/cleaved/bruted* (HS 710239; billion USD; 2011-2015)



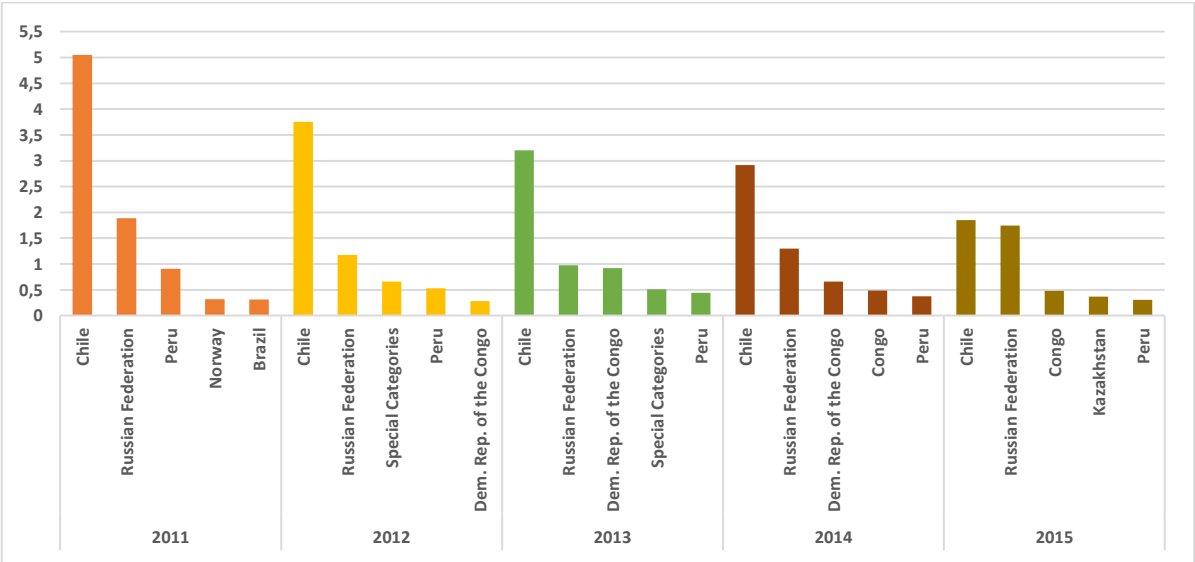
5. Chile, Peru and Brazil (in this order) were the leading suppliers of *Copper ores & concentrates* (HS 260300) to the EU-28 over the entire period 2011-2015. All three together supplied around 60 per cent of EU-28 total imports in the analysed period.

**Figure 15.** EU-28 top five import sources of *Copper ores & concentrates* (HS 260300; billion USD; 2011-2015)



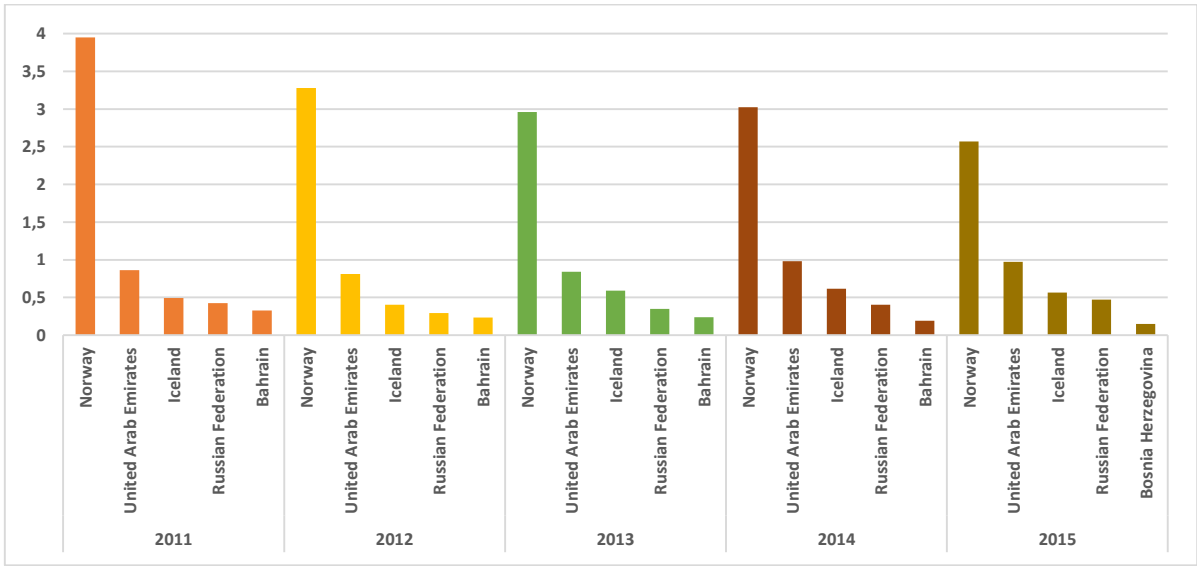
6. Together, Chile, Russian Federation and Peru (in this order) supplied around 72 per cent of EU-28's total imports of *Cathodes & sections of cathodes, of refined copper, unwrought* (HS 740311) over the studied period. Chile was by far the leading supplier, with a share of around 46 per cent of total EU-28 imports of this product over the entire period 2011-2015.

**Figure 16.** EU-28 top five import sources of *Cathodes & sections of cathodes, of refined copper, unwrought* (HS 740311; billion USD; 2011-2015)



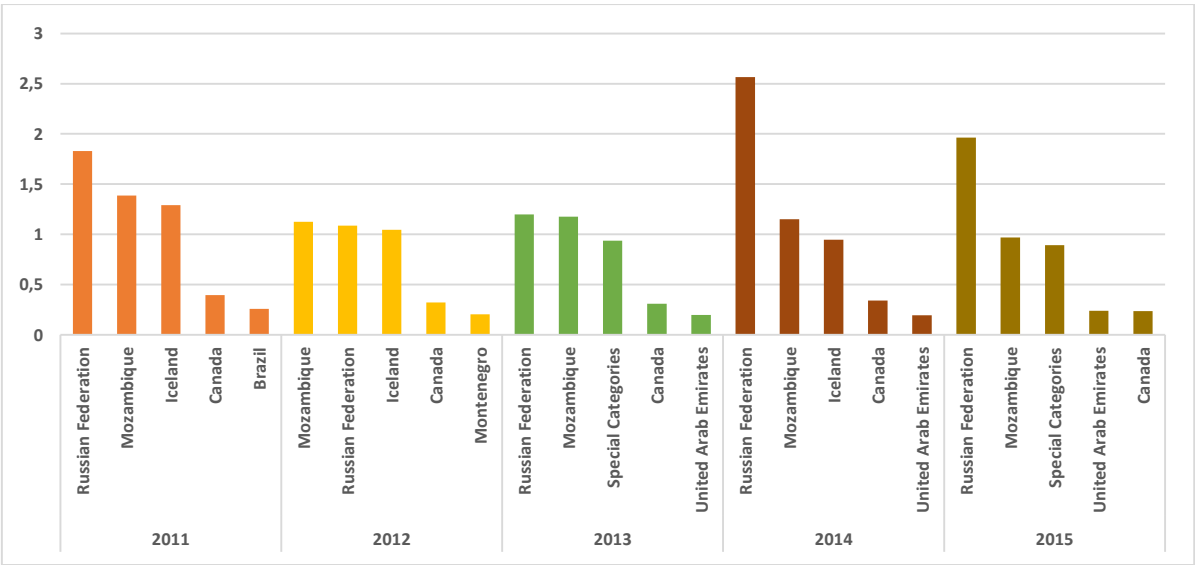
7. Iceland, Norway, Russian Federation and United Arab Emirates provided together 83 per cent of the EU-28 total imports of *Aluminium alloys, unwrought* (HS 760120) in the studied period. Norway was by far the leading supplier, accounting for more than half of the EU-28's total five-year imports of the commodity.

**Figure 17.** EU-28 top five import sources of *Aluminium alloys, unwrought* (HS 760120; billion USD; 2011-2015)



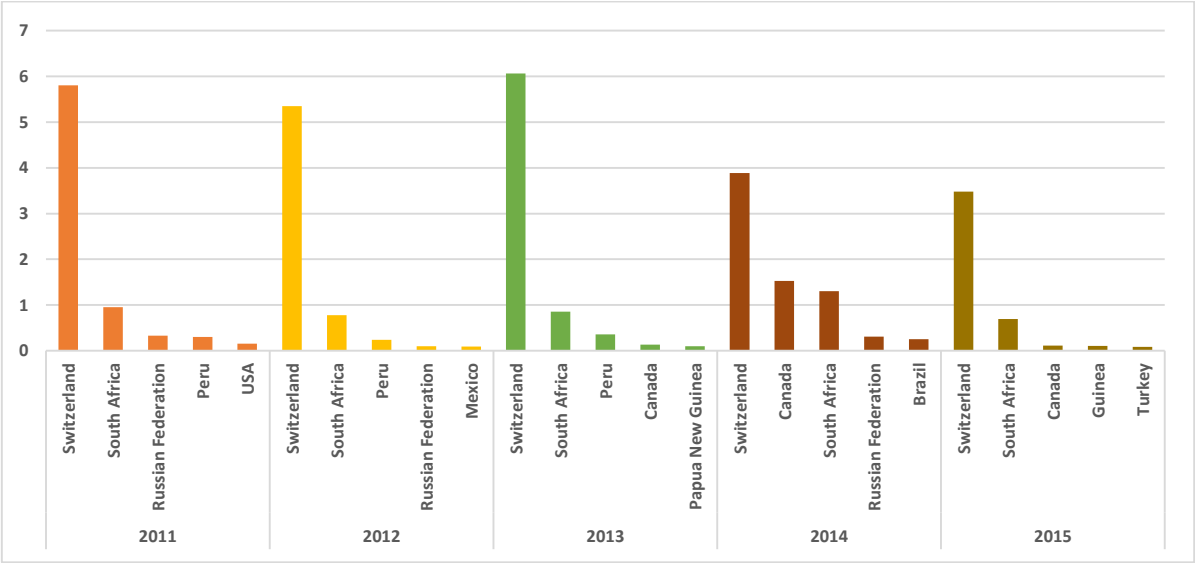
8. Mozambique and Russian Federation were constantly the leading suppliers of *Aluminium, not alloyed, unwrought* (HS 760110), together providing more than half of EU-28’s total imports of the commodity over the period. Russian Federation supplied alone around 30 per cent of the total imports of that period, with an increasing annual contribution, from around 28 in 2011 to 37 percent in 2015.

**Figure 18.** EU-28 top five import sources of *Aluminium, not alloyed, unwrought* (HS 760110; billion USD; 2011-2015)



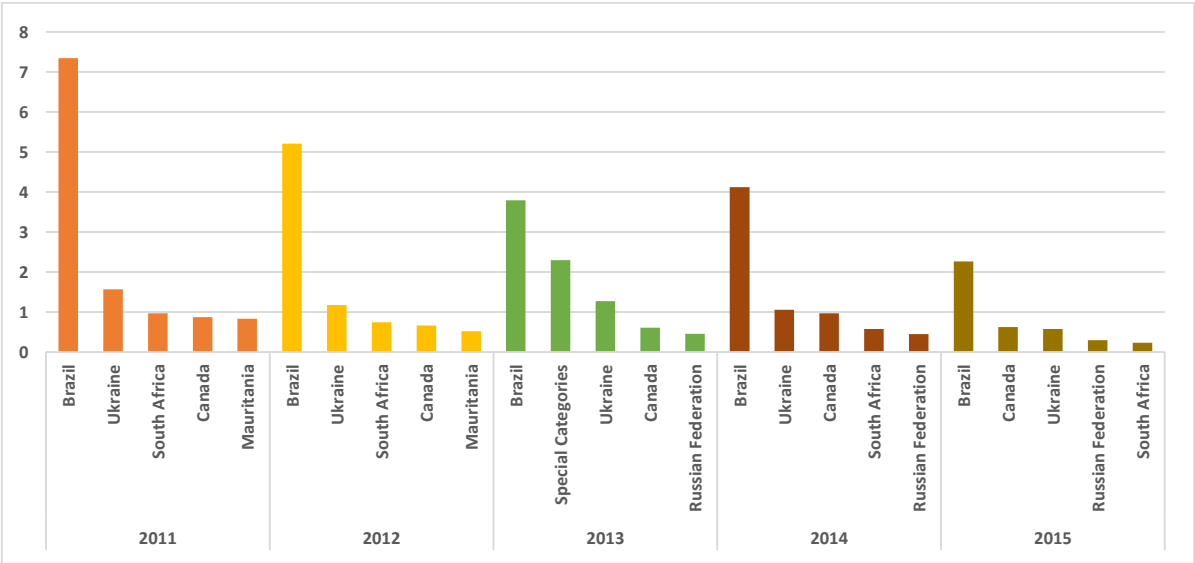
9. Switzerland (by far the main supplier) and South Africa were constantly the main providers of *Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)* (HS 710812) to the EU-28, with an aggregated share of around 80 per cent over the entire period. By far the most important supplier was Switzerland, with a total contribution of 66 per cent to the EU supply in 2011-2015.

**Figure 19.** EU-28 top five import sources of *Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)* (HS 710812; billion USD; 2011-2015)



10. Around 70 per cent of EU-28 total imports of *Iron ores & concentrates (excl. roasted iron pyrites), non-agglomerated* (HS 260111) over the period 2011-2015 were constantly sourced from three countries: Brazil, Canada and Ukraine. Brazil was by far the biggest provider, being the source of half of EU-28’s total imports of the period 2011-2015.

**Figure 20.** EU-28 top five import sources of *Iron ores & concentrates (excl. roasted iron pyrites), non-agglomerated* (HS 260111; billion USD; 2011-2015)

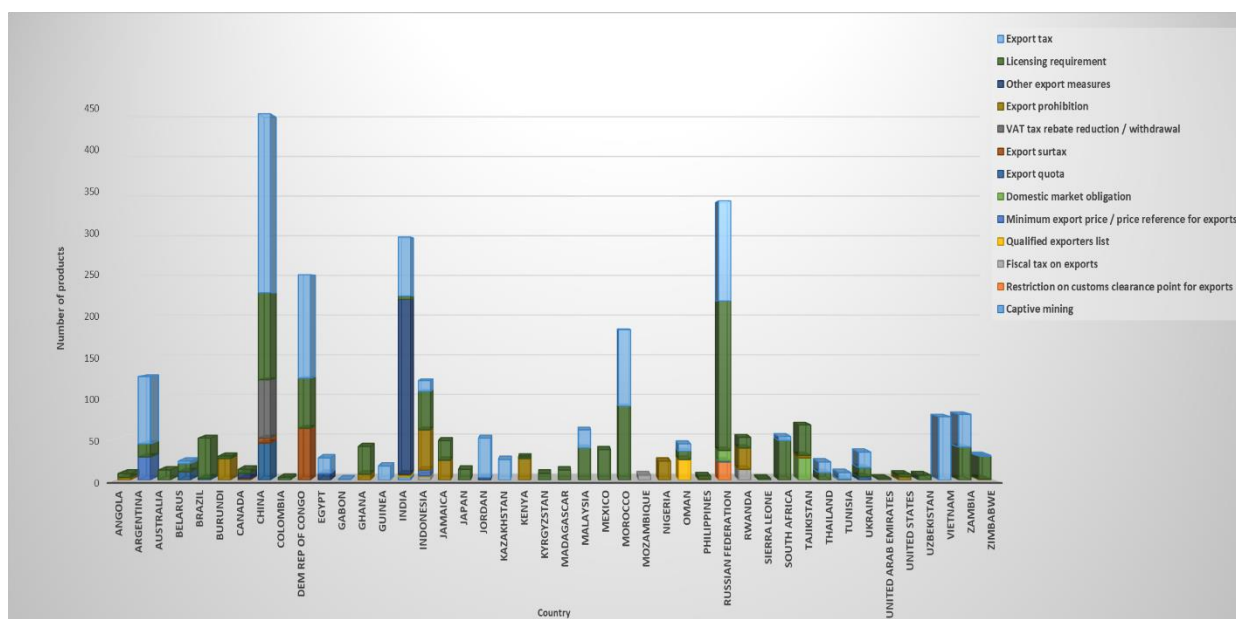




## 2.2.1 Export restrictions imposed by the supplying countries of EU-28's top ten raw materials commodities

Many global producers have increasingly imposed export restrictions on raw-material commodities in recent years. Out of the total number of around 2600 export restrictions on raw materials in force worldwide in 2014, almost a quarter were introduced from 2011 onwards<sup>14</sup>. China, Russian Federation, India, Democratic Republic of Congo and Morocco (in this order) are the countries with the highest number of HS 6-digit raw material commodities restricted for export in 2014, as shown in Figure 21.

**Figure 21.** Export restrictions in place worldwide in 2014, by imposing country, measure type and number of HS 6-digit products affected

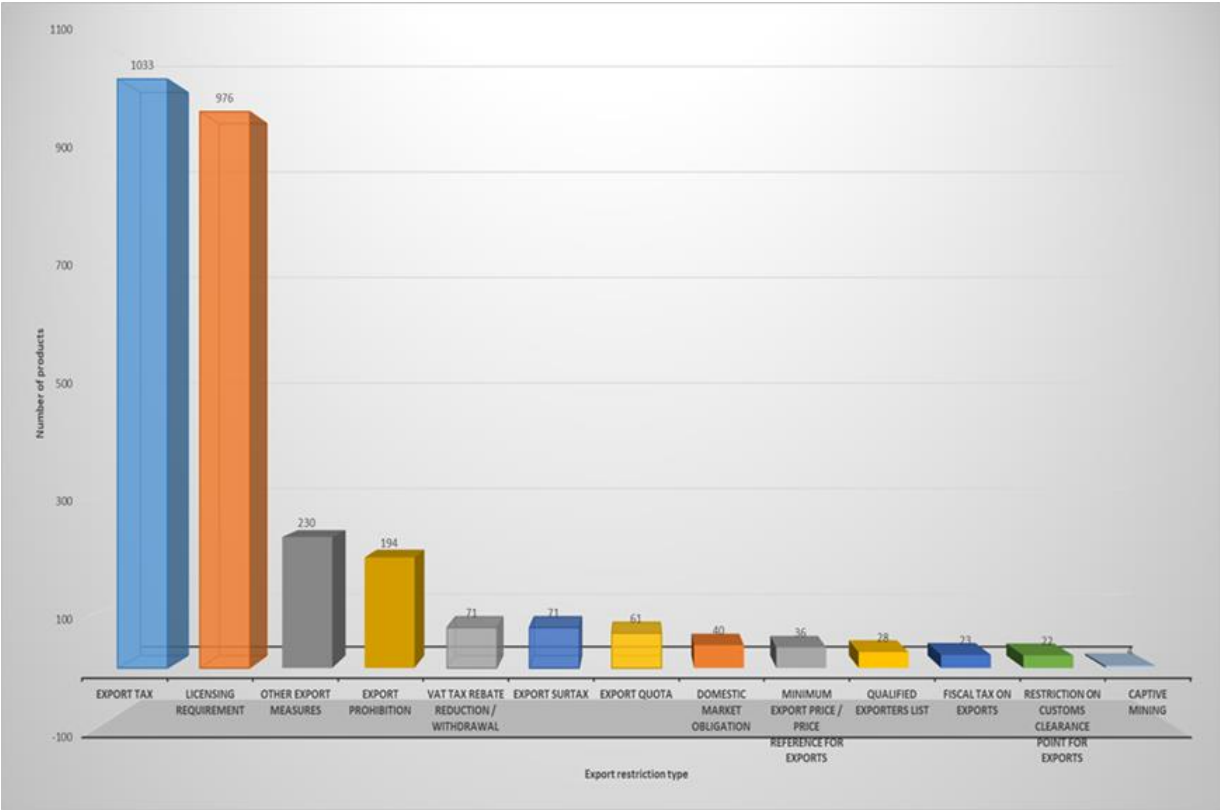


Source: Our elaboration based on OECD Inventory on Export Restrictions on Industrial Raw Materials, [http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions\\_IndustrialRawMaterials](http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions_IndustrialRawMaterials)

The most frequently used types of export restrictions imposed worldwide and still in place in 2014 were by far export taxes and licensing requirements (Figure 22).

14 This statement is based on our elaboration of data from OECD Inventory on Export Restrictions on Industrial Raw Materials, [http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions\\_IndustrialRawMaterials](http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions_IndustrialRawMaterials)

**Figure 22.** Export restrictions in place worldwide in 2014, by measure type



Source: Our elaboration based on OECD Inventory on Export Restrictions on Industrial Raw Materials, [http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions\\_IndustrialRawMaterials](http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions_IndustrialRawMaterials)

Table 2 presents restrictions in place in 2014, imposed by the top-five supplying countries to the EU-28 on exports of the EU-28’s top 10 imported NFNERM, as presented in Figure 6. In compiling the list, two features were only taken into account: i) the main suppliers to the EU-28, i.e., top five and ii) exports restrictions in place in 2014, regardless of their date of introduction. 2014 was selected as reference year as it is the last year for which OECD provides detailed data on export restrictions imposed on industrial raw materials worldwide.

**Table 2.** Export restrictions in place in 2014 imposed by its top-five supplying countries on exports of the EU-28’s top 10 imported NFNERM

HS 6-digit code	Product description	Supplying country	Share of EU-28 total imports of commodity in 2014 (%)*	Measure type in place in 2014	Value of measure
260300	Copper ores & concentrates	Argentina	10.5	Export tax	10%
				Licensing requirement	NA
710231	Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted	Russian Federation	24.5	Export tax	6.5%
				Domestic market obligation	NA
				Licensing requirement	NA
				Restriction on customs clearance point	NA
				Minimum export price/ price reference	NA
710812	Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)	Russian Federation	4	Domestic market obligation	NA
				Licensing requirement	NA
				Restriction on customs clearance point	NA

		South Africa	16	Licensing requirement	NA
710813	Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms	South Africa	18	Licensing requirement	NA
740311	Cathodes & sections of cathodes, of refined copper, unwrought	Democratic Republic of Congo	11	Export tax	1%
				Export tax	10 USD/tonne
				Export surtax	3%
				Licensing requirement	150 USD
		Russian Federation	20.5	Export tax	10%
760120	Aluminium alloys, unwrought	Russian Federation	7	Export tax	2.5%
				Export tax	3%

Source: OECD Inventory on Export Restrictions on Industrial Raw Materials (accessed on January 28, 2018), [http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions\\_IndustrialRawMaterials](http://qdd.oecd.org/subject.aspx?Subject=ExportRestrictions_IndustrialRawMaterials)

Special attention deserves commodities for which export-restricting countries account for a high share in EU-28 imports. For example, Russia and Democratic Republic of Congo, which accounted for together 31.5% of the EU-28 total imports of *Cathodes & sections of cathodes, of refined copper, unwrought* in 2014, imposed export-restricting measures on this commodity in the same year.

Since in most cases the export restrictions imposed by the exporting countries apply globally, the extent of their trade restrictiveness requires further analysis. For a certain country, it depends on i) the supplier' share in its imports of a specific commodity, ii) the type of export measure applied and iii) the existence of a trade agreement with the supplying country that prohibits imposition of export restrictions.

### Summary of the section

- This section gives more details on the top-five suppliers of each of the ten product groups listed in the top 10 NFNERM imported by the EU-28 in 2015, as presented in Figure 6.
- There were long-standing suppliers of the top 10 NFNERM imported by the EU-28, which account for significant shares of total imports of certain product groups over the entire period 2011-2015, as follows:
  - i) Canada, South Africa, Switzerland and USA were constantly the main suppliers of *Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms* (HS 710813) over the entire period 2011-2015, together accounting for 77 per cent of EU-28 imports of this product group over the whole period and around 83 per cent in 2015;
  - ii) Starting from 2012, Russian Federation and USA were the most important suppliers of *Bituminous coal, whether/not pulverised but not agglomerated* (HS 270112 - a HS code that covers coking coal) to the EU-28, providing together around half of EU-28's imports in 2015.
  - iii) Botswana, Russian Federation and United Arab Emirates were constantly the three main suppliers of *Diamonds, non-industrial, unworked/simplely awn/cleaved/bruted* (HS 710231) to the EU-28 over the period 2011-2015, together accounting for 62 per cent of EU-28 total five-year imports of this product group;
  - iv) India, Israel and Hong Kong were the main suppliers of the third-ranking product group, *Diamonds, non-industrial, other than unworked/simplely sawn/cleaved/bruted* (HS 710239), providing together approximately 53 per cent of EU-28's total imports over the period 2011-2015. India was by far the leading supplier to the EU-28, with a share of 28 per cent;
  - v) Chile, Peru and Brazil (in this order) were the leading suppliers of *Copper ores & concentrates* (HS 260300) to the EU-28 over the entire period 2011-2015. All three together supplied around 60 per cent of EU-28 total imports of the whole period. (HS 260300);

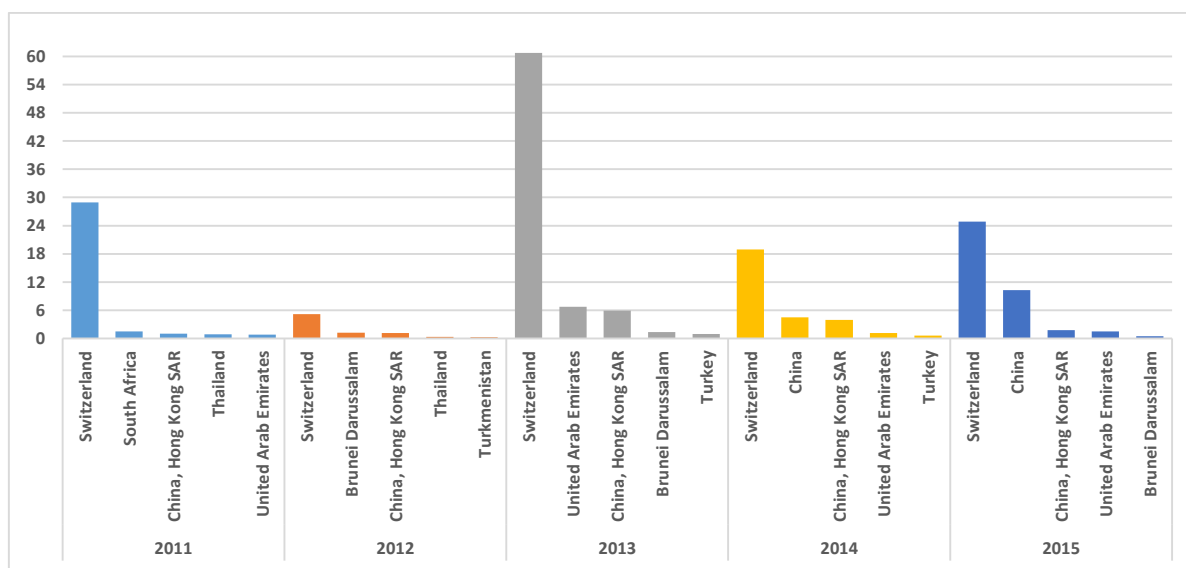
- vi) Together, Chile, Russian Federation and Peru (in this order) supplied around 72 per cent of EU-28's total imports of *Cathodes & sections of cathodes, of refined copper, unwrought* (HS 740311) over the studied period. Chile was by far the leading supplier, with a share of around 46 per cent;
  - vii) Iceland, Norway, Russian Federation and United Arab Emirates provided together 83 per cent of the EU-28 total imports of *Aluminium alloys, unwrought* (HS 760120) in the studied period. Norway was by far the leading supplier, accounting for more than half of the EU-28's total five-year imports of the commodity;
  - viii) Mozambique and Russian Federation were constantly the leading suppliers of *Aluminium, not alloyed, unwrought* (HS 760110), together providing more than half of EU-28's total imports of the commodity over the period.
  - ix) Switzerland (by far the main supplier, with a total contribution of 66 per cent to the EU supply in 2011-2015) and South Africa were constantly the main providers of *Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)* (HS 710812) to the EU-28;
  - x) Around 70 per cent of EU-28 total imports of *Iron ores & concentrates (excl. roasted iron pyrites), non-agglomerated* (HS 260111) over the period 2011-2015 were constantly sourced from three countries: Brazil (the biggest provider, being the source of half of EU-28's total imports of the period 2011-2015), Canada and Ukraine.
- In 2014, there were export restrictions in place for the HS commodities listed in the EU-28's top 10 NFNERM imports, imposed by top-five supplying countries which account for a high share in EU-28 imports. For example, a high share of EU-28 imports of *Cathodes and sections of cathodes, of refined copper, unwrought* was restricted in 2014. The extent of restrictiveness' trade impact on a certain country depends on i) supplier' share in its imports of a specific commodity, ii) the type export measure applied and iii) the existence of a trade agreement with the supplying country that prohibits imposition of export-restricting measures.

## 2.3 Analysis of main destination countries of top ten raw materials commodities exported by the EU-28

Exactly as in the previous section, this section presents the main five destination countries of each of the top ten NFNERM exported by the EU-28 in 2015, as shown in Figure 9. We try to respond to the question: *where did the top ten HS 6-digit NFNERM exported by the EU-28 in the period 2011-2015 go to?*

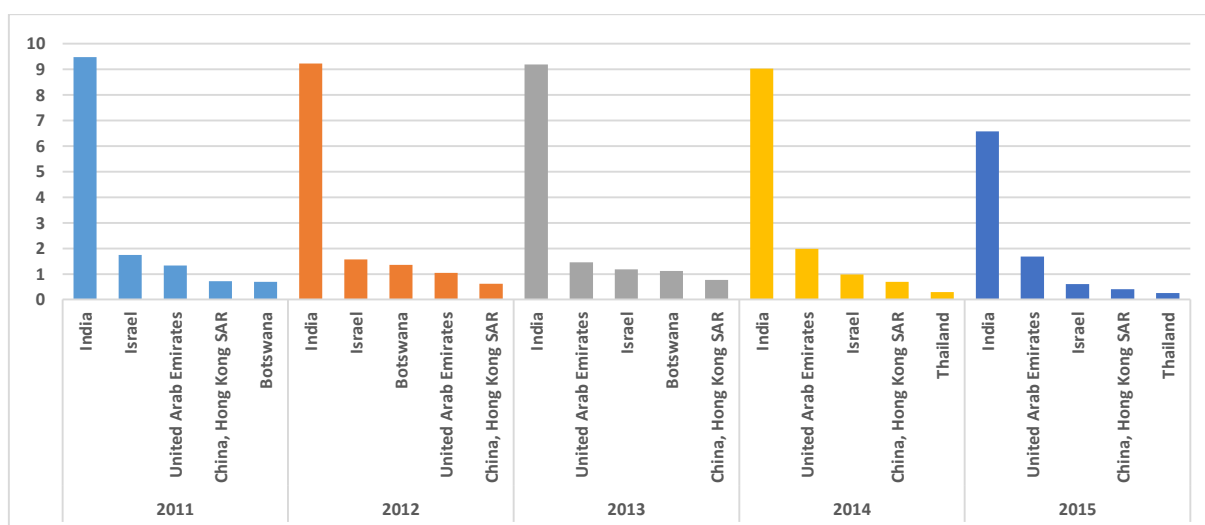
1. Switzerland was by far the main destination of the exports of *Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms* (HS 710813), accounting for a share of 72 per cent of overall EU-28 exports in the period 2011-2015. In 2015, China became the EU-28's second important export destination of the commodity, with an annual share of around 26 per cent.

**Figure 23.** EU-28 top five destination countries of *Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms* (HS 710813; billion USD; 2011-2015)



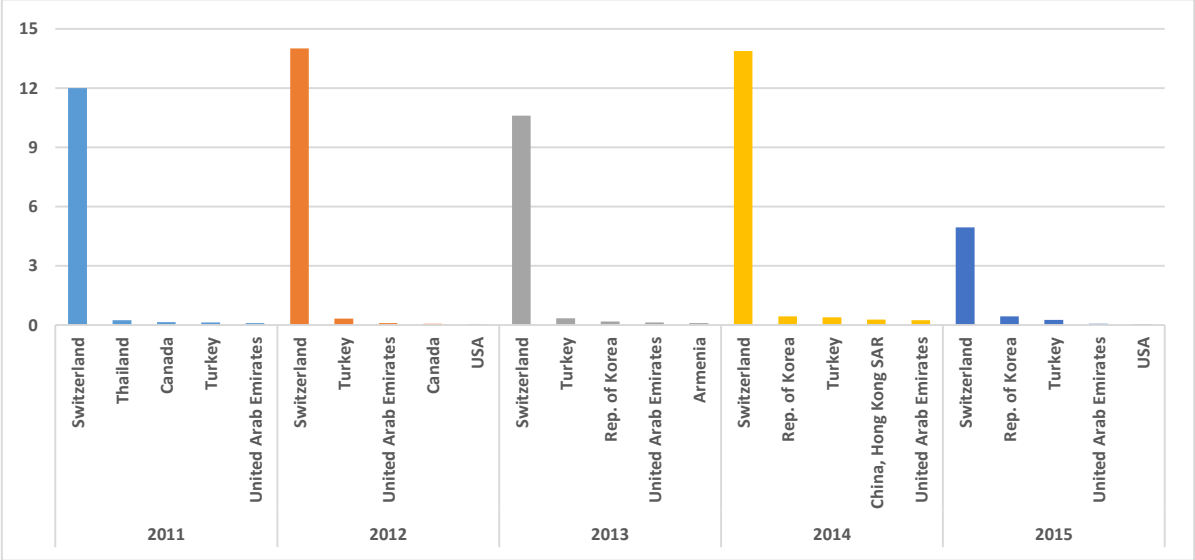
2. India was by far the main export destination of *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231), receiving approximately 60 per cent of EU-28's total exports over the period 2011-2015. United Arab Emirates, Israel and Hong Kong were also constant recipients over the period.

**Figure 24.** EU-28 top five destination countries of *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231; billion USD; 2011-2015)



3. Switzerland stood out in EU-28's exports destinations of *Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)* (HS 710812), being the destination of around 91 per cent of commodity's total exports over the entire reference period. Turkey and United Arab Emirates were also constant recipients, with small commodity's export shares.

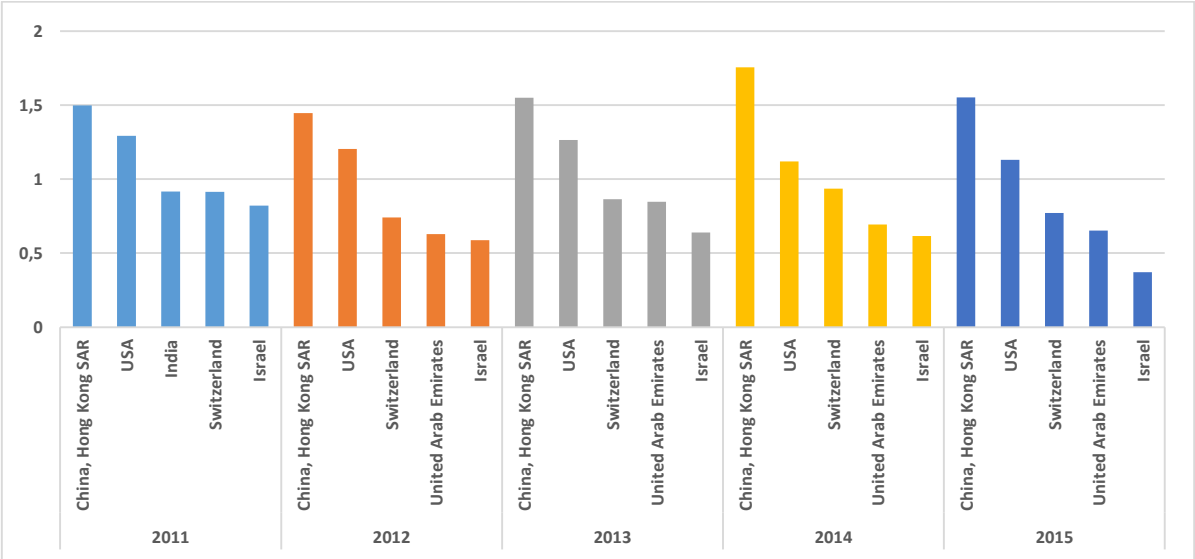
**Figure 25.** EU-28 top five destination countries of *Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)* (HS 710812; billion USD; 2011-2015)



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

4. Hong Kong, USA, Switzerland and Israel were, in this order, constant destinations of EU-28 exports of *Diamonds, non-industrial other than unworked or simply sawn/cleaved/bruted* (HS 710239), accounting together for around 66 per cent of the EU-28's commodity's total exports over the analysed period.

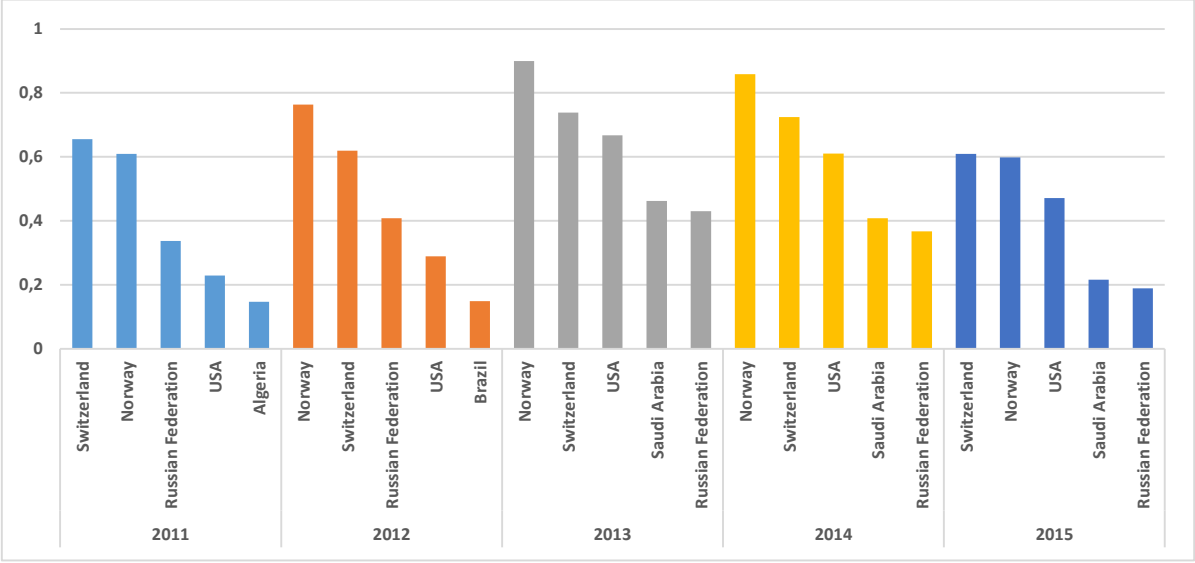
**Figure 26.** EU-28 top five destination countries of *Diamonds, non-industrial other than unworked/ simply sawn/cleaved/bruted* (HS 710239; billion USD; 2011-2015)



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

5. Norway, Switzerland, USA and Russian Federation remained constant EU-28 export partners for *Structures & parts of structures of iron/steel* (HS 730890) over the whole period 2011-2015, accounting for together 41 per cent of EU-28 total exports.

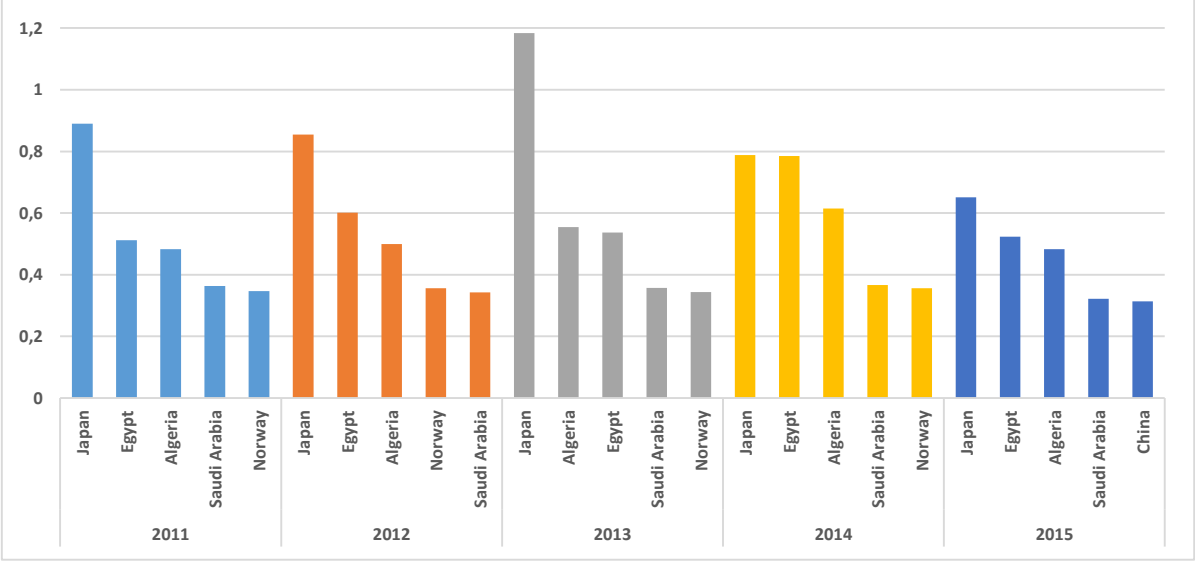
**Figure 27.** EU-28 top five destination countries of *Structures & parts of structures of iron/steel (excl. of 7308.10-7308.40); plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel (HS 730890; billion USD; 2011-2015)*



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

6. Japan, Egypt, Algeria and Saudi Arabia were constant destinations of EU-28’s exports of *Wood sawn/chipped length wise, sliced/peeled, whether/not planed, sanded/end-jointed, of a thickness >6mm, coniferous (HS 440710), receiving together 57 per cent of the commodity’s EU-28 exports of this product group over the entire period.*

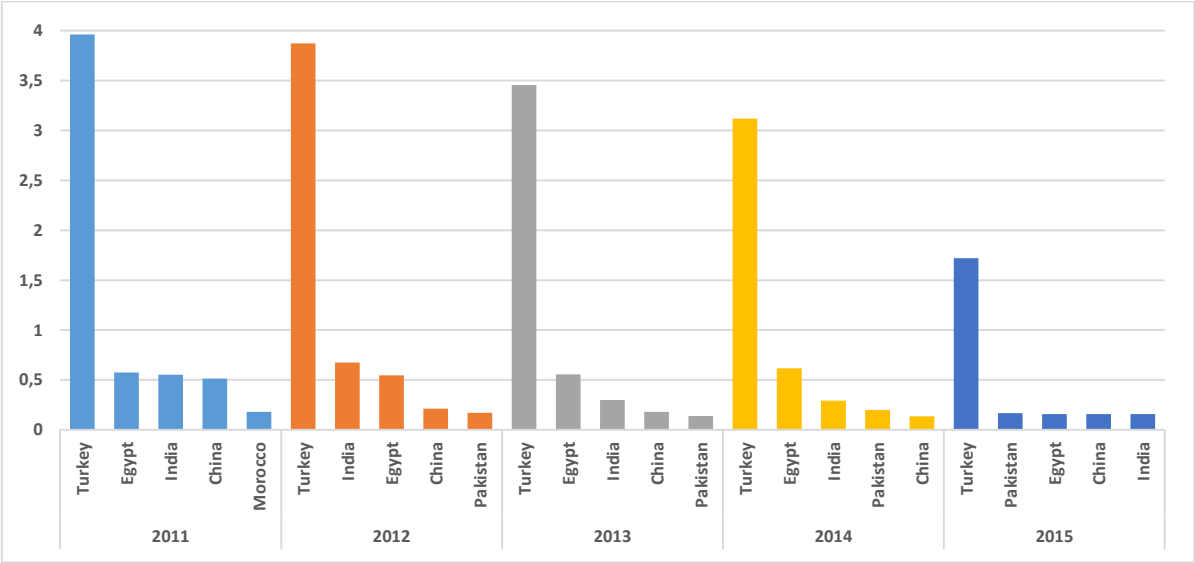
**Figure 28.** EU-28 top five destination countries of *Wood sawn/chipped length wise, coniferous (HS 440710; billion USD; 2011-2015)*



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

7. Turkey, Egypt, India and China (in this order) were constantly the main recipients of *Ferrous waste and scrap (HS 720449), with an overall share of 83 per cent the EU-28 exports over the period. Turkey was by far the main destination, with a share of 61 per cent in EU-28’s total exports of the analysed period.*

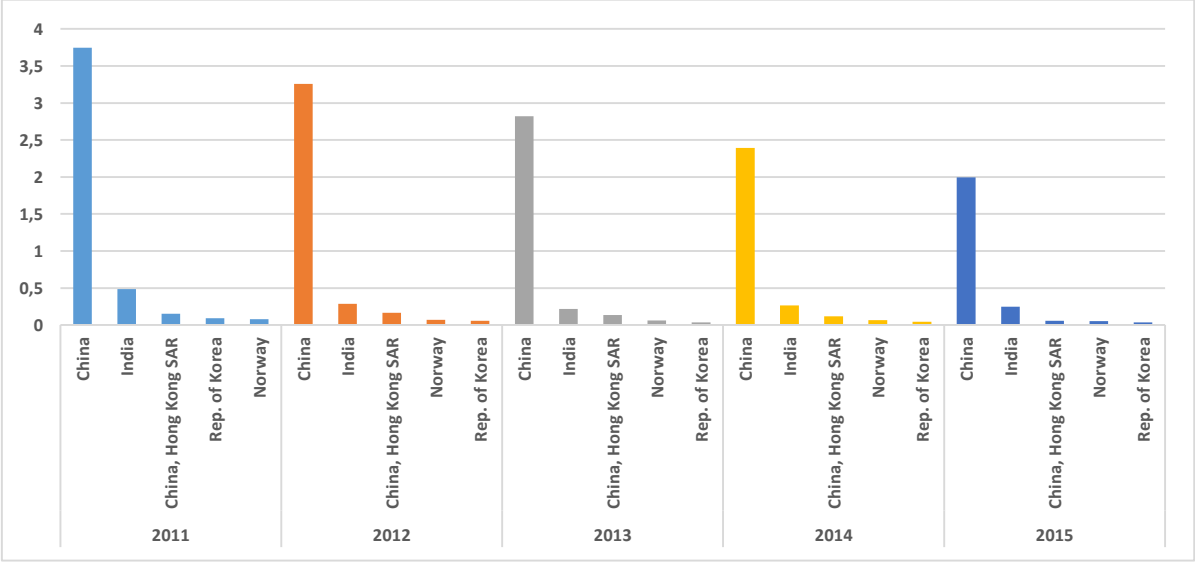
**Figure 29.** EU-28 top five destination countries of *Ferrous waste & scrap (excl. of 7204.10-7204.41)* (HS 720449; billion USD; 2011-2015)



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

8. China, India, Hong Kong, Norway and Republic of Korea were all five constant country destinations of EU-28’s exports of *Copper waste and scrap* (HS 740400), receiving together around 95 per cent of the total EU-28 exports. China was by far the leading destination, accounting for a share of around 80 percent over the entire period 2011-2015.

**Figure 30.** EU-28 top five destination countries of *Copper waste & scrap* (HS 740400; billion USD; 2011-2015)

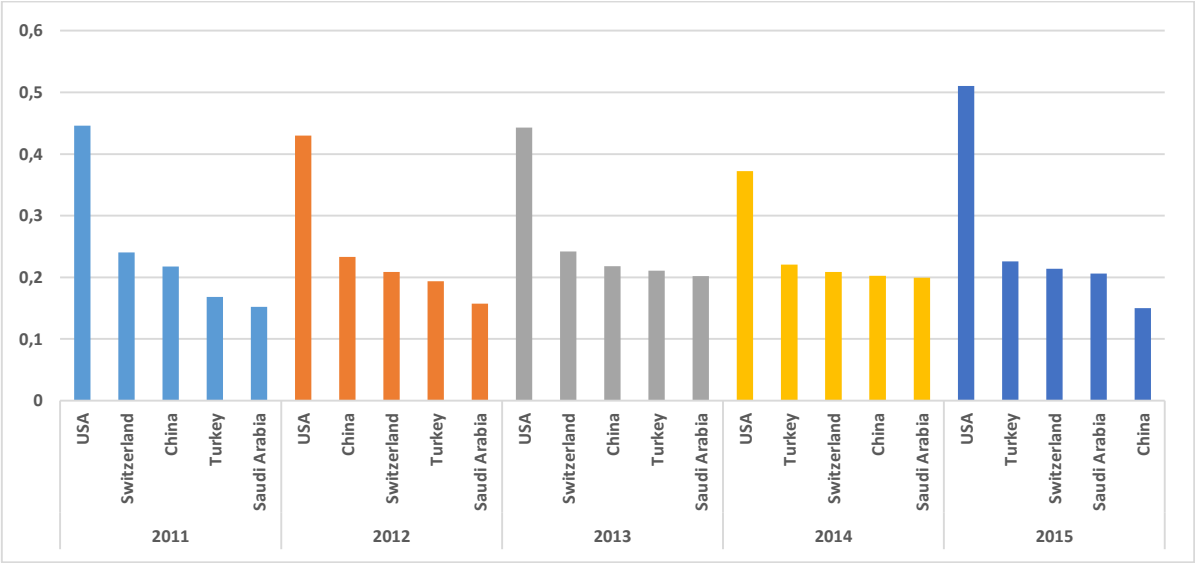


Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

9. All top-five countries - USA, Switzerland, China, Turkey and Saudi Arabia - were constant destinations of EU-28’s exports of *Plates, sheets and strip of aluminium alloys* (HS 760612), with invariable annual values of EU-28 exports across the period. Together they represented more than half of the EU-28’s total exports in the analysed period.



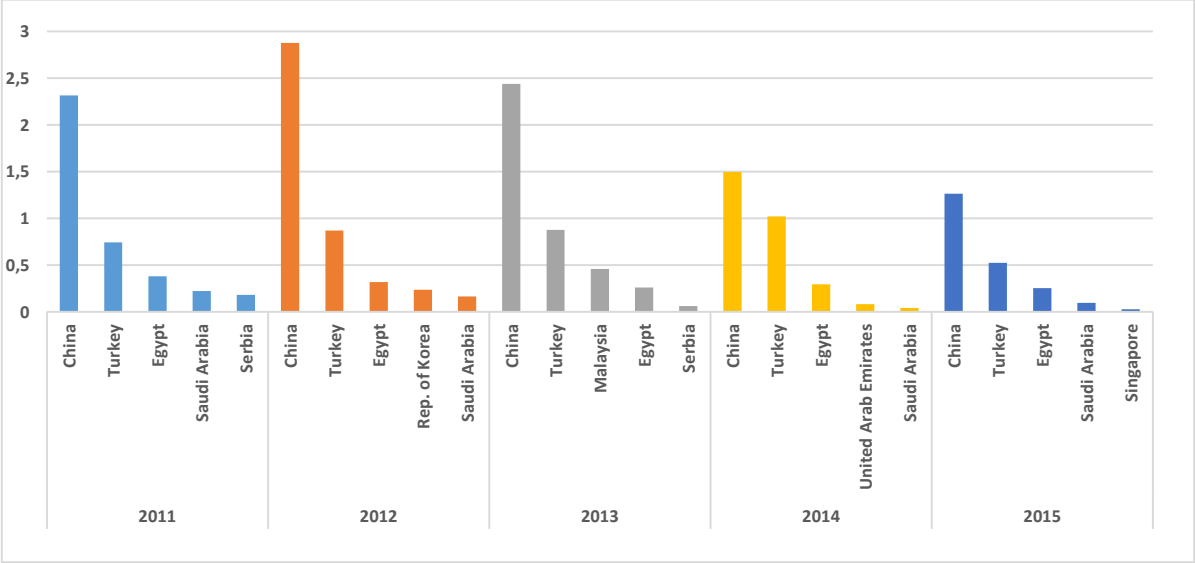
**Figure 31.** EU-28 top five destination countries of *Plates, sheets and strip, rectangular (incl. square) of aluminium alloys (HS 760612; billion USD; 2011-2015)*



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

10. Around 85 per cent of the total EU-28 exports of *Cathodes & sections of cathodes, of refined copper, unwrought (HS 740311)* in the whole period went to China, Turkey and Egypt, all constant importers of the period. China was by far the main importer, with a share of 55 percent of the total EU-28 exports of the commodity in the analysed period.

**Figure 32.** EU-28 top five destination countries of *Cathodes & sections of cathodes, of refined copper, unwrought (HS 740311; billion USD; 2011-2015)*



Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

**Summary of the section**

- There were *long-standing destination countries* of the top 10 NFNERM exported by the EU-28 in 2015, which account for significant shares of its total exports of certain product groups over the entire period 2011-2015, as follows:
  - i) Switzerland was by far the main export destination of *Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms (HS 710813)* and *Gold (incl. gold plated with platinum), in unwrought forms (excl. powder) (HS*

710812) over the period, accounting for a total share of 72 and 91 per cent respectively;

ii) India received around 60 percent of EU-28's total exports of *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231) over the period;

iii) Hong Kong, USA, Switzerland and Israel received together around 66 per cent of the EU-28 exports of *Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted* (HS 710239);

iv) Main destinations of *Wood sawn/chipped length wise, coniferous* (HS 440710) were Japan, Egypt, Algeria and Saudi Arabia (more than half, together);

v) Turkey, Egypt, India and China were the main recipients of *Ferrous waste & scrap* (HS 720449), with an overall share of 85 per cent. Turkey was by far the main destination, with a share of 61 per cent;

vi) China was by far the leading destination of EU-28's exports of *Copper waste & scrap* (HS 740400), with an outstanding share of around 80 percent over the entire period 2011-2015.

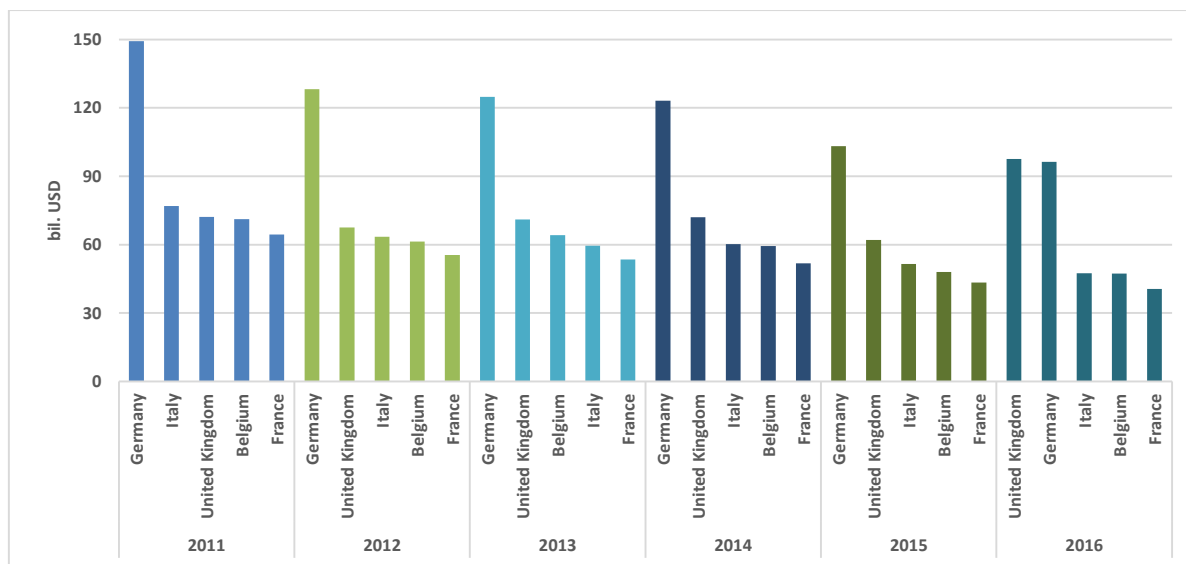
vii) USA, Switzerland, China, Turkey and Saudi Arabia were constant destinations of EU-28's exports of *Plates, sheets and strip of aluminium alloys* (HS 760612), with invariable annual values of EU-28 exports across the period. Together they represented more than half of the EU-28 total exports in the analysed period.

viii) Around 55 per cent of the EU-28 exports of *Cathodes & sections of cathodes, of refined copper, unwrought* (HS 740311) in the whole period went to China.

## 2.4 Analysis of trade in raw material commodities in selected EU countries

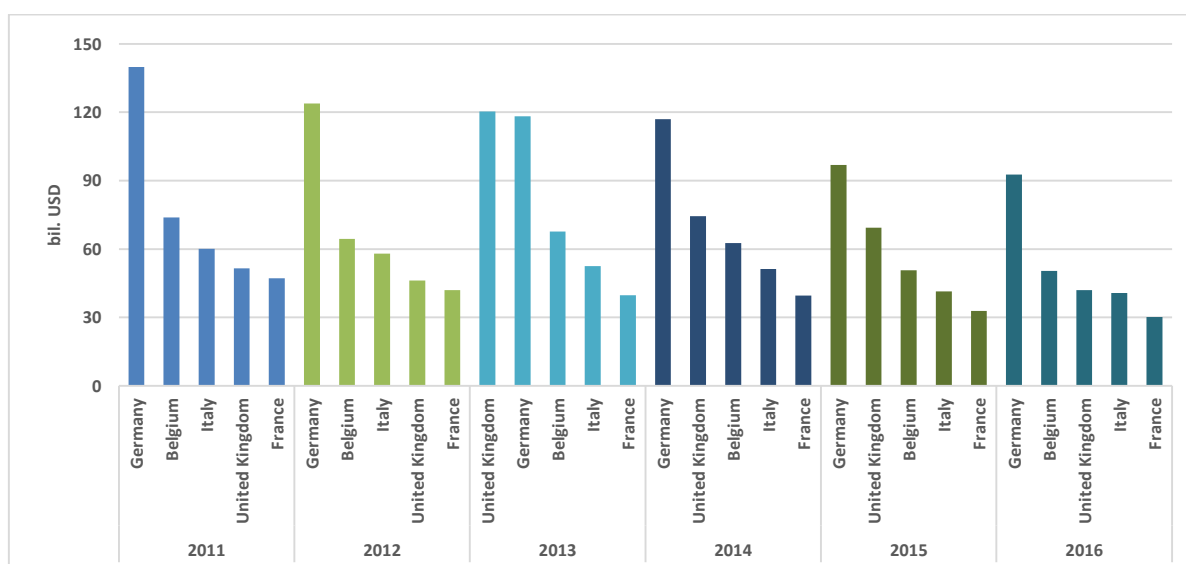
In addition to presenting EU-28 aggregated data, this section analyses the trade flows in raw materials of those five countries that account for the highest annual values of EU-28's both imports and exports of NFNERM in the period 2011-2016. They are the main importers, namely, in descending order, Germany, United Kingdom, Belgium, Italy and France.

**Figure 33.** Top five importing countries of raw material commodities in the EU-28 (2011-2016)



The same five countries were also the main importers and exporters of NFNERM in the EU-28. With the exception of 2013, Germany was the leading EU-28 exporting country in terms of value over the period 2011-2016.

**Figure 34.** Top five exporting countries of raw material commodities in the EU-28 (2011-2016)



### 2.4.1 Belgium

Belgium was one of the five top importing and exporting countries of NFNERM in the EU-28 over the period 2011-2016. As compared with 2011, Belgium's imports and exports of

NFNERM, in monetary terms, decreased by around 33 per cent and 32 per cent respectively in 2016.

The main NFNERM product group imported by Belgium in 2016 was *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231), accounting for a share of around 22 percent of total NFNERM imported. With a share of around 24 percent of the product group's total world imports, Belgium was the second world's importer of commodity after India (38%) in 2016.

Several NFNERM products groups imported by Belgium that accounted for *significant world import shares* in 2016 were:

- i) *Diamonds, unsorted* (HS 710210), ranking first in the world, with a share of around 38 per cent of world' total imports of this product group in 2016.
- ii) *Waste and scrap of stainless steel* (HS 720421), ranking also first in the world with a world import share of around 23 %.
- iii) *Unrefined copper; copper anodes for electrolytic refining* (HS 740200) – the second importing country in the world, with 15% of world's total imports, after China (48.5%).
- iv) *Lead ores and concentrates* (HS 260700) – the fourth importing country in the world, with around 10% of world's total imports, after Republic of Korea, China and Canada;
- v) *Zinc ores and concentrates* (260800), with a global market share of around 9 per cent.

**Table 3.** Top 10 raw materials commodities imported by Belgium in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM imported (%)	Share in country's imports of products (%)	Country's share in world's product import (%)
1	710231	Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted	10,39	21,95	2,79	23,83
2	710239	Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted	4,24	8,96	1,14	5,80
3	740200	Unrefined copper; copper anodes for electrolytic refining	1,06	2,25	0,29	14,94
4	740400	Copper waste & scrap	1,04	2,20	0,28	6,10
5	720421	Waste and scrap of stainless steel	0,98	2,08	0,26	23,01
6	710813	Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms	0,93	1,97	0,25	1,19
7	721049	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, othw. plated/coated with zinc (excl. electrolytically), other than corrugated	0,88	1,85	0,24	5,15
8	710210	Diamonds, unsorted	0,71	1,50	0,19	38,10
9	260800	Zinc ores and concentrates	0,66	1,39	0,18	8,65
10	260700	Lead ores and concentrates	0,56	1,18	0,15	9,65

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

As in the case with imports, the main NFNERM product group exported by Belgium in 2016 in terms of total value in 2016 was *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231), accounting for a share of around 22 percent of total NFNERM exported (first-ranking in the world's total exports, with a global market share of 27 per cent). It was followed by *Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted* (HS 710239), with a global market share of around 5 percent.

In 2016, Belgium held *significant shares of world exports* of several copper- and steel-based commodities, as follows:

- i) *Flat-rolled products of stainless steel* (HS 721912) – with around 28% of world's exports, being the second in the world's total imports after China (around 29%);
- ii) *Flat-rolled products of other alloy steel* (722592) – 16.5% of world's exports, the second in the world's total exports after Germany (16.6%);
- iii) *Copper wire of refined copper* (HS 740811) – around 10% of world's exports, the second in the world's total exports after Germany (15%);
- iv) *Flat-rolled products of iron/non-alloy steel* (HS 721049) – around 9% of world's exports.

**Table 4.** Top 10 raw materials commodities exported by Belgium in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM exported (%)	Share in country's exports of products (%)	Country's share in world's product export (%)
1	710231	Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted	11,14	22,11	2,80	27,05
2	710239	Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted	4,71	9,35	1,18	5,53
3	721049	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, othw. plated/coated with zinc (excl. electrolytically), other than corrugated	1,71	3,40	0,43	9,27
4	710813	Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms	1,67	3,32	0,42	3,16
5	730890	Structures of iron/steel (excl. of 7308.10-7308.40); plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel	1,23	2,44	0,31	3,84
6	740811	Copper wire, of refined copper of which the maximum cross-sectional dim. exceeds 6mm	1,05	2,08	0,26	9,81
7	760612	Plates, sheets & strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	0,85	1,68	0,21	3,95
8	721912	Flat-rolled products of stainless steel, of a width of 600mm/more, not further worked than hot-rolled, in coils, of a thickness of 4.75mm/more but not >10mm	0,66	1,32	0,17	28,46
9	722592	Other n.e.s. in 72.25, flat-rolled products of other alloy steel, of a width of 600 mm/more, of othw. plated/coated with zinc	0,65	1,30	0,16	16,48
10	721070	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, painted/varnished/coated with plastics	0,59	1,17	0,15	6,32

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

## 2.4.2 France

France ranked constantly the fifth in top five EU-28 importing and exporting countries of NFNERM over the period 2011-2016. In 2016 as compared with 2011, France's imports and exports of NFNERM in monetary terms declined also significantly by 40 per cent and 36 per cent respectively.

As shown in Table 5, in terms of value, the top three NFNERM product groups imported by France in 2016 were commodities made of steel, aluminium and copper, in this order: i) *Structures of iron/steel; plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel* (HS 730890); ii) *Plates, sheets & strip, rectangular of aluminium alloys* (HS 760612); and iii) *Cathodes and sections of cathodes, of refined copper, unwrought* (740311).

France held significant shares of world's total imports of i) *Titanium & articles thereof* (HS 810890), with around 13.4 per cent (the second after Germany), and *Bars, rods and profiles (excl. hollow profiles) of aluminium alloys* (HS 760429), accounting for around 9 per cent of global market of this commodity.

**Table 5.** Top 10 raw materials commodities imported by France in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM imported (%)	Share in country's imports of products (%)	Country's share in world's product import (%)
1	730890	Structures of iron/steel (excl. of 7308.10-7308.40); plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel	0,94	2,32	0,17	3,79
2	760612	Plates, sheets and strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	0,89	2,19	0,16	4,74
3	740311	Cathodes and sections of cathodes, of refined copper, unwrought	0,86	2,12	0,15	1,96
4	760120	Aluminium alloys, unwrought	0,83	2,05	0,15	3,78
5	710239	Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted	0,83	2,05	0,15	1,14

6	270112	Bituminous coal, whether/not pulverised but not agglomerated	0,83	2,04	0,15	1,51
7	731815	Screws and bolts (excl. of 7318.11-7318.14), whether/not with their nuts/washers, of iron/steel	0,73	1,79	0,13	4,71
8	721049	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, othw. plated/coated with zinc (excl. electrolytically), other than corrugated	0,68	1,66	0,12	3,97
9	760429	Bars, rods and profiles (excl. hollow profiles) of aluminium alloys	0,64	1,58	0,11	8,87
10	810890	Titanium and articles thereof, n.e.s. in 81.08	0,64	1,58	0,11	13,36

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

*Plates, sheets and strip of aluminium alloys* (HS 760612), *Gold in unwrought forms* (HS 710812) and *Copper waste and scrap* (HS 740400) were the top three NFNERM commodities exported by France in 2016.

France held important world market shares for two steel commodities, namely i) *Other flat-rolled products of other alloy steel* (HS 722599) (first-ranking in the world's total imports, with share of around 26 per cent) and ii) *Other flat-rolled products of other alloy steel* (HS 722530), with a global market share of 7 per cent.

**Table 6.** Top 10 raw materials commodities exported by France in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM exports (%)	Share in country's exports of products (%)	Country's share in world's product export (%)
1	760612	Plates, sheets & strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	1,37	4,52	0,28	6,35
2	710812	Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)	0,82	2,72	0,17	0,34
3	740400	Copper waste & scrap	0,77	2,55	0,16	6,06
4	721049	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, othw. plated/coated with zinc (excl. electrolytically), other than corrugated	0,67	2,20	0,14	3,59
5	720449	Ferrous waste & scrap (excl. of 7204.10-7204.41)	0,65	2,15	0,13	4,67
6	722530	Other flat-rolled products of other alloy steel, of a width of 600 mm/more, not further worked than hot-rolled, in coils	0,55	1,81	0,11	7,08
7	731815	Screws & bolts (excl. of 7318.11-7318.14), whether/not with their nuts/washers, of iron/steel	0,53	1,77	0,11	3,36
8	722599	Other n.e.s. in 72.25, flat-rolled products of other alloy steel, of a width of 600 mm/more, other than of electrolytically/othw. plated/coated with zinc	0,48	1,58	0,10	25,72
9	740811	Copper wire, of refined copper of which the maximum cross-sectional dim. exceeds 6mm	0,48	1,57	0,10	4,46
10	721070	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, painted/varnished/coated with plastics	0,47	1,57	0,10	5,07

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

### 2.4.3 Germany

Over the period 2011-2016, Germany ranked first among the EU-28 countries in terms of both import (excepting in 2016) and export (excepting in 2013) of NFNERM. In 2016 as compared with 2011, Germany's imports and exports of NFNERM, in monetary terms, decreased significantly by around 35 per cent and 34 per cent respectively.

The top three NFNERM commodities imported by Germany in 2016 were: i) *Gold in unwrought forms* (710812), *Aluminium alloys, unwrought* (HS 760120) and *Cathodes & sections of cathodes, of refined copper, unwrought* (HS 740311).

In the same year, Germany was an important global importer of several NFNERM commodities, as detailed below:

- i) the main importing country of *Platinum, unwrought/in powder form* (711011), with an import share of around 16.5 percent of world's total imports;
- ii) after USA (around 19%), the second world importer of *Aluminium alloys, unwrought* (HS 760120), with a global share of around 15.5%;
- iii) the main importing country of *Plates, sheets and strip of aluminium alloys* (HS 760612), with an import share of around 13 percent of world's total imports;
- iv) after China (around 36%), the second world importer (with a global share of around 13%) of *Copper waste and scrap* (HS 740400);
- v) after USA (around 13.5%), the second world importer of *Screws and bolts of iron/steel* (HS 731815), with a global share of around 11%.

**Table 7.** Top 10 raw materials commodities imported by Germany in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM imported (%)	Share in country's imports of products (%)	Country's share in world's product import (%)
1	710812	Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)	4,34	4,51	0,41	1,62
2	760120	Aluminium alloys, unwrought	3,43	3,56	0,32	15,57
3	740311	Cathodes & sections of cathodes, of refined copper, unwrought	3,38	3,51	0,32	7,69
4	270112	Bituminous coal, whether/not pulverised but not agglomerated	2,65	2,76	0,25	4,83
5	760612	Plates, sheets & strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	2,48	2,57	0,23	13,24
6	740400	Copper waste & scrap	2,24	2,33	0,21	13,15
7	730890	Structures of iron/steel (excl. of 7308.10-7308.40); plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel	2,14	2,22	0,20	8,59
8	731815	Screws & bolts (excl. of 7318.11-7318.14), whether/not with their nuts/washers, of iron/steel	1,66	1,73	0,16	10,79
9	260300	Copper ores & concentrates	1,63	1,70	0,15	3,81
10	711011	Platinum, unwrought/in powder form	1,62	1,69	0,15	16,44

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

The top three NFNERM commodities exported by Germany in 2016 are: i) *Gold in unwrought forms* (HS 710812), ii) *Plates, sheets and strip of aluminium alloys* (HS 760612) and iii) *Structures of iron/steel; plates, rods, angles, shapes, sections, tubes, etc., prepared for use in structures, of iron/steel* (HS 730890).

In the same year, Germany was the first exporting country of:

- i) *Waste and scrap of stainless steel* (HS 720421), accounting for around a quarter of total world exports;
- ii) *Plates, sheets and strip of aluminium alloys* (HS 760612), with a global market share of around 21%;
- iii) *Screws and bolts of iron/steel* (HS 731815), with a global market share of around 16%;
- iv) *Copper wire, of refined copper* (HS 740811), with a share of 15%;

Also, Germany held significant shares on global market of other several NFNERM, being the second exporting country of the following commodities:

- i) *Aluminium structures and parts* (HS 761090), with a global market share of around 17%, after China (around 31%);
- ii) *Aluminium waste and scrap* (HS 760200), with a global market share of around 15%, after USA (around 20%);
- iii) *Copper waste and scrap* (HS 740400), with a global market share of around 10%, after USA (around 17.5%).

**Table 8.** Top 10 raw materials commodities exported by Germany in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM exported (%)	Share in country's exports of products (%)	Country's share in world's product export (%)
1	710812	Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)	4,69	5,06	0,35	1,94
2	760612	Plates, sheets & strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	4,49	4,85	0,33	20,87
3	730890	Structures of iron/steel (excl. of 7308.10-7308.40); plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel	2,57	2,77	0,19	8,02
4	731815	Screws and bolts (excl. of 7318.11-7318.14), whether/not with their nuts/washers, of iron/steel	2,48	2,68	0,19	15,61
5	740811	Copper wire, of refined copper of which the maximum cross-sectional dim. exceeds 6mm	1,60	1,73	0,12	15,02
6	440710	Wood sawn/chipped length wise, sliced/peeled, whether/not planed, sanded/end-jointed, of a thickness >6mm, coniferous	1,47	1,59	0,11	6,30
7	760200	Aluminium waste and scrap	1,32	1,43	0,10	14,70
8	740400	Copper waste and scrap	1,30	1,40	0,10	10,22
9	720421	Waste and scrap of stainless steel	1,17	1,27	0,09	24,62
10	761090	Aluminium structures, aluminium plates, rods, profiles, tubes and the like, prepared for use in structures	1,16	1,26	0,09	16,83

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

#### 2.4.4 Italy

Italy was constantly one of the five top EU-28 exporting countries of NFNERM over the period 2011-2016. As compared with 2011, Italy's imports and exports of NFNERM in monetary terms, declined by around 38 per cent and 32 per cent respectively in 2016.

As it can be seen in Table 9, the main NFNERM imported by Italy in 2016 were *Cathodes and sections of cathodes, of refined copper, unwrought* (HS 740311), gold in unwrought forms (HS 710812) and *Bituminous coal, whether/not pulverised but not agglomerated* (HS 270112).

In the same year, Italy held significant shares of world's imports of three NFNERM commodities:

i) *Waste and scrap of precious metal/of metal clad with precious metal* (HS 711299); the third importing country after Japan and Germany (20 per cent and around 18 percent respectively), accounting for a share of around 15 per cent of commodity's total world imports.

ii) *Semi-finished products of iron/non-alloy steel* (HS 720212); the second importing country in the world after USA (around 22 per cent), accounting for a share of around 11 per cent of commodity's total world imports.

iii) *Flat-rolled products of iron/non-alloy steel* (HS 720839); the second importing country in the world after Republic of Korea (around 11 per cent), accounting for a share of around 10 per cent of commodity's total world imports.

**Table 9.** Top 10 raw materials commodities imported by Italy in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM imported (%)	Share in country's imports of products (%)	Country's share in world's product import (%)
1	740311	Cathodes & sections of cathodes, of refined copper, unwrought	2,77	5,83	0,68	6,31
2	710812	Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)	2,66	5,60	0,66	1,00
3	270112	Bituminous coal, whether/not pulverised but not agglomerated	1,21	2,55	0,30	2,20



4	760110	Aluminium, not alloyed, unwrought	1,15	2,42	0,28	5,54
5	760120	Aluminium alloys, unwrought	1,13	2,37	0,28	5,12
6	711299	Waste and scrap of precious metal/of metal clad with precious metal; other waste & scrap containing precious metal/precious metal compounds, of a kind used principally for the recovery of precious metal, other than gold/platinum, n.e.s. of 71.12	1,09	2,30	0,27	15,22
7	710813	Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms	1,01	2,13	0,25	1,29
8	440710	Wood sawn/chipped length wise, sliced/peeled, whether/not planed, sanded/end-jointed, of a thickness >6mm, coniferous	0,81	1,71	0,20	3,43
9	720839	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, hot-rolled, not clad/plated/coated, in coils, not further worked than hot-rolled (excl. pickled), of a thickness of <3mm	0,81	1,71	0,20	10,10
10	720712	Semi-finished products of iron/non-alloy steel, containing by weight <0.25% of carbon, of rectangular (other than square) cross-section	0,77	1,63	0,19	10,91

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

The main NFNERM commodities exported by Italy in 2016 were *Gold, in unwrought forms* (HS 710812) and commodities of iron and steel such as *Flat-rolled products of iron/non-alloy steel* (HS 721049), *Screws and bolts* (HS 731815) and *Structures of iron/steel* (HS 730890).

Italy was the *main global exporter* of tubes, pipes and hollow profiles, namely i) *Tubes, pipes & hollow profiles* (HS 730640), with a market share of around 28 percent and ii) *Other tubes, pipes and hollow profiles* (HS 730661), accounting for around a quarter of commodity's global exports in 2016. Italy also held important shares in world's exports of other two NFNERM commodities, as follows:

i) *Tubes, pipes and hollow profiles* (HS 730630); the second exporting country after China (around 15.5 per cent of global exports), accounting for a share of around 15 per cent of commodity's total world exports.

ii) *Platinum, unwrought/in powder form* (HS 711011); the third exporting country after South Africa and United Kingdom (around 27 and 21 per cent respectively), accounting for a share of around 11 per cent of commodity's total world exports.

**Table 10.** Top 10 raw materials commodities exported by Italy in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM exported (%)	Share in country's exports of products (%)	Country's share in world's product export (%)
1	710812	Gold (incl. gold plated with platinum), in unwrought forms (excl. powder)	2,68	6,57	0,58	1,11
2	721049	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, othw. plated/coated with zinc (excl. electrolytically), other than corrugated	1,16	2,83	0,25	6,25
3	731815	Screws & bolts (excl. of 7318.11-7318.14), whether/not with their nuts/washers, of iron/steel	1,11	2,72	0,24	6,97
4	730890	Structures of iron/steel (excl. of 7308.10-7308.40); plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel	1,10	2,69	0,24	3,43
5	730661	Other tubes, pipes & hollow profiles (excl. of 7306.10-7306.40), welded, of non-circular cross-section, of square/rectangular cross-section	1,06	2,59	0,23	23,95
6	730640	Tubes, pipes & hollow profiles (excl. of 7306.10-7306.30), welded, of circular cross-section, of stainless steel	0,98	2,41	0,21	27,56
7	730630	Tubes, pipes & hollow profiles (excl. of 7306.10 & 7306.20), welded, of circular cross-section, of iron/non-alloy steel	0,86	2,11	0,19	15,19
8	711011	Platinum, unwrought/in powder form	0,78	1,90	0,17	10,94
9	721420	Bars & rods of iron/non-alloy steel (excl. of 72.13), containing indentations/ribs/ grooves/other deformations produced during the rolling process/twisted after rolling	0,72	1,77	0,16	9,04

10	760612	Plates, sheets & strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	0,70	1,71	0,15	3,24
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Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

## 2.4.5 United Kingdom

United Kingdom was the only top-five EU-28 country whose imports of NFNERM increased over the analysed period, by around 35 percent. As compared with 2011, country's exports of NFNERM declined by 19 per cent.

In 2016, United Kingdom was the *leading world importer* of three NFNERM product groups:

- i) semi-manufactured gold (HS 710813), accounting for around 74 per cent of total world's imports;
- ii) sawdust and wood waste and scrap (HS 440310), with a share of 39 percent;
- iii) semi-manufactured platinum (HS 711019), with a share of 26 percent.

The country was also a major global importer of unwrought silver (HS 710691), with a world share of 17 percent (the second importing country after USA - 31 per cent), and of waste and scrap of precious metals (HS 711299), being the fourth world's importer, with an import share of 10 per cent.

**Table 11.** Top 10 raw materials commodities imported by United Kingdom in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM imported (%)	Share in country's imports of products (%)	Country's share in world's product import (%)
1	710813	Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms	57,86	59,26	9,10	73,62
2	710691	Silver (incl. silver plated with gold/platinum), unwrought	2,19	2,25	0,35	17,18
3	440710	Wood sawn/chipped length wise, sliced/peeled, whether/not planed, sanded/end-jointed, of a thickness >6mm, coniferous	1,52	1,56	0,24	6,42
4	760612	Plates, sheets & strip, rectangular (incl. square), of a thickness >0.2mm, of aluminium alloys	1,44	1,48	0,23	7,70
5	440130	Sawdust & wood waste & scrap, whether/not agglomerated in logs/briquettes/pellets/similar forms	1,24	1,27	0,20	38,93
6	710239	Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted	1,08	1,11	0,17	1,48
7	721049	Flat-rolled products of iron/non-alloy steel, of a width of 600mm/more, othw. plated/coated with zinc (excl. electrolytically), other than corrugated	0,80	0,82	0,13	4,72
8	711011	Platinum, unwrought/in powder form	0,79	0,81	0,12	8,03
9	711299	Waste & scrap of precious metal/of metal clad with precious metal; other waste & scrap containing precious metal/precious metal compounds, of a kind used principally for the recovery of precious metal, other than gold/platinum, n.e.s. of 71.12	0,73	0,75	0,12	10,23
10	711019	Platinum, in semi-manufactured forms	0,72	0,74	0,11	25,95

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

As shown in Table 12, the top four NFNERM product groups exported by the United Kingdom in 2016 were precious metal commodities, namely semi-manufactured gold (HS 710813), unwrought platinum (HS 711011), unwrought palladium (HS 711021) and ferrous waste and scrap (HS 720449).

United Kingdom was the world's leading exporter of semi-manufactures gold (HS 710813; global share of 30 percent) and the second exporting country of i) unsorted diamonds (HS 710210; global share of 35 per cent), ii) unwrought platinum (HS 711011; global share of 22 per cent), iii) unwrought palladium (HS 711021; global share of 21 per cent), iv) semi-manufactured platinum (HS 711019; global share of around 15 per cent).

**Table 12.** Top 10 raw materials commodities exported by United Kingdom in 2016

Rank	Product HS code	Product description	Value (billion USD)	Share in country's total NFNERM exported (%)	Share in country's exports of products (%)	Country's share in world's product export (%)
1	710813	Gold (incl. gold plated with platinum), non-monetary, in semi-manufactured forms	15,74	37,54	3,78	29,77
2	711011	Platinum, unwrought/in powder form	1,56	3,73	0,38	22,00
3	711021	Palladium, unwrought/in powder form	1,39	3,30	0,33	21,18
4	720449	Ferrous waste and scrap (excl. of 7204.10-7204.41)	1,33	3,17	0,32	9,57
5	740400	Copper waste and scrap	0,93	2,21	0,22	7,30
6	710239	Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted	0,84	2,01	0,20	0,99
7	711019	Platinum, in semi-manufactured forms	0,69	1,64	0,17	14,23
8	710691	Silver (incl. silver plated with gold/platinum), unwrought	0,68	1,63	0,16	5,05
9	710210	Diamonds, unsorted	0,65	1,56	0,16	34,61
10	760200	Aluminium waste and scrap	0,58	1,39	0,14	6,48

Source: Our calculations based on DESA/UNSD, United Nations Comtrade database

### Summary of the section

In this section, the top five EU-28 countries, in terms of both total import export value of NFNERM over the period 2011-2016, were analysed, i.e., Belgium, France, Germany, Italy and United Kingdom.

Over the period 2011-2016, *the imports and exports of NFNERM declined significantly in all these five countries (excepting United Kingdom's imports).*

The main NFNERM product group imported by **Belgium** in 2016 was *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231). Several NFNERM products groups imported by Belgium accounted for significant world import shares in 2016: i) *Diamonds, unsorted* (HS 710210); ii) *Waste and scrap of stainless steel* (HS 720421); iii) *Unrefined copper; copper anodes for electrolytic refining* (HS 740200) and iv) *Lead ores & concentrates* (HS 260700).

In 2016 Belgium was a significant exporter of *Diamonds, non-industrial, unworked/simplely sawn/cleaved/bruted* (HS 710231) and *Diamonds, non-industrial other than unworked/simplely sawn/cleaved/bruted* (HS 710239). Belgium held also high shares of world's exports of several copper and steel commodities in 2016: i) *Flat-rolled products of stainless steel* (HS 721912); ii) *Flat-rolled products of other alloy steel* (722592); iii) *Copper wire, of refined copper* (HS 740811); and iv) *Flat-rolled products of iron/non-alloy steel* (HS 721049).

The top three NFNERM product groups imported by **France** in 2016 were, in this order: i) *Structures of iron/steel; plates, rods, angles, shapes, sections, tubes & the like, prepared for use in structures, of iron/steel* (HS 730890); ii) *Plates, sheets & strip, rectangular of aluminium alloys* (HS 760612); and iii) *Cathodes and sections of cathodes, of refined copper, unwrought* (740311). France held significant shares of world's total imports of i) *Titanium & articles thereof* (HS 810890) and ii) *Bars, rods and profiles of aluminium alloys* (HS 760429).

*Plates, sheets & strip of aluminium alloys* (HS 760612), *Gold in unwrought forms* (HS 710812) and *Copper waste & scrap* (HS 740400) were the top three NFNERM commodities exported by France in 2016. France held important world market shares of two steel commodities, namely i) *Other flat-rolled products of other alloy steel* (HS 722599) and ii) *Other flat-rolled products of other alloy steel* (HS 722530).

The top three NFNERM commodities imported by **Germany** in 2016 are: i) *Gold in unwrought forms* (710812), *Aluminium alloys, unwrought* (HS 760120) and *Cathodes &*

*sections of cathodes, of refined copper, unwrought* (HS 740311). In the same year, Germany was an important global importer of several NFNERM commodities, as follows: i) the main importing country of *Platinum, unwrought/in powder form* (711011); ii) the first importing country of *Plates, sheets and strip of aluminium alloys* (HS 760612); iii) the second world importer of *Copper waste and scrap* (HS 740400); iv) the second world importer of *Screws and bolts of iron/steel* (HS 731815); ii) the second world importer of *Aluminium alloys, unwrought* (HS 760120).

The top three NFNERM commodities exported by Germany in 2016 are: i) *Gold in unwrought forms* (HS 710812), ii) *Plates, sheets and strip of aluminium alloys* (HS 760612) and iii) *Structures of iron/steel; plates, rods, angles, shapes, sections, tubes, etc., prepared for use in structures, of iron/steel* (HS 730890). In the same year, Germany was the first exporting country of: i) *Waste and scrap of stainless steel* (HS 720421); ii) *Plates, sheets and strip of aluminium alloys* (HS 760612); iii) *Screws and bolts of iron/steel* (HS 731815); iv) *Copper wire, of refined copper* (HS 740811). Germany also held significant shares on global market of other several NFNERM, being the second exporting country of the following commodities: i) *Aluminium structures and parts* (HS 761090); ii) *Aluminium waste and scrap* (HS 760200); iii) *Copper waste and scrap* (HS 740400).

The main NFNERM imported by **Italy** in 2016 were *Cathodes and sections of cathodes, of refined copper, unwrought* (HS 740311), gold in unwrought forms (HS 710812) and unwrought aluminium, both alloyed and not alloyed (HS 760110 and HS 710620). In the same year, Italy was an important global importer of three NFNERM commodities: i) *Waste and scrap of precious metal/of metal clad with precious metal* (HS 711299); ii) *Semi-finished products of iron/non-alloy steel* (HS 720212); iii) *Flat-rolled products of iron/non-alloy steel* (HS 720839).

The main NFNERM commodities exported by Italy in 2016 were *Gold, in unwrought forms* (HS 710812) and commodities of iron and steel such as *Flat-rolled products of iron/non-alloy steel* (HS 721049), *Screws & bolts* (HS 731815) and *Structures of iron/steel* (HS 730890). Italy was the main global exporter of tubes, pipes and hollow profiles, namely i) *Tubes, pipes & hollow profiles* (HS 730640); ii) *Other tubes, pipes and hollow profiles* (HS 730661). Italy also held important shares in exports of other two NFNERM commodities, as follows: i) *Tubes, pipes and hollow profiles* (HS 730630); ii) *Platinum, unwrought/in powder form* (HS 711011).

In 2016, **United Kingdom** was the leading world importer of three NFNERM product groups: i) semi-manufactured gold (HS 710813); ii) sawdust and wood waste and scrap (HS 440310); iii) semi-manufactured platinum (HS 711019). The country was also an major global importer of unwrought silver (HS 710691) and of waste and scrap of precious metals (HS 711299).

The first four NFNERM product groups exported by United Kingdom in 2016 were semi-manufactured gold (HS 710813), unwrought platinum (HS 711011), unwrought palladium (HS 711021) and ferrous waste and scrap (HS 720449). It was the world's leading exporter of semi-manufactures gold (HS 710813) and the second exporting country of i) unsorted diamonds (HS 710210), ii) unwrought platinum (HS 711011), iii) unwrought palladium (HS 711021) and iv) semi-manufactured platinum (HS 711019).

## 2.5. Detailed EU-28 trade flows of commodities containing borates

Raw materials are incorporated in a multitude of commodities, at different production stages such as ores and concentrates, intermediates, final products and waste and scraps.

In a value-chain perspective, this section details the EU-28 trade flows of commodities incorporating one critical raw material for the EU, i.e., borates<sup>15</sup>. The rationale for its selection was the better code allocation and thus broader value-chain coverage of material-containing commodities in trade statistics.

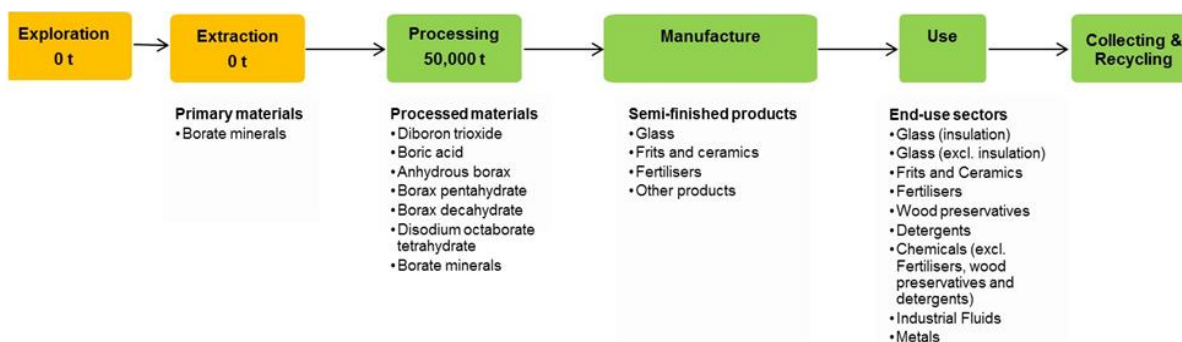
Table 13 below lists the HS 6-digit and the corresponding CN 2016 8-digit codes for borates-containing commodities, as identified in Harmonized System 2007 and Combined Nomenclature 2016.

**Table 13.** Trade codes for boron-containing commodities in Harmonized System 2007 and Combined Nomenclature 2016

HS 2007 codes	Product description	Production stage	Corresponding CN 2016 codes	Product description
<b>BORON</b>				
252810	Natural sodium borates & concentrates thereof (whether/not calcined)	raw material	252800 00	Natural borates and concentrates thereof (whether or not calcined), but not including borates separated from natural brine; natural boric acid containing not more than 85 % of H3BO3 calculated on the dry weight
252890	Natural borates & concentrates thereof (excl. sodium borates), whether/not calcined but not incl. borates separated from natural brine; natural boric acid containing not >85% of H3BO3 calc. on the dry weight	raw material		
280450	Boron; tellurium	intermediate	- 280450 10 - 280450 90	- Boron - Tellurium
281000	Oxides of boron; boric acids	intermediate	- 281000 10 - 281000 90	- Diboron trioxide - Other
284011	Anhydrous disodium tetraborate (refined borax)	intermediate	284011 00	Disodium tetraborate (refined borax): Anhydrous
284019	Disodium tetraborate, not anhydrous	intermediate	- 284019 10 - 284019 90	- Disodium tetraborate pentahydrate - Other
284020	Other borates, nes	intermediate	- 284020 10 - 284020 90	- Other borates: borates of sodium, anhydrous - Other borates: others
284030	Peroxyborates	intermediate	284030 00	Peroxyborates (perborates)

As shown in Figure 33, the trade codes listed above only partly covers the *Extraction* and *Processing* stages of borates' value chain. In line with the composition of NFNERM database, in this study we limit our analysis to these two upstream value-chain stages.

**Figure 35:** A value-chain view of products containing borates



Source: Partly reproduced partly from European Commission (2017)

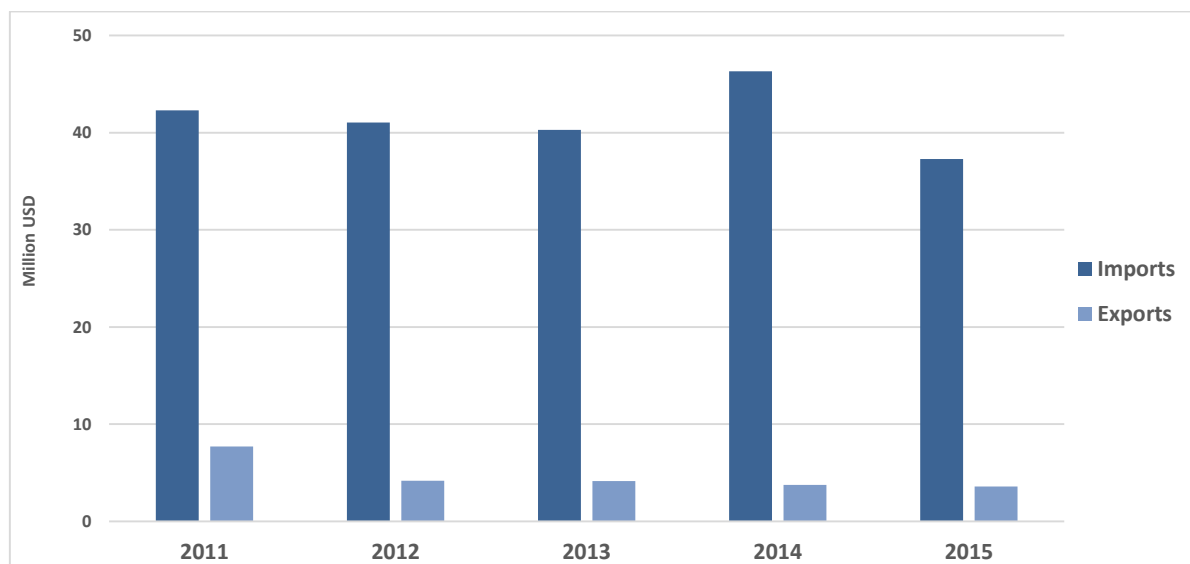
Based on UN Comtrade and Eurostat data (for *Boron*, CN 28045010), we present further the EU-28 trade flows of commodities containing borates, as listed in Table 13, and EU-28's trade partners in the period 2011-2015.

<sup>15</sup> According to the 2017 list of Critical Raw Materials for the EU published in September 2017 - COM(2017) 490, <https://ec.europa.eu/transparency/regdoc/rep/1/2017/EN/COM-2017-490-F1-EN-MAIN-PART-1.PDF>

I. Since UN Comtrade data on the EU-28's monetary and quantitative trade flows of *Natural sodium borates and concentrates thereof* (HS 252810) are only available for 2011, we cannot analyse their evolution over the reference period 2011-2015.

II. As shown in Figure 36, the total value of EU-28 imports of *Natural borates and concentrates* (HS 252890) decreased constantly over the period 2011-2015 (with an exception in 2014); the total value of EU-28 exports of the commodity declined significantly in 2015 as compared with 2011, by more than 50 per cent.

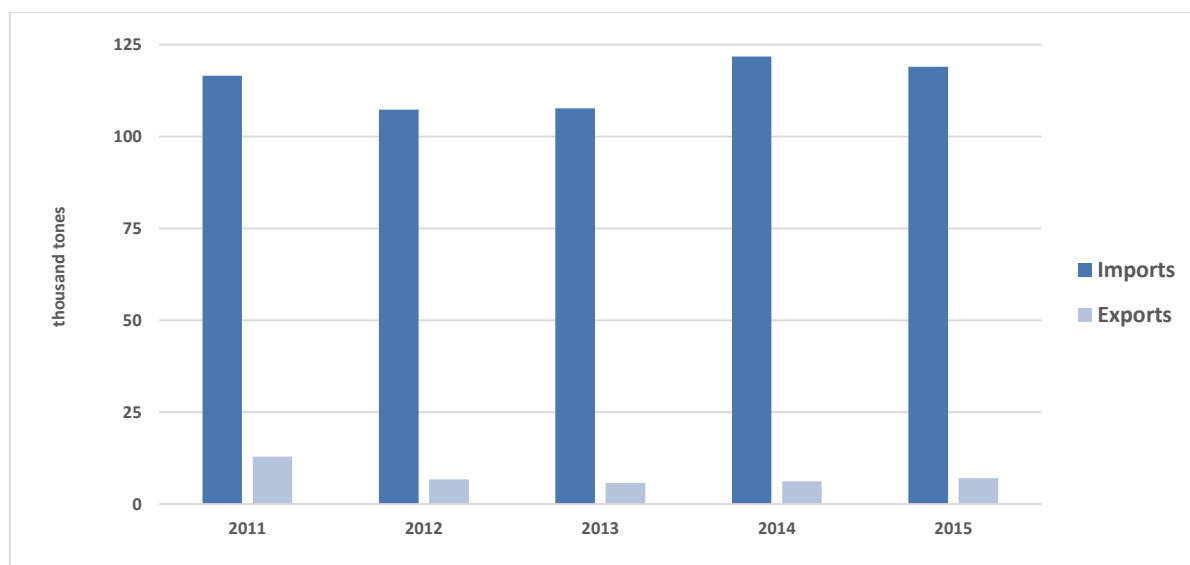
**Figure 36.** Total value of EU-28 imports and exports of *Natural borates and concentrates* (HS 252890; mil. USD)



Source: DESA/UNSD, United Nations Comtrade database

As compared with 2011, a significant decline of EU-28's quantity of imported *Natural borates and concentrates* took place in 2012 and 2013 (Figure 37), but reaching in 2015 a similar level similar. After a sharp reduction over the period 2011-2013, the amount of EU-28 exports of *Natural borates and concentrates* increased by around 25 per cent in 2015 as compared with 2013.

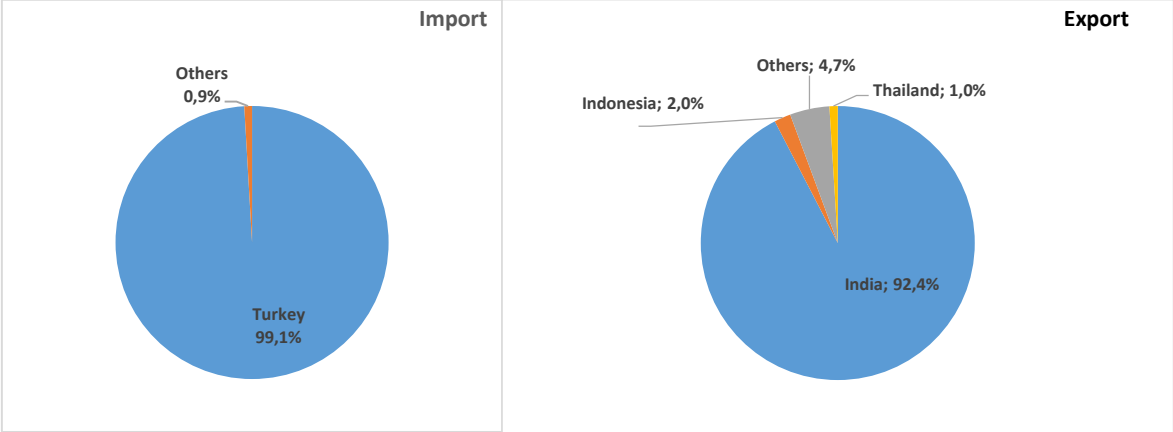
**Figure 37.** Total quantity of EU-28 imports and exports of *Natural borates and concentrates* (HS 252890; net weight)



Source: DESA/UNSD, United Nations Comtrade database

In 2015, Turkey was the source of almost all EU-28's imports of *Natural borates and concentrates*, whereas India was the predominant destination of EU-28 exports (92.4 per cent).

**Figure 38.** EU-28's top import sources and export destinations of *Natural borates and concentrates* (HS 252890; share of total net weight; 2015)

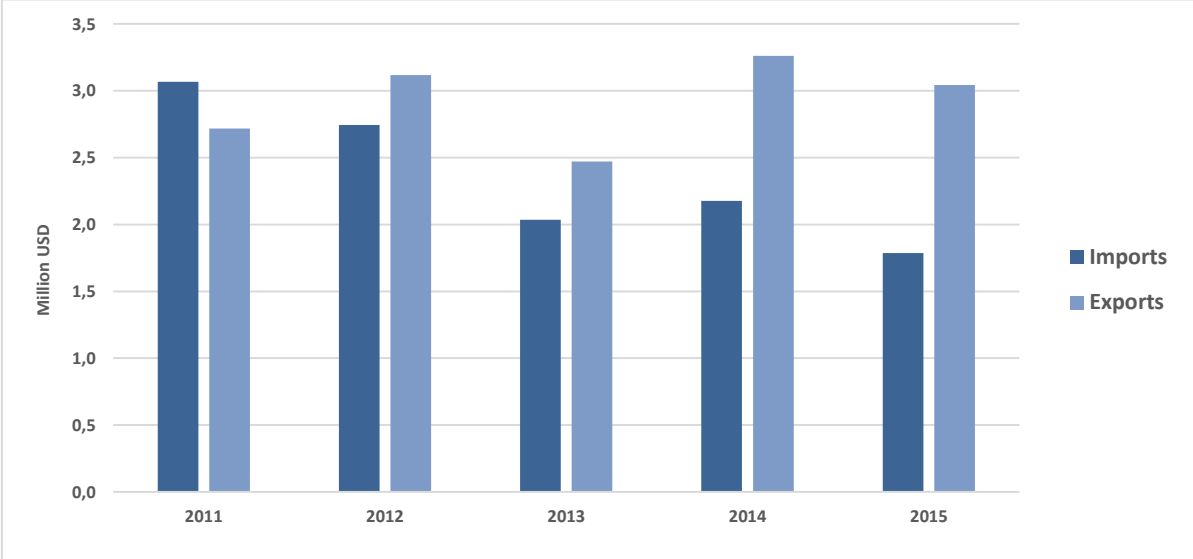


Source: DESA/UNSD, United Nations Comtrade database

III. As Combined Nomenclature provides more disaggregated trade codes<sup>16</sup> for some commodities, in this study we have used Eurostat trade data for CN 28045010, *Boron*, instead of *Boron; tellurium* (HS 280450), as provided by UN Comtrade. Data are for extra-EU28 imports and exports.

The value of EU-28 imports of *Boron* decreased by around 42 per cent in 2015 as compared with 2011, whereas the value of and exports increased by 11 per cent.

**Figure 39.** Total value of EU-28 imports and exports of *Boron* (CN 28045010; mil. USD)



Source: Eurostat, European statistics on international trade in goods

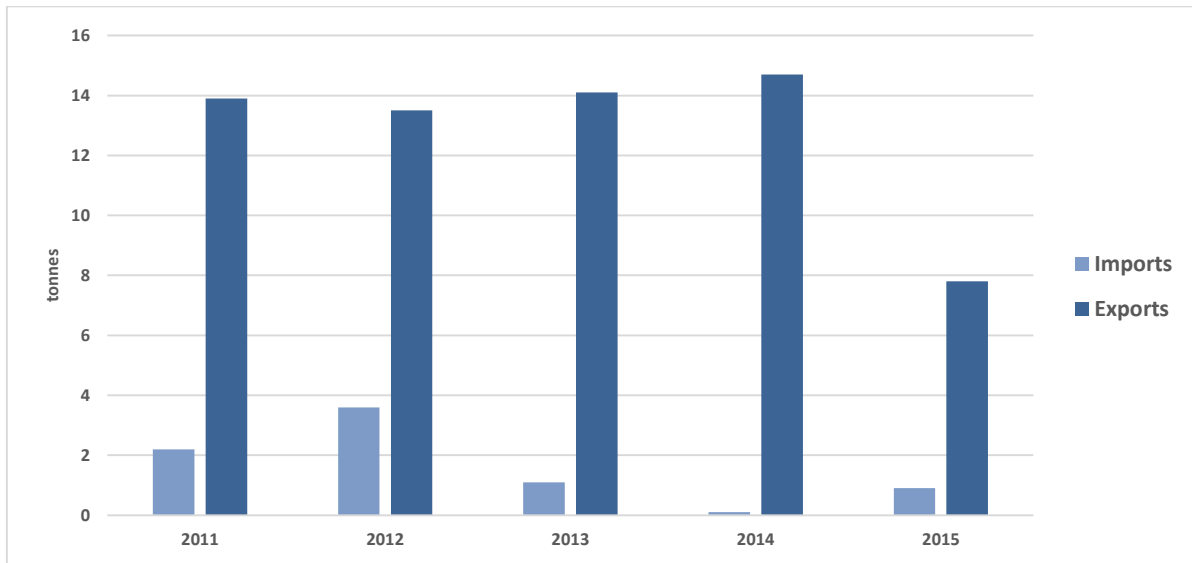
Note: The original trade values expressed in Euro were converted in to USD using the Euro-USD annual reference exchange rates published by European Central Bank<sup>17</sup>.

EU-28 total amount of imported *Boron* declined significantly in 2015, as compared with 2011, by 59 per cent. The quantity exported increased slightly up to 2014, followed by a sharp decrease of 47 per cent in 2015, as compared with 2014.

<sup>16</sup> Eurostat, European statistics on international trade in goods, <http://ec.europa.eu/eurostat/web/international-trade-in-goods/data/database>

<sup>17</sup> [https://www.ecb.europa.eu/stats/policy\\_and\\_exchange\\_rates/euro\\_reference\\_exchange\\_rates/html/eurofxref-graph-usd.en.html](https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/eurofxref-graph-usd.en.html)

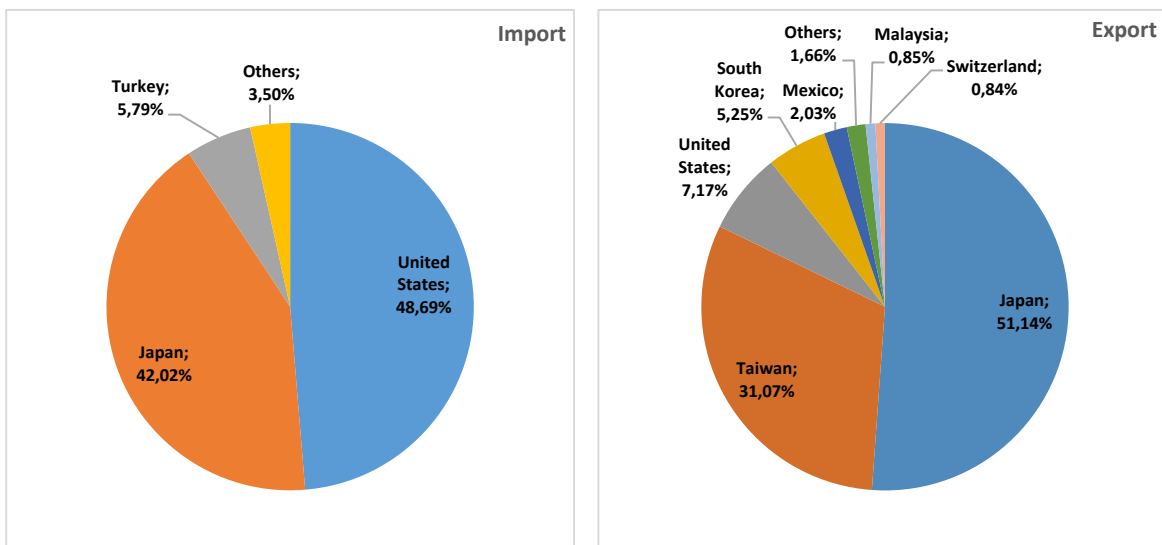
**Figure 40.** Total quantity of EU-28 imports and exports of *Boron* (CN 28045010; weight)



Source: Eurostat, European statistics on international trade in goods

In 2015, United States and Japan were the main sources of imported *Boron*, together supplying around 90 per cent of UE-28's total imports of commodity. Together, Japan and Taiwan received 82 per cent of total EU-28 exports of commodity.

**Figure 41.** EU-28's top import sources and export destinations of *Boron* (HS 28045010; % of total import/export value; 2015)

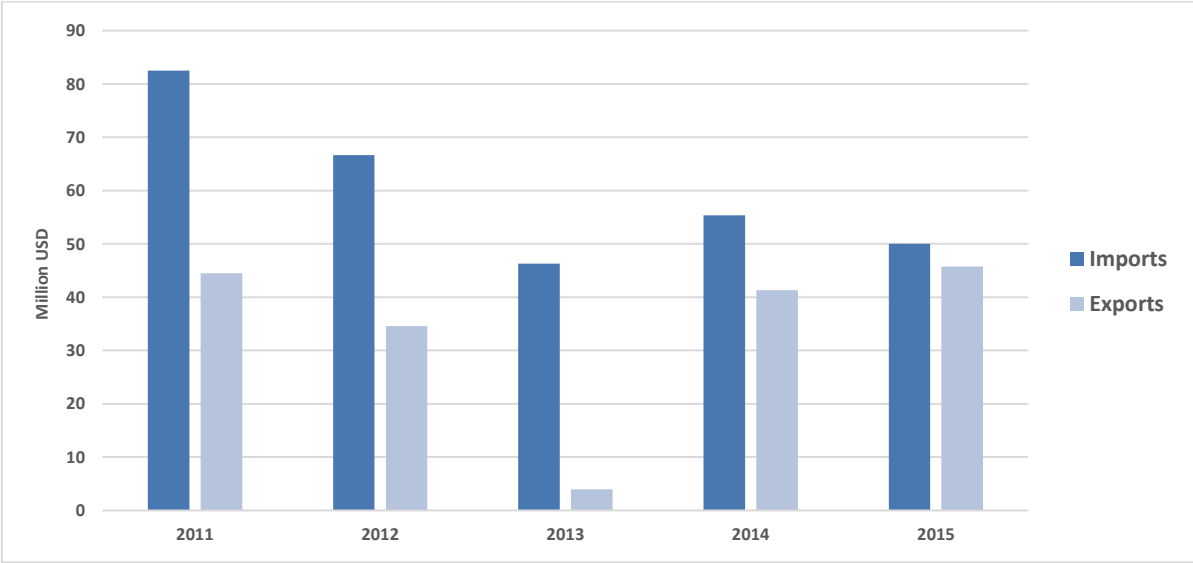


Source: Eurostat, European statistics on international trade in goods

IV. Total value of EU-28 imports of *Oxides of boron; boric acids* (HS 281000) declined significantly, by around 40 per cent in 2015 as compared with 2011. After a constant decline of EU-28 exports of *Oxides of boron; boric acids* (HS 281000) between 2011 and 2013, they rose again, reaching in 2015 a total value similar to that in 2011. In 2015, EU-28 reached a share of 13,7 per cent of commodity's world exports.



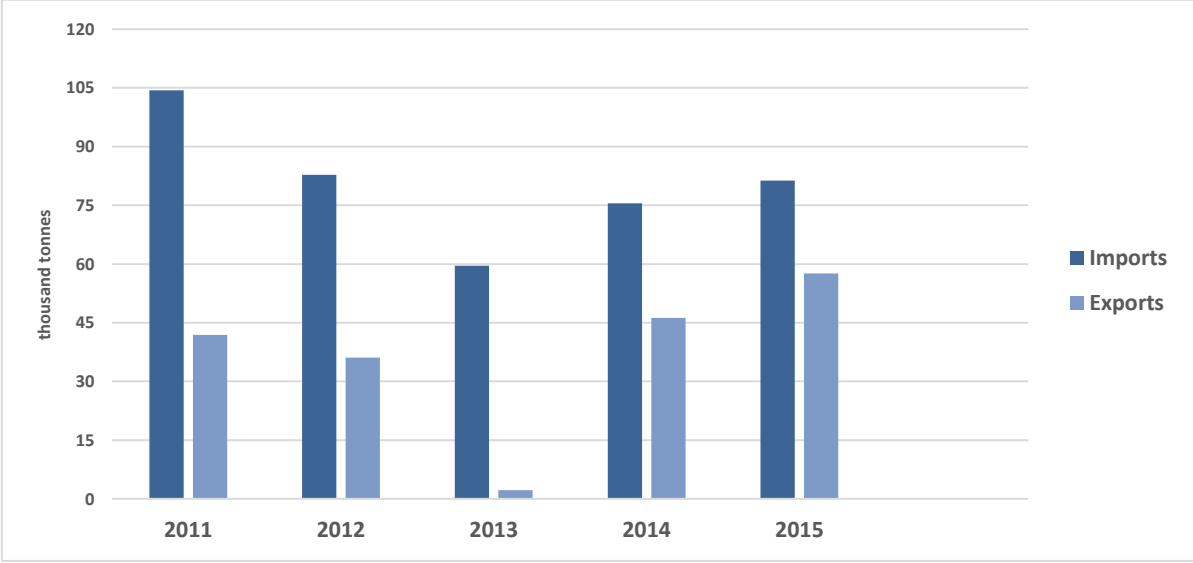
**Figure 42.** Total value of EU-28 imports and exports of *Oxides of boron; boric acids* (HS 281000; mil. USD)



Source: DESA/UNSD, United Nations Comtrade database

In terms of quantity, EU-28’s imports and export of commodity had a similar trend: a substantial decline between 2011 and 2013, followed by a significant rise up to 2015.

**Figure 43.** Total quantity of EU-28 imports and exports of *Oxides of boron; boric acids* (HS 281000) over the period 2011-2015 (net weight)

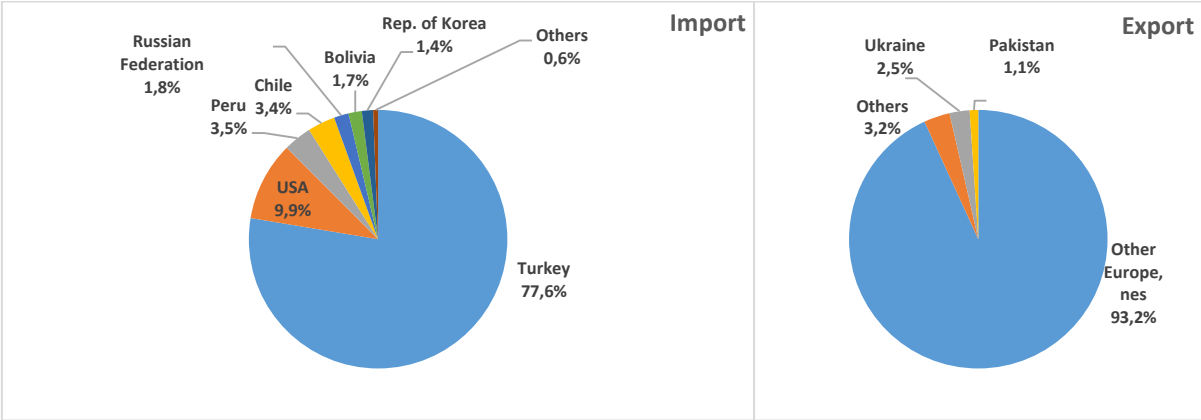


Source: DESA/UNSD, United Nations Comtrade database

Turkey and USA were the main sources of EU-28’s imports of *Oxides of boron; boric acids* in 2015, accounting for of 77.6 per cent and 9.9 per cent respectively. A group of European countries<sup>18</sup> was the main destination of commodity’s exports (93.2 per cent).

<sup>18</sup> "Other Europe, n.e.s." is a not-specified area in UN Comtrade statistics, referring to a group of European partner countries for which the reporting country does not send the details of the trading partner - <https://unstats.un.org/unsd/tradekb/Knowledgebase/50042/Areas-not-elsewhere-specified?Keywords=other+europe>

**Figure 44.** EU-28's top import sources and export destinations of *Oxides of boron; boric acids* (HS 281000; share of total net weight; 2015)

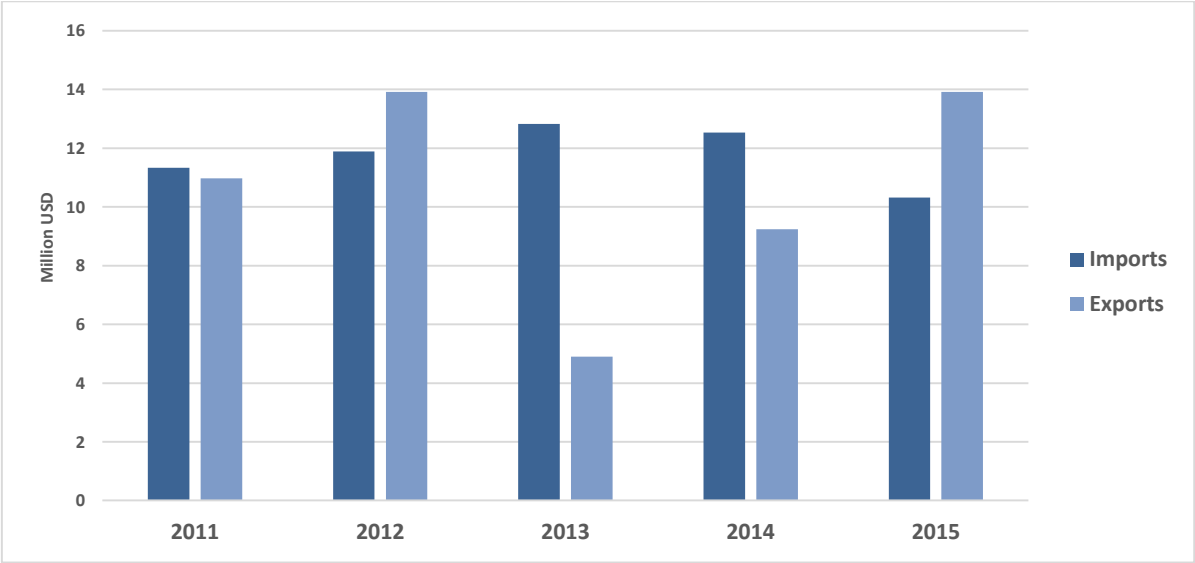


Source: DESA/UNSD, United Nations Comtrade database

V. Value of EU-28 imports of *Anhydrous disodium tetraborate (refined borax)* (HS 284011) rose between 2011 and 2013 and then declined by around 20 percent in 2015 as compared with 2013.

After a previous decline, the value of EU-28 exports of commodity increased almost three times in 2015 as compared with 2013. In 2015, EU-28 held a significant share of commodity's world exports of 26 per cent.

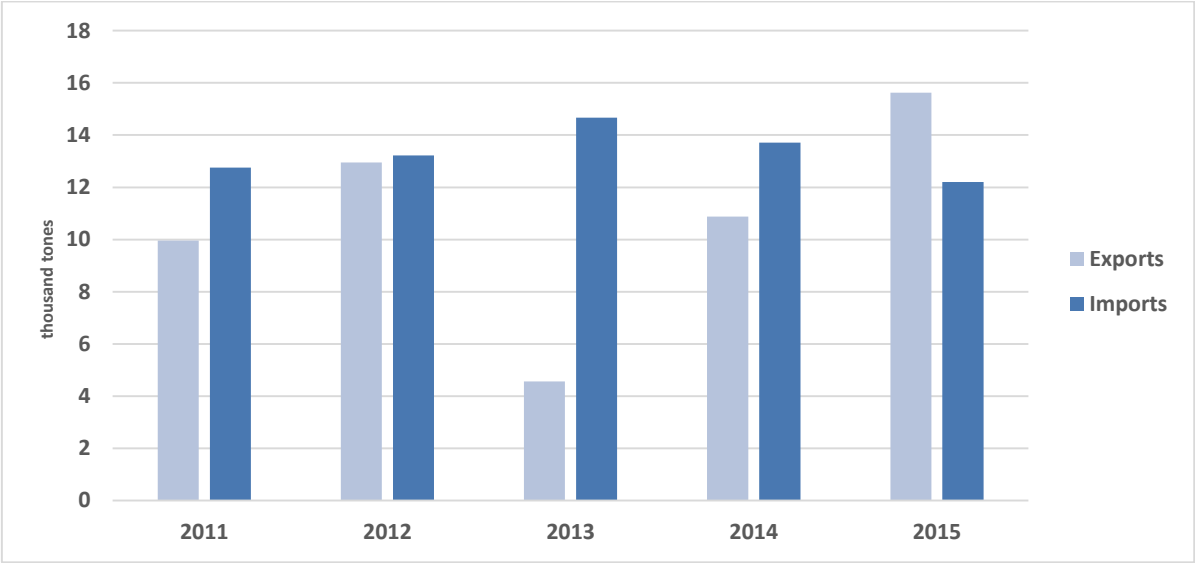
**Figure 45.** Total value of EU-28 imports and exports of EU-28 imports and exports of *Anhydrous disodium tetraborate (refined borax)* (HS 284011; million USD)



Source: DESA/UNSD, United Nations Comtrade database

The evolution of the amount of imports of *Anhydrous disodium tetraborate (refined borax)* followed the same trend as that of import value.

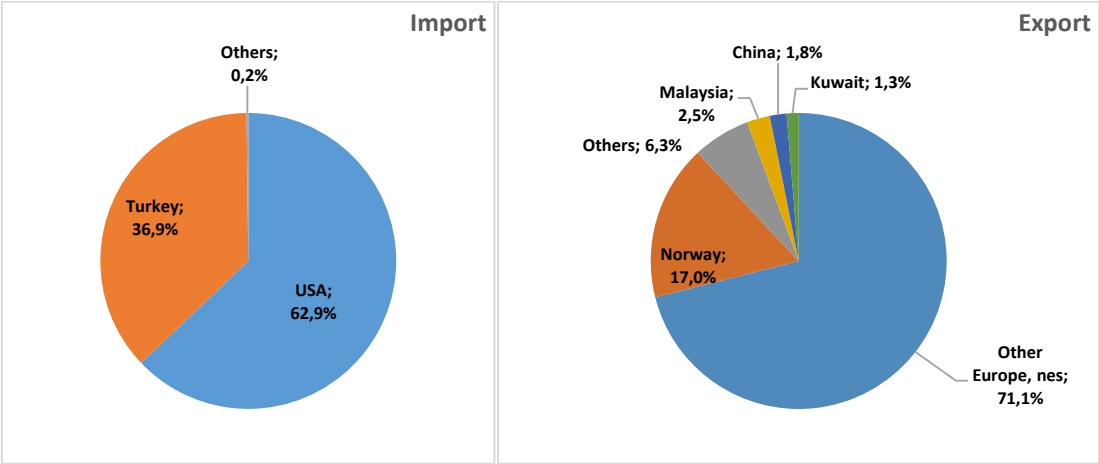
**Figure 46.** Total quantity of EU-28 imports and exports of *Disodium tetraborate (refined borax), anhydrous* (HS 284011; net weight)



Source: DESA/UNSD, United Nations Comtrade database

USA and Turkey provided almost all EU-28’s commodity imports, while a group of unspecified European countries and Norway were its main export destinations.

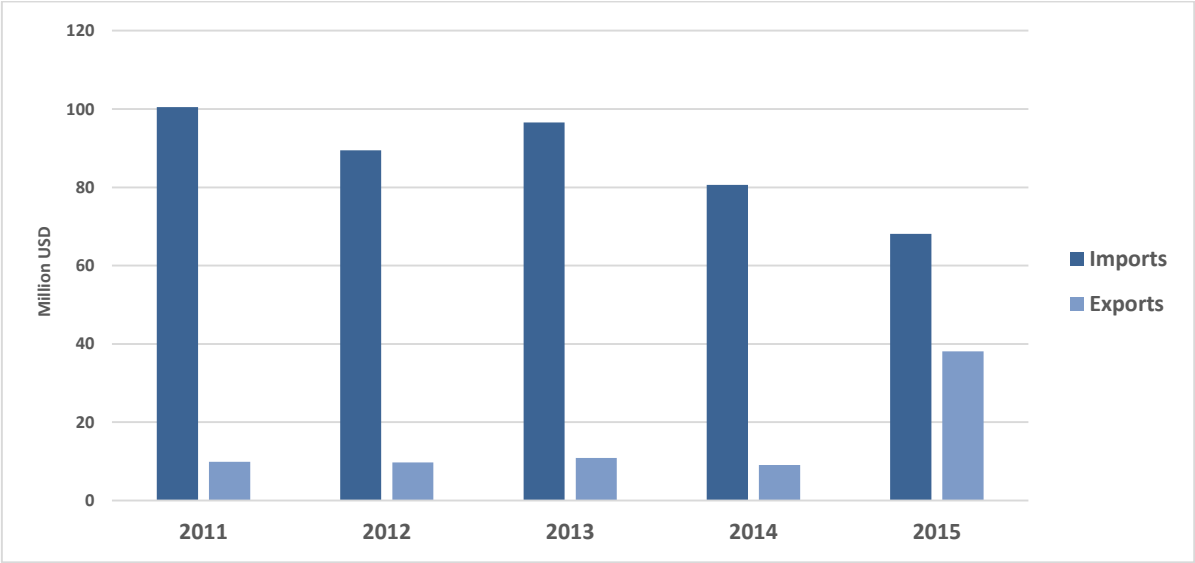
**Figure 47.** EU-28’s top import sources and export destinations of *Disodium tetraborate (refined borax), anhydrous* (HS 284011; share of total net weight; 2015)



Source: DESA/UNSD, United Nations Comtrade database

VI. The value of EU-28’s imports of *Disodium tetraborate (refined borax), other than anhydrous* (HS 284019) decreased by 32 percent in 2015 as compared with 2011. EU-28’s exports in terms of value increased almost four times in the same period. As a result, in 2015 EU-28 reached a share of 11.7 per cent out of commodity’s world export.

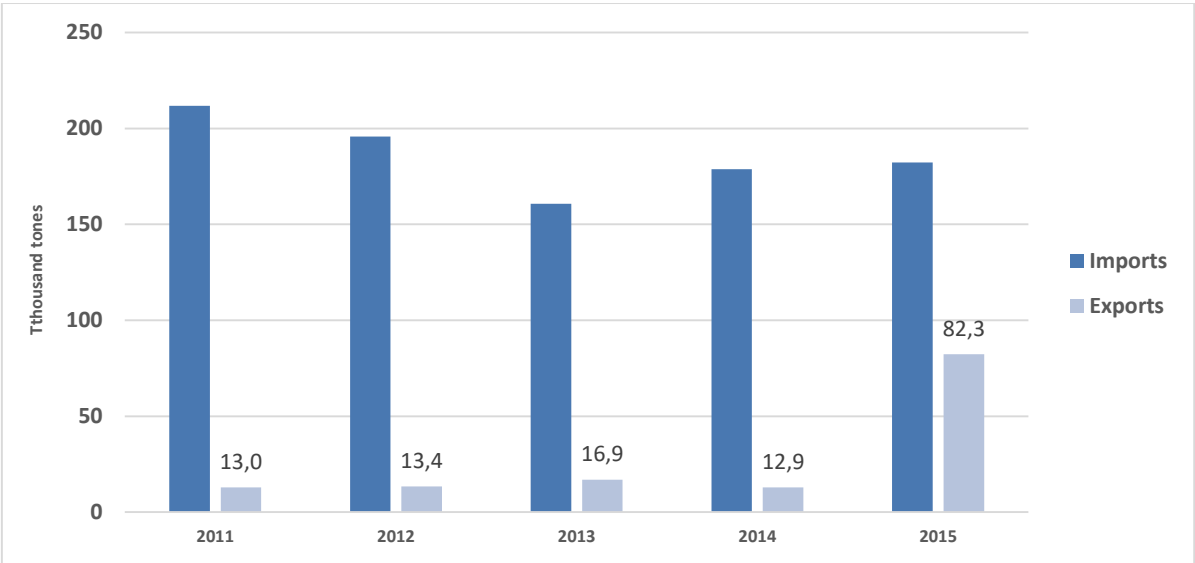
**Figure 48.** Total value of EU-28 imports and exports of *Disodium tetraborate (refined borax), other than anhydrous* (HS 284019; million USD)



Source: DESA/UNSD, United Nations Comtrade database

As compared with 2011, the amount of imported *Disodium tetraborate (refined borax), other than anhydrous* declined in 2015 by 14 per cent and the amount of exported commodity increased around six times.

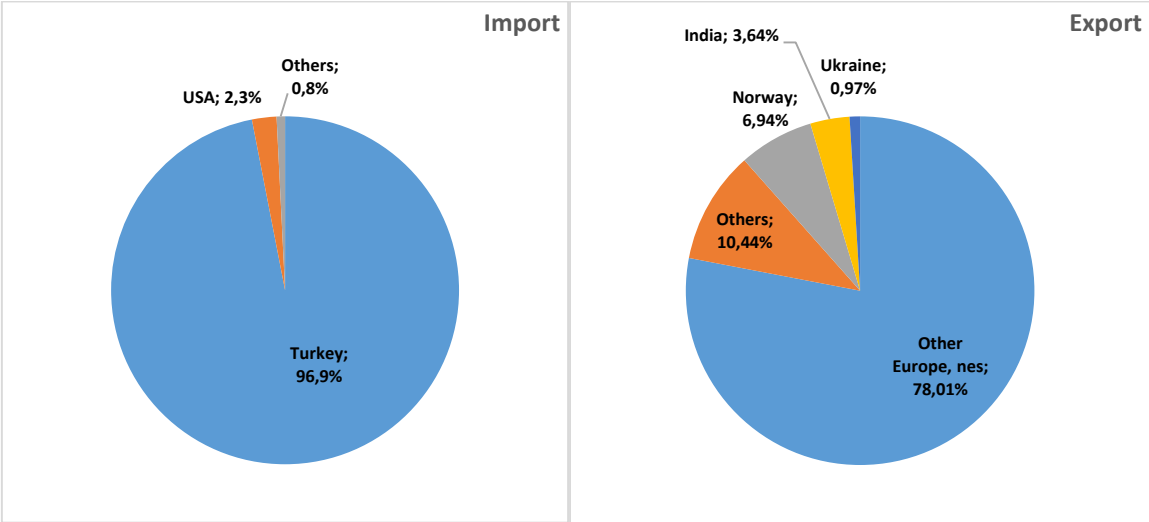
**Figure 49.** Total quantity of EU-28 imports and exports of *Disodium tetraborate (refined borax), other than anhydrous* (HS 284019; weight)



Source: DESA/UNSD, United Nations Comtrade database

Turkey was the main commodity' supplier to the EU-28, while unspecified European countries were its main export destinations.

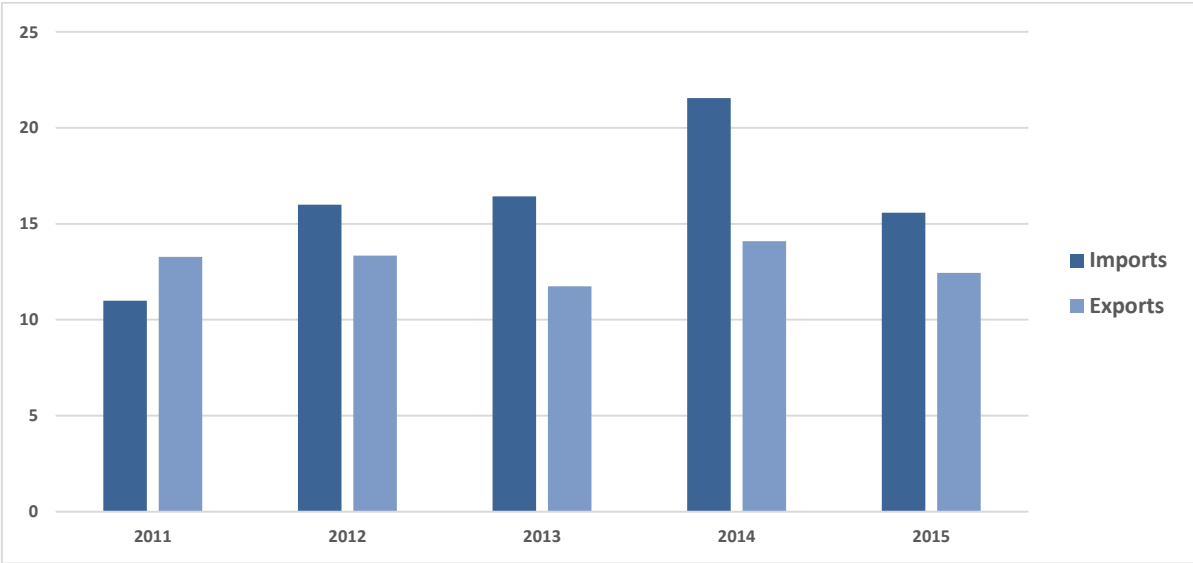
**Figure 50.** EU-28’s top import sources and export destinations of *Disodium tetraborate (refined borax), other than anhydrous (HS 284019; % of total net weight; 2015)*



Source: DESA/UNSD, United Nations Comtrade database

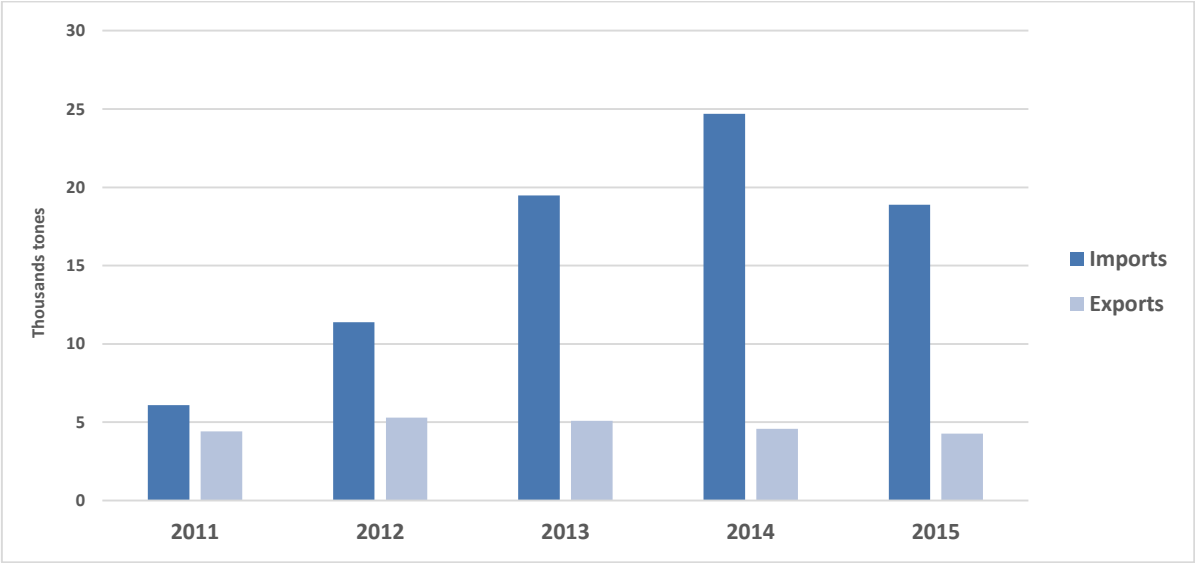
VII. Total value of EU-28 imports of *Borates other than disodium tetraborate (refined borax) (HS 284020)* increased by 42 per cent in 2015 as compared with 2011, after a peak value in 2014. Exports decreased slightly in 2015 by 6 per cent, as compared with 2011. The commodity’s share of world exports held by the EU-28 reached 13.6 per cent in 2015.

**Figure 51.** Total value of EU-28 imports and exports of *Borates other than disodium tetraborate (refined borax) (HS 284020; million USD)*



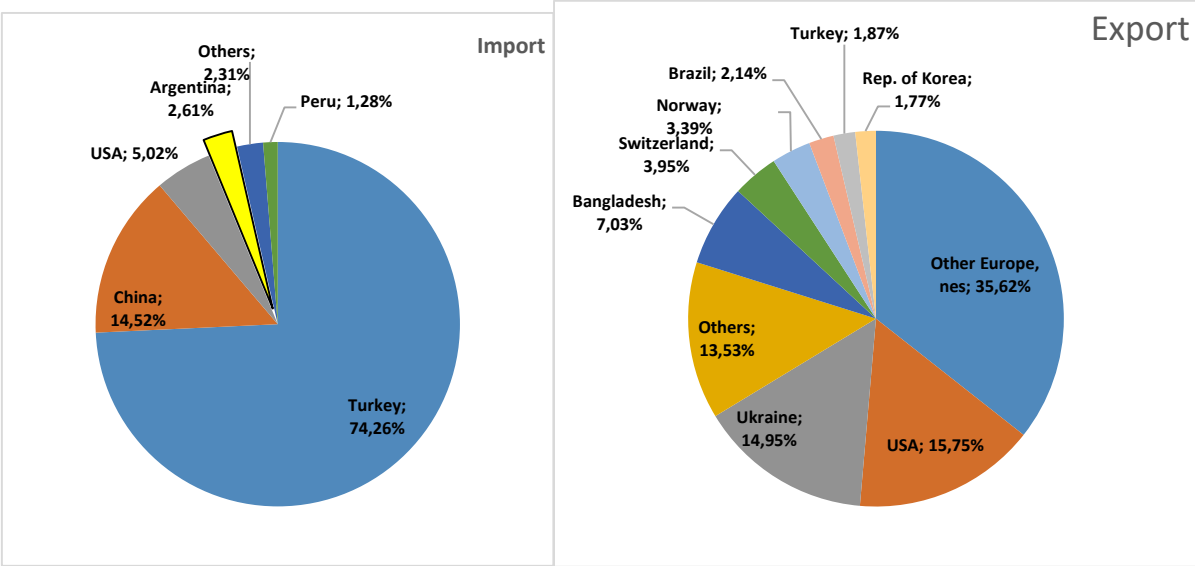
The amount of commodity’s imports increased more than three times in 2015 as compared with 2011, while the quantity of commodity exported decreased slightly by 3 per cent.

**Figure 52.** Total quantity of EU-28 imports and exports of *Borates other than disodium tetraborate (refined borax) (HS 284020; weight)*



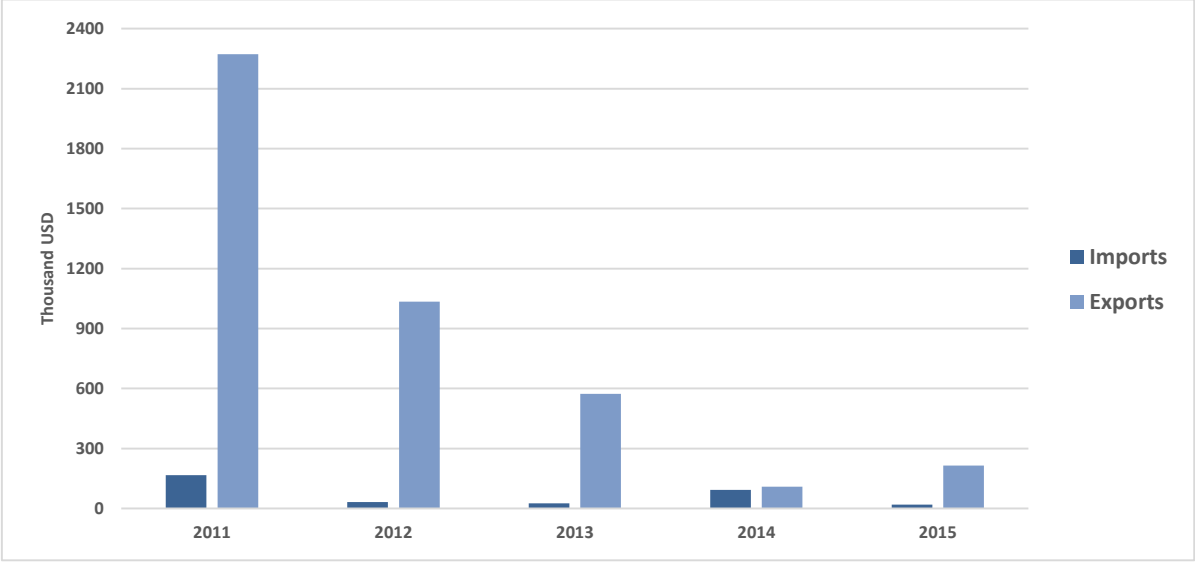
Turkey was again the main supplier, while Other Europe n.e.s, USA and Ukraine were the main destinations commodity's exports of the EU-28.

**Figure 53.** EU-28's top import sources and export destinations of *Borates other than disodium tetraborate (refined borax) (HS 284020)*



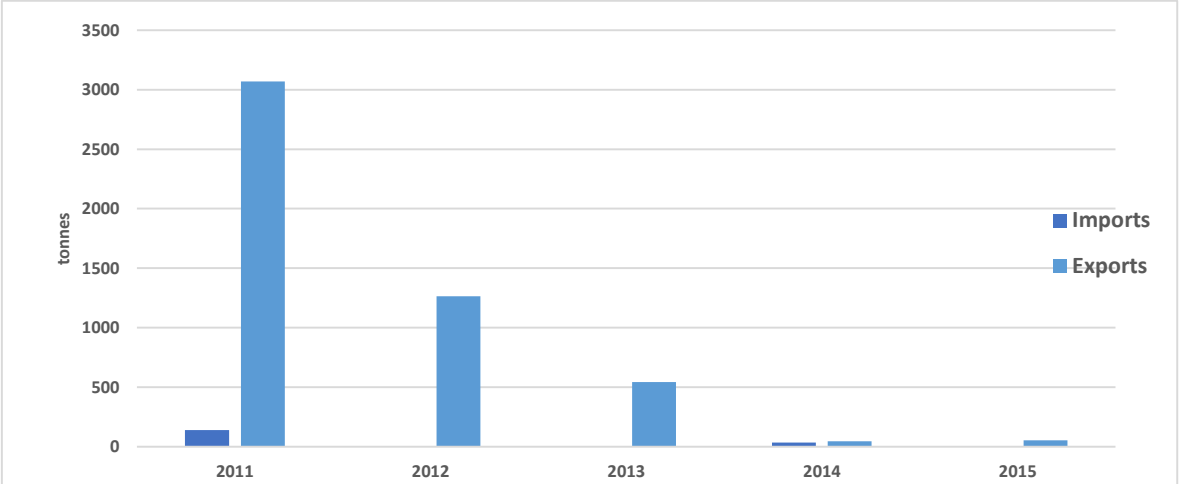
VIII. In 2015, value of EU-28 imports of *Peroxoborates (perborates) (HS 284030)* decreased substantially, around nine times less than in 2011. The value of commodity's exports also decreased drastically, from around 2.3 million USD in 2011 to 0.2 million USD in 2015.

**Figure 54.** Total value of EU-28 imports and exports of *Peroxoborates (perborates)* (HS 284030); million USD)



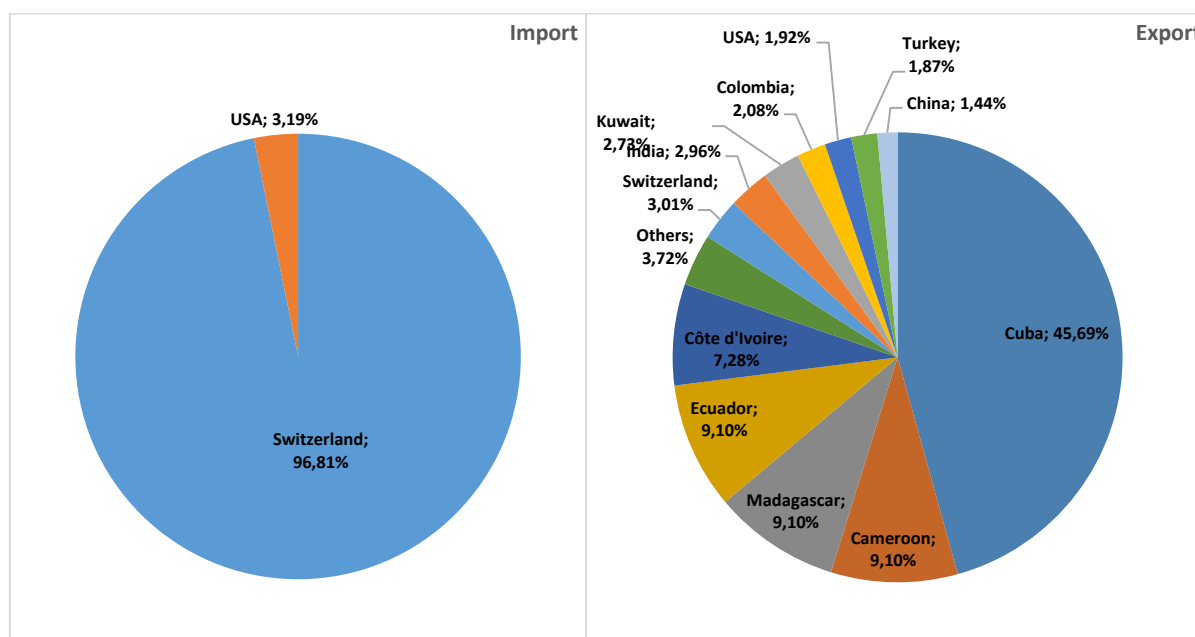
The amount of commodity's imports and exports had the same abrupt downtrend in the period 2011-2015 as their value.

**Figure 55.** Total quantity of EU-28 imports and exports of *Peroxoborates (perborates)* (HS 284030); million USD)



Switzerland provided almost 97 per cent of the EU-28 imports of *Peroxoborates (perborates)* in 2015. Cuba was the main destination of commodity's exports in 2015, with a share of around 46 per cent.

**Figure 56.** EU-28's top import sources and export destinations of *Peroxoborates (perborates)* (HS 284030; 2015)



### Summary of the section

In a value-chain perspective, this section examines the EU-28 trade flows and trading partners of commodities incorporating borates, namely those identified in Harmonized System 2007 and Combined Nomenclature 2016 (only for *Boron*, CN 28045010). The rationale for selecting this material is better code allocation and thus broader value-chain coverage of material-containing commodities in trade statistics. The identified trade codes listed above partly covers the *Extraction* and *Processing* stages of borates' value chain.

The EU-28 trade flows and trading partners are analysed for the following commodities:

- i) *Natural borates and concentrates* (HS 252890);
- ii) *Boron* (CN 28045010), based on Eurostat data;
- iii) *Oxides of boron; boric acids* (HS 281000);
- iv) *Anhydrous disodium tetraborate (refined borax)* (HS 284011);
- v) *Disodium tetraborate (refined borax), other than anhydrous* (HS 284019);
- vi) *Borates other than disodium tetraborate (refined borax)* (HS 284020);
- vii) *Peroxoborates (perborates)* (HS 284030).

Turkey, USA, Japan and Switzerland are major suppliers of borates-containing commodities to the EU, at various production stage.

In the analysed period, EU-28 held significant shares of world's exports of i) *Anhydrous disodium tetraborate (refined borax)* (HS 284011) (26 percent); ii) *Oxides of boron; boric acids* (HS 281000) (13.7 per cent), iii) *Borates other than disodium tetraborate (refined borax)* (HS 284020) (13.6 per cent); iv) *Disodium tetraborate (refined borax), other than anhydrous* (HS 284019) (11.7 percent).



## Conclusions

The main objective of this study is to get a more detailed picture of the most important EU-28's trade flows and trading partners of non-energy and non-food raw materials commodities (NFNERM) over the period 2011-2016. This is justified by the particular trade status of raw materials (including food- and energy-related ones) among the other broad categories of EU-28's traded goods: unlike the other product groupings, they are commodity categories with negative trade balance in terms of value (Figure 1).

The first section (section 2.1) analyses the trade flows, main imported and exported products and main trading partners for the EU-28 as an aggregate.

Compared with 2011, the EU-28's balance of NFNERM trade decreased significantly in 2015, brought about by declining values of both exports and imports over the period. As to the latter, it could have been influenced by the constant reduction of the EU's industrial import price indices and of the price of many minerals, ores and industrial and precious metals on global markets.

China, Switzerland and USA are the major EU-28 trade partners of NFNERM, each of them countries being present among EU-28's both top five importers and top five exporters of NFNERM over the period 2011-2015.

The main five supplying countries of NFNERM to the EU-28 were Russian Federation, Canada, China, Switzerland and USA.

The main five destinations of the EU-28's total NFNERM exported between 2011 and 2015 were Switzerland, China, India, Turkey and USA.

Copper-, aluminium-, iron- and nickel-incorporating commodities, at various production stages, are among the commodities that are listed in the EU-28's top ten HS 6-digit imported products (excluding gold- and diamond-containing commodities).

HS 6-digit product composition of the EU-28's top five HS 6-digit products (excluding gold- and diamond-containing commodities) exported in 2015 includes commodities containing iron, wood, aluminium, copper, platinum and palladium, at different production stage.

The trade flows of the EU-28's most imported/exported ten HS 6-digit NFNERM products and their main supplying and destination countries were further examined in sections 2.2 and 2.3.

We found that there were long-standing suppliers of the top 10 NFNERM imported by the EU-28, which account for significant shares of EU-28's total imports of certain product groups over the entire period 2011-2015.

Also, there were long-standing destination countries of the top 10 NFNERM exported by the EU-28 in 2015, which account for significant shares of its total exports of certain product groups over the entire period 2011-2015.

In 2014, there were export restrictions in place for the HS commodities listed in the EU-28's top 10 NFNERM imported, imposed by EU-28's top-five supplying countries.

In the *fourth section* (section 2.4), we zoomed in on the EU-28 trade bloc and analysed the trade flows in raw materials of those five countries that account for the highest annual values of EU-28's both imports and exports of NFNERM in the period 2011-2016.

The main importers are, in descending order, Germany, United Kingdom, Belgium, Italy and France. The same five countries were also the main exporters of NFNERM in the EU-28.

Over the period 2011-2016, the imports and exports of NFNERM declined significantly in all these five countries (excepting United Kingdom's imports).

These five countries accounted for significant world import shares of several NFNERM product groups and held also high shares of world's exports of several commodities in 2016.

In the *last section* of this study (section 2.5) we selected one raw materials critical to the EU – i.e., borates – and analysed, in a value-chain perspective, the EU-28 trade flows and trading partners for commodities incorporating borates, as identified in Harmonized System 2007 and Combined Nomenclature 2016 (only for *Boron*, CN 28045010). The identified

trade codes dealt with here only partly covers the *Extraction* and *Processing* stages of boron value chain. The analysis carried out in this section can be extended to commodities belonging to other value-chain stages of borates, such as *Manufacturing* and *Use*.

Depending on the available trade codes and data in trade statistics, the analysis carried out here may be extended, by dealing with issues such as i) dependency on imports of NFNERM by value-chain stage or ii) calculation of NFNERM-specific trade performance indicators (e.g., industry's trade openness, product diversification, revealed comparative advantage, etc.).

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