OECD Inventory of Export Restrictions on Industrial Raw Materials

September 2024



OECD

OECD Inventory of Export Restrictions on Industrial Raw Materials 2024

MONITORING THE USE OF EXPORT RESTRICTIONS AMID MARKET AND POLICY TENSIONS

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Please cite this publication as:
OECD (2024), *OECD Inventory of Export Restrictions on Industrial Raw Materials 2024: Monitoring the use of export restrictions amid market and policy tensions*, OECD Publishing, Paris, https://doi.org/10.1787/5e46bb20-en.

ISBN 978-92-64-95431-1 (PDF)
ISBN 978-92-64-40390-1 (HTML)
ISBN 978-92-64-87822-8 (epub)

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1 International trade in industrial raw materials

Key messages

- With supply concentrated and demand widespread, trade is critical for access to critical raw materials for the green and digital transitions. Yet export restrictions have increased more than fivefold over the last decade.
- While export quotas and taxes are the most common measures, export bans – the most restrictive measures – are increasing and were the most commonly introduced measure in 2022.
- Waste and scrap products and ores and minerals face the highest incidence of export restrictions, reflecting both industrial policy and environmental considerations.
- More than 20% of trade in certain key minerals for the green transition faced at least one export restriction over 2020-22.

International trade has long been the backbone of the raw materials industry. The economic viability of this industry requires extraction and processing to take place where materials are the most naturally abundant, or where the geological and climatic conditions and available technology and resources make their extraction and processing economically viable. Mining and processing operations also require significant long-term investment and typically face extended approval periods. Additionally, the raw materials industry has long been characterised by pervasive state intervention, including in the form of special regulations (e.g. natural monopolies, licenses), state ownership, investment restrictions, subsidies, and export restrictions.

This combination of natural endowments, economic viability, economies of scale and policies explains why the extraction and processing of certain raw materials is highly concentrated, both geographically and in terms of ownership and control.

The figures tell the story: for example, the three top producing countries in 2023 accounted for 60% or more of the global production of primary forms of cobalt (78%), lithium (92%), nickel (65%), and rare earth elements (90%). Processing of raw materials is also typically performed in a handful of countries. Concentration in the processing stage can be influenced by the concentration of reserves, given the vertical integration of mining and processing activities and efforts to minimise transport costs, and also policies aimed at leveraging ownership of reserves to attract investment in processing and enhance local value addition.

Concentration means that markets for raw materials are highly sensitive to trade restrictions. With the digital and green transitions significantly increasing demand for several of these highly geographically concentrated resources (IEA (2024[1]), there can be growing incentives for market participants and policy

makers to exploit market power dynamics to pursue economic and non-economic objectives. The situation is further complicated by the fact that the expansion of demand for industrial raw materials is taking place against a backdrop of growing geopolitical tensions and strategic rivalries.

Export restrictions, defined as measures known or suspected to restrain export activity, take many forms and can be aimed at achieving diverse policy objectives. For example, some countries may use export licensing measures to help monitor and limit negative environmental and social effects of extraction and processing of raw materials, or as a means of tracking exports. Export taxes can be aimed at raising government revenue, including to address environmental and social costs of mining activities. Export quotas or outright export bans can also be aimed at limiting extraction or processing activities by reducing incentives for such activities in the domestic market, but they can also be used to lower the domestic prices, or reduce global supply, of raw materials in order to promote domestic processing and attract foreign investment in processing facilities. That said, there can be debate about whether such measures are the best policy instruments to sustainably achieve the intended objectives, notably where the policies of a single important producing country can have significant international spillover effects. For example, exploitation taxes can be an alternative to generate government revenue from critical raw materials for source countries, but without the same impacts on global markets as export taxes.

Restrictions on exports of raw materials aimed at favouring downstream domestic users to the detriment of foreign users are some of the most contentious forms of state intervention. Where the exporter holds a large share of the global market, export restrictions contribute to raising world market prices, creating incentives for other exporters to impose similar restrictions, resulting in spiralling negative effects on international markets. By undermining the economic viability and thereby decreasing the output of domestic extractive industries, or simply by limiting the supply available to other countries, export restrictions can also potentially hamper the global supply of the concerned materials.

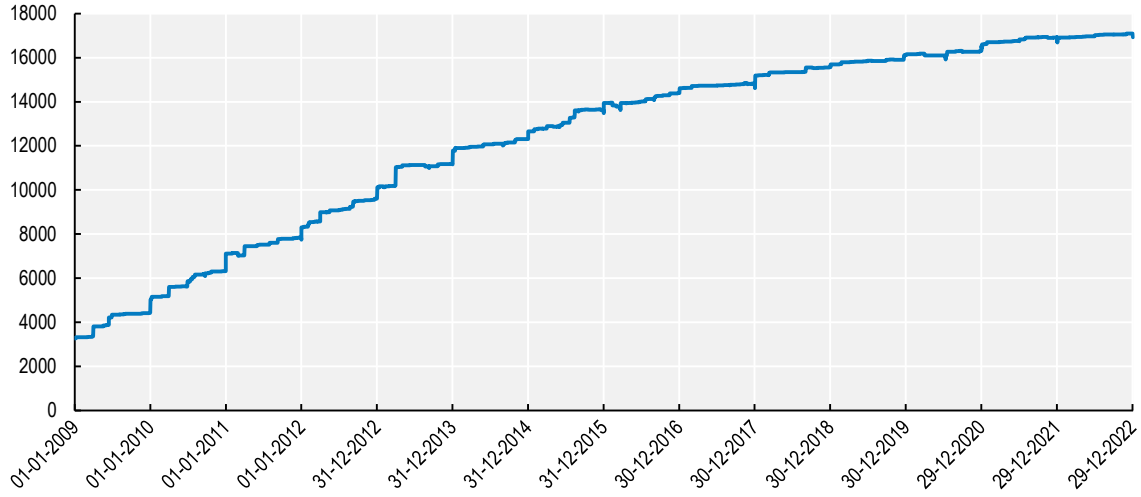
The OECD has been monitoring the use of export restrictions on critical raw materials since 2009 and updates its Inventory on Export Restrictions on Industrial Raw Materials annually (for more information, see *About the OECD Inventory* below). This note sets out the key findings from the latest update of the Inventory, covering the period 2009-22. The next release, expected in 2025, will cover data through to 2023.

2 Key trends in the use of export restrictions, 2009-2022

Over 2009-2022, export restrictions on industrial raw materials increased more than fivefold, with the most significant increases recorded in the early 2010s (Figure 2.1). Over 2020-22, approximately 13% of global trade in non-waste and scrap industrial raw materials faced at least one export restriction measure.

Figure 2.1. Export restrictions increased fivefold over 2009-22

Number of exported raw material products subject to at least one export restriction measure



Note: The count of all types of measures in place across all covered raw materials and all implementing countries, taking into account the stock of measures in place at the beginning of the period, as well as new additions and eliminations.
Source: OECD Inventory on Export Restrictions on Industrial Raw Materials (OECD, 2024[2]).

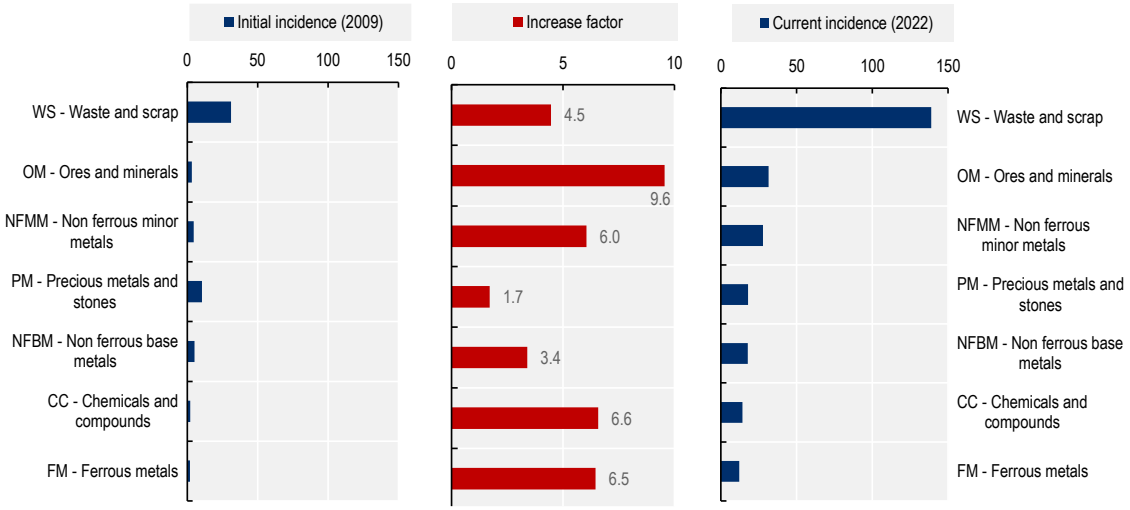
Waste and scrap products face the highest incidence of export restrictions, reflecting both environmental concerns about the export of such materials for disposal and a desire to draw on the potential of the circular economy as a source of supply of certain metals and minerals (Figure 2.2). That said, these policies may disadvantage foreign users and may be sub-optimal from a global point of view as they may prevent recycling in potentially more efficient foreign locations and undermine the wider deployment of recycling technologies. Moreover, trade in waste and scrap can be essential to achieve the economies of scale needed to make the circular economy viable.

Export restrictions on ores and minerals, in essence the raw materials located upstream in critical raw material supply chains, also increased faster than restrictions in other segments of the critical raw materials supply chain. This correlates with the other observed broad trend towards increasing concentration of

production, imports, and exports of products upstream in the supply chain. It is also broadly consistent with the logic of supporting domestic downstream industries via restrictions on exports of upstream products.[1]

Figure 2.2. Waste and scrap products and ores and minerals face the highest incidence of export restrictions

Initial scaled (per HS code) incidence of export restrictions by sector, increase factor, and current scaled incidence



Note: The scaled incidence is the number of export restrictions recorded for the product divided by the number of HS codes that describe that product category. Products are ordered by the scaled incidence in 2020. Increase factor is calculated as the ratio of the scaled count of measures in place in December 2022 and the scaled count of measures in place in January 2009. Products are ordered by the current incidence of export restrictions.
Source: OECD Database on Export Restrictions on Industrial Raw Materials (OECD, 2024[2]).

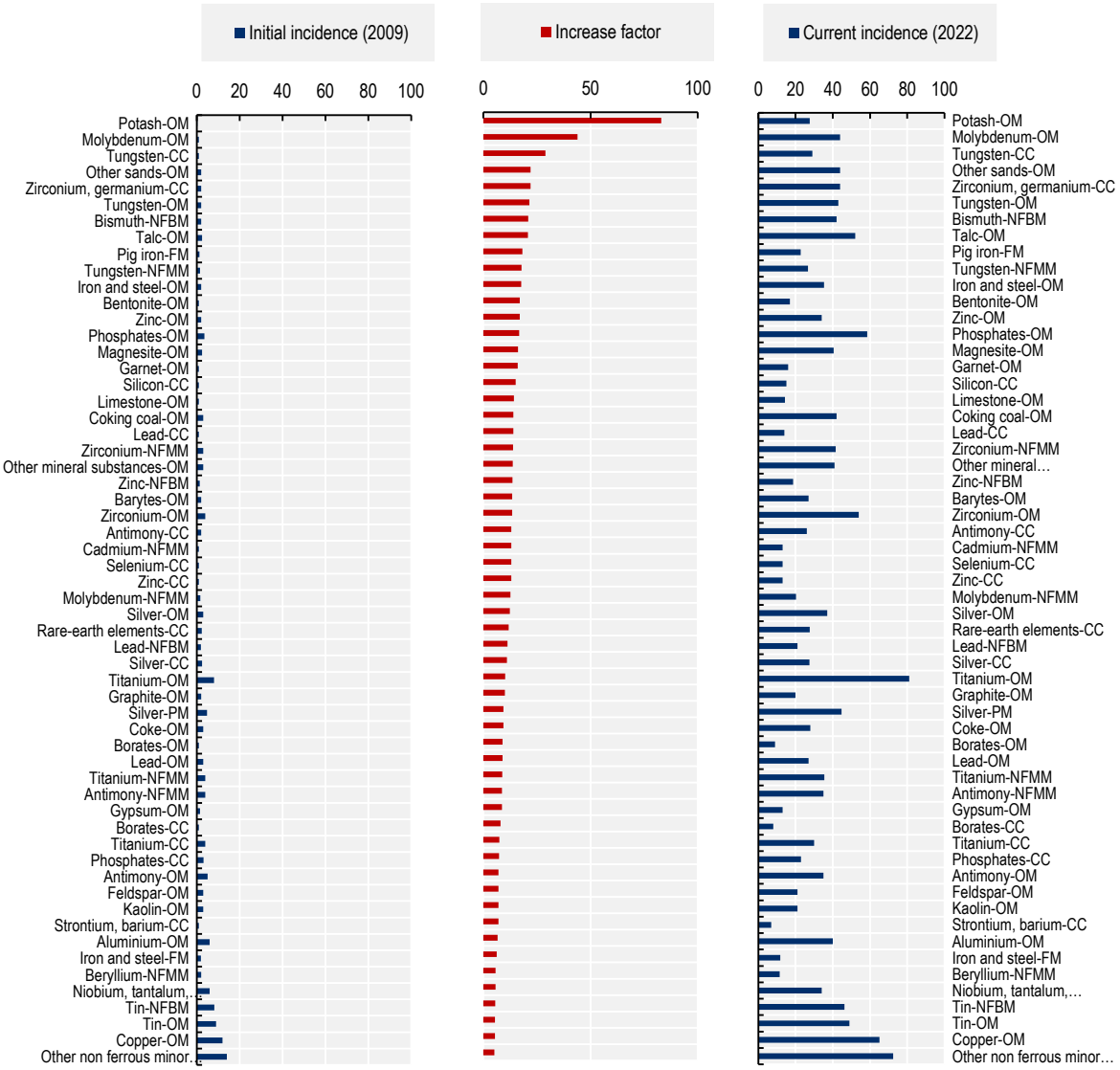
Of the non-waste and scrap industrial raw materials, potash, molybdenum, tungsten, zirconium and germanium experienced some of the steepest increases in the incidence of export restrictions, while products such as manganese, titanium, copper, phosphates and zirconium and germanium recorded the highest level of incidence in restrictions in 2022 (Figure 2.3).

In the period 2020-22, more than 20% of world exports of cobalt, rare earth elements, tin, palladium, platinum, nickel, copper, iron and steel, manganese, silver and other precious metals ores faced at least one export restriction (Figure 2.4).

[1] For more information, see Kowalski and Legendre (2023[4]).

Figure 2.3. Some products have experienced a sharp increase in export restrictions

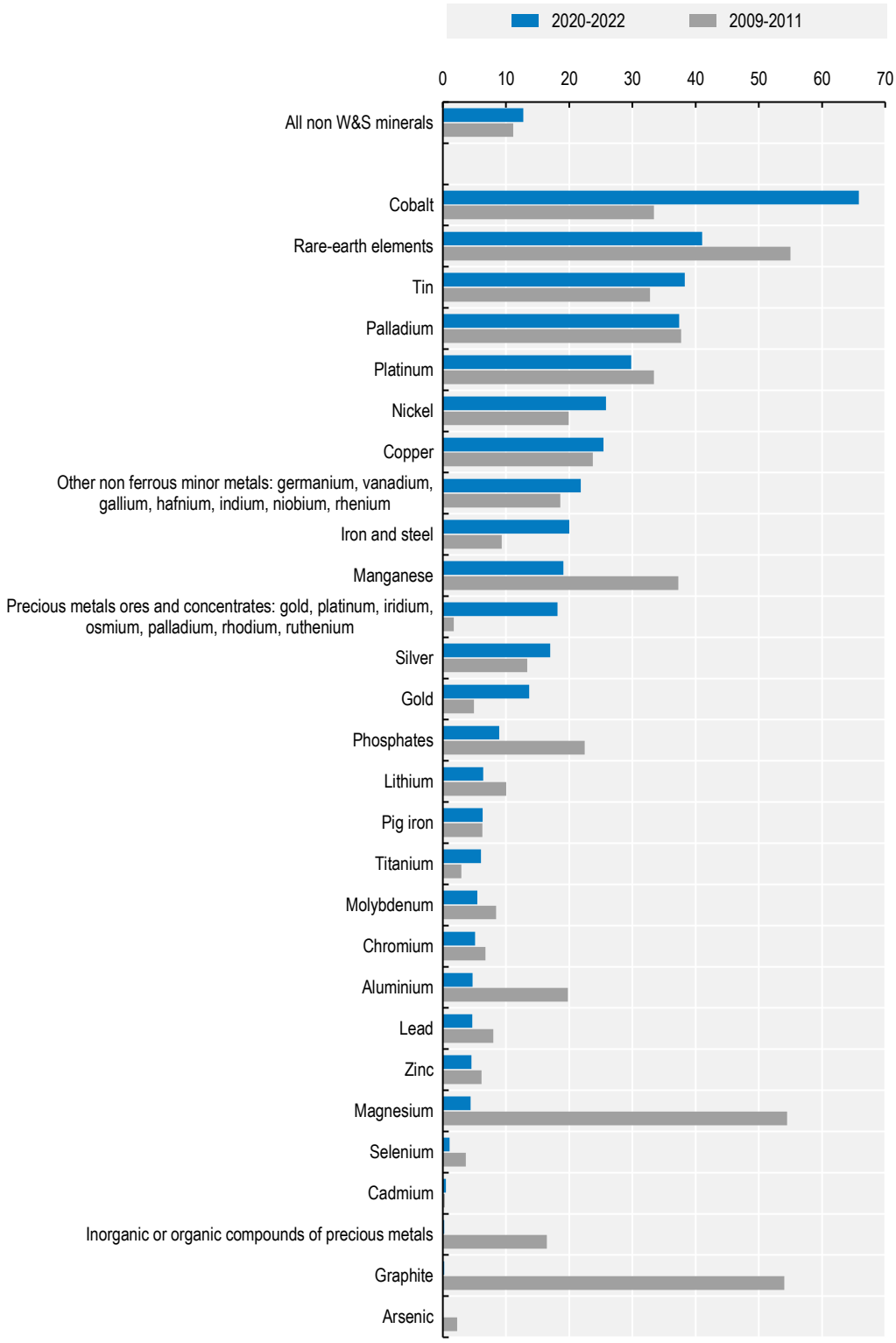
Initial scaled (per tariff line) incidence of export restrictions by product-sector*, increase factor**, and current scaled incidence



* Note that all specific HS6 raw material products are classified into the following 'sectors' which aim to capture the different stages of processing or types of products : PM – precious metals and stones; OM – ores and minerals; CC- chemicals and compounds; NFMM – non-ferrous minor metals; NFBM – non-ferrous base metals; WS – waste and scrap; FM- ferrous metals.
** Only non-waste and scrap sectors with above average (5.17) increase factors for the period 2009-2022 are shown.
Source: OECD Database on Export Restrictions on Industrial Raw Materials (OECD, 2024[2]).

Figure 2.4. More than 20% of trade in certain key minerals for the green transition faced at least one export restriction over 2020-22

Share in global exports of a given mineral (%) facing at least one export restriction

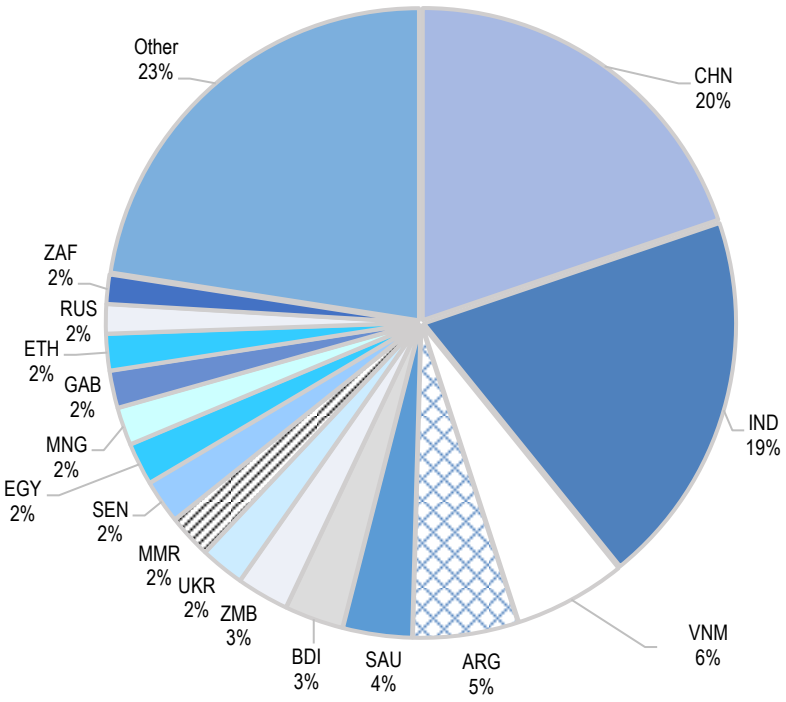


Source: OECD Database on Export Restrictions on Industrial Raw Materials (OECD, 2024[2]) and BACI database.

China, India, Viet Nam, Argentina, and Saudi Arabia were the top five countries in terms of the number of new export restrictions introduced over the period 2009-2022, accounting for more than half of the measures introduced (Figure 2.5).

Figure 2.5. Five countries accounted for more than half of the new restrictions introduced over 2009-2022

Country shares in the increase in the total number of export restriction measures between 2009 and 2022



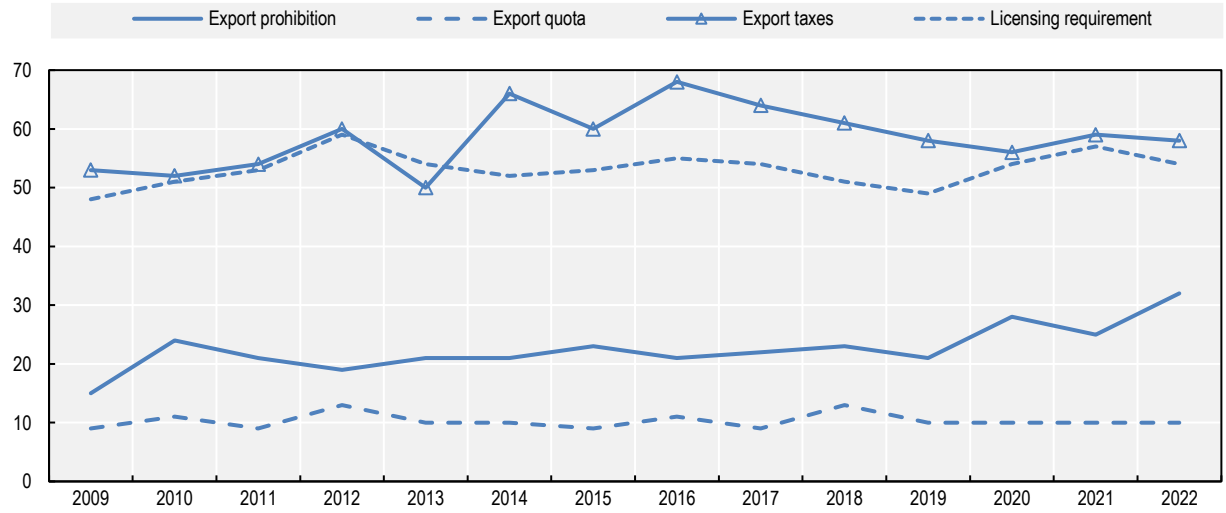
Source: OECD Database on Export Restrictions on Industrial Raw Materials.

Export taxes and *licensing requirements* were the types of measures that contributed the most to the increased global stock of export restrictions for the period 2009-2022. They were also the two most frequently used types of restrictions in 2022. This may be related to the fact that, under WTO rules, quantitative restrictions on exports are generally prohibited, while *export taxes* and *licensing requirements* are not.[2] The use of quantitative export restrictions, such as *export prohibitions* or *quotas*, however, has also been increasing, particularly in recent years. In particular, the incidence of *export prohibitions*, the most egregious type of export restrictions, has increased significantly since 2020 (Figure 2.6) and were the type of export restriction most frequently introduced in 2022 (Figure 2.7).

[2] For more information, see Kowalski and Legendre (2023[4]).

Figure 2.6. While export taxes and quotas are the most common measures, export prohibitions have increased in recent years

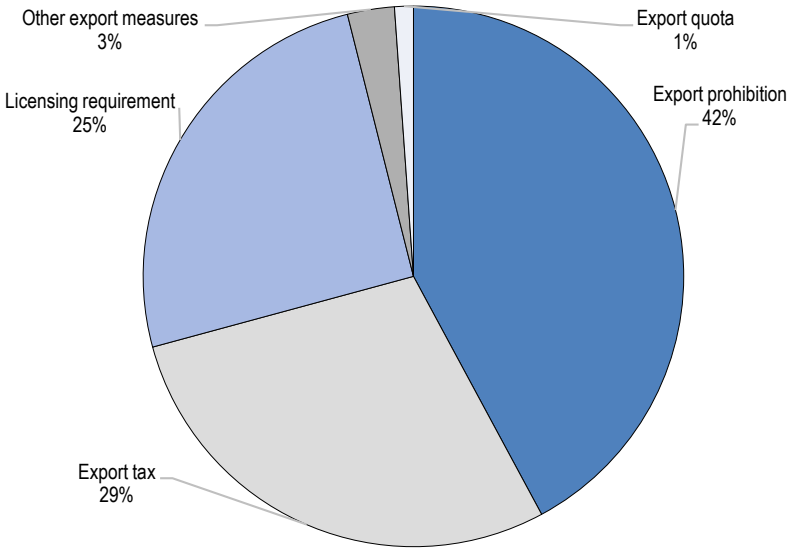
Number of countries applying at least one export restriction by type over time



Note: The export taxes category includes export taxes, export surtaxes, and fiscal taxes on exports.
Source: OECD Database on Export Restrictions on Industrial Raw Materials.

Figure 2.7. Export prohibitions were the most commonly introduced measure in 2022

Type of new measures introduced in 2022



Note: The export taxes category includes export taxes, export surtaxes, and fiscal taxes on exports.
Source: OECD Database on Export Restrictions on Industrial Raw Materials.

3 Implications

- The OECD Inventory on Export Restrictions on Industrial Raw Materials reveals a concerning trend in which export restrictions are becoming at once increasingly prevalent and more prohibitive.
- Given the high degree of interdependency in the global economy and many countries' reliance on international trade for access to critical raw materials, the imposition of export restriction on raw materials risks negative spillover effects cascading down global supply chains.
- This, and the global ramifications of a potentially impeded green transition, suggests a need for co-operative solutions to restrain the use of export restrictions.
- An important first step is to better understand the motivations of countries using export restrictions, as well as the impact on trading partners and global markets. This will be key in helping identify other, less restrictive, means of achieving important policy objectives.
- Evidence on the use of export restrictions is fundamental to analysing their economic and non-economic effects, and to motivate and inform international co-operation. The OECD Inventory is a unique, freely accessible, source of qualitative and quantitative data which can serve as a foundation for these efforts.

4 About the OECD Inventory on Export Restrictions on Industrial Raw Materials

Gathering evidence on the use of export restrictions is fundamental to analysing their economic and non-economic effects, and for motivating and informing international co-operation. The OECD Inventory of Export Restrictions on Industrial Raw Materials aims to improve transparency and to build a database of border and domestic measures that restrict the export of industrial raw materials. The Inventory is a rich source of qualitative and quantitative information on different types of export restrictions introduced (or withdrawn) by the main exporters of industrial raw materials. It is a public good that provides data for empirical analysis to advance understanding of the economic and non-economic effects of these export restrictions. The Inventory can be used to assess whether and how export restrictions may be contributing to shortages and high prices of raw materials, as well as how policy reforms may ease tensions and help ensure the secure and efficient supply of raw materials for all. [3]

Data sources collection process

Information on export restrictions is collected from official websites and documents issued by governments of the key producing countries. These include ministries in charge of the economy, trade, industry, mining, forestry, or foreign affairs, as well as customs agencies. Sources of information on policies that restrict exports include legal acts, rules, regulations, public notices, circulars, and notifications by ministries published on their websites. Secondary sources, such as news articles, are also used to identify export measures applied by a country or changes made to measures during the survey year. That said, only measures that can be substantiated from official sources are entered into the database.

Product coverage

The Inventory covers 65 industrial commodities, including 58 minerals and metals, six wood products, and all metallic waste and scrap from minerals and metals covered in the Inventory (Table 4.1). Export restrictions are recorded in the database for products classified in the Harmonised System 2007 nomenclature at the 6-digit level (HS6), which currently covers 489 products.

[3] See, for example, Kowalski and Legendre (2023[4]).

Table 4.1. Products covered in the Inventory

Minerals and metals

Aluminium	Antimony	Arsenic	Barytes	Bentonite
Beryllium	Bismuth	Borates	Cadmium	Chromium
Cobalt	Coke	Coking coal	Copper	Diamonds
Diatomite	Feldspar	Fluorspar	Gallium	Garnet
Germanium	Gold	Natural graphite	Gypsum	Indium
Iron and steel	Kaolin	Lead	Limestone	Lithium
Magnesite	Magnesium	Manganese	Mercury	Molybdenum
Nickel	Niobium	Perlite	Phosphates	Pig iron
Platinum group metals (PGMs)[1]	Potash	Rare earths (REE)	Rhenium	Selenium
Silica	Silicon	Silver	Strontium	Talc
Tantalum	Tellurium	Tin	Titanium	Tungsten
Vanadium	Zinc	Zirconium		

1. Platinum group metals (PGM) includes platinum, palladium, and all other PMG metals (rhodium, iridium, osmium and ruthenium).

Wood (6)

Industrial roundwood coniferous	Sawnwood coniferous
Industrial roundwood non-coniferous non-tropical	Sawnwood non-coniferous non-tropical
Industrial roundwood non-coniferous tropical	Sawnwood non-coniferous tropical

Other

Metal waste and scrap for all metals and minerals included in the Inventory

Country coverage

All countries accounting for at least 3% of global production of any of the covered materials or which were among the top five producers of any of products covered are included in the Inventory. Eighty countries producing industrial raw material commodities are currently surveyed. These countries accounted for 97% of the world production of minerals and metals, and 81% of world production of wood in 2022. This coverage essentially allows for the monitoring of export restrictions by all significant raw materials producers worldwide.

Table 4.2. Countries covered in the Inventory

Angola	Argentina	Australia	Austria (EU)
Belarus	Belgium (EU)	Bolivia	Botswana
Brazil	Bulgaria (EU)	Burundi	Canada
Chile	China (People's Republic of)	Colombia	Czechia (EU)
Democratic Republic of the Congo	Denmark (EU)	Egypt	Ethiopia
Finland (EU)	France (EU)	Gabon	Germany (EU)
Ghana	Greece (EU)	Guatemala	Guinea
Hungary (EU)	India	Indonesia	Ireland (EU)
Israel	Italy (EU)	Jamaica	Japan

Jordan	Kazakhstan	Kenya	Korea
Kyrgyzstan	Lao People's Democratic Republic	Madagascar	Malaysia
Mexico	Mongolia	Morocco	Mozambique
Myanmar	Namibia	Netherlands	New Caledonia (France)
Nigeria	Norway	Oman	Peru
Philippines	Poland (EU)	Portugal (EU)	Qatar
Romania (EU)	Russia	Rwanda	Saudi Arabia
Senegal	Sierra Leone	Slovakia (EU)	South Africa
Spain (EU)	Sweden (EU)	Tajikistan	Thailand
Tunisia	Türkiye	Ukraine	United Arab Emirates
United Kingdom	United States	Uzbekistan	Viet Nam
Zambia	Zimbabwe		

Types of measures covered

The Inventory records measures known or suspected to restrain export activity. These measures typically increase the relative price of exported products, decrease the quantity supplied, or change the terms of competition amongst suppliers. The list of surveyed measures includes export taxes, prohibitions, non-automatic licensing requirements, and any other export restricting measure (able 4.3).

The Inventory excludes export controls that have been implemented to comply with international conventions and agreements that limit the trade of certain goods,[4] or measures implemented to control exports of dual-use items.[5] Only export restrictions that are applied to all trading partners are covered in the Inventory.[6]

Table 4.3. Measures restricting exports included in the Inventory

Export restriction	Definition
Export tax	A tax collected on goods or commodities at the time they leave a customs territory. This tax can be set either on a *per unit* basis or an *ad valorem* (percentage of value) basis. Other terms equivalent to export tax are also covered: *export tariff, export duty, export levy, export charge*.
Fiscal tax on exports	A tax not paid at the border, but which applies only to, or discriminates against, goods or commodities intended for export. An example is when the *sales tax* which a government charges is higher for goods or commodities intended for export than when these goods or commodities are offered for sale in the domestic market. Another term equivalent to fiscal tax on exports that is also covered: *export royalty*.
Export surtax	A tax collected on goods or commodities at the time they leave a customs territory, and which is applied in addition to the normal export tax rate. These can be part of a progressive tax system or can be adapted to price trends and can thus be of a temporary nature. Example: a USD 10 surcharge is applied on each ton of a commodity exported when the world price of this commodity exceeds USD 1 800 a tonne. Other terms equivalent to export surtax that are also covered: *export surcharge*.
Export quota	A prescribed maximum volume of permitted exports.
Export prohibition	No exports are permitted. Exceptions may be granted through export licences. Other terms equivalent to export prohibition that are also covered: *export ban, export embargo*.

[4] These include measure such as the Kimberley Process for conflict diamonds; the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for some wood products; the Rotterdam Convention with regard to some chemical products; and the Basel Convention regarding metallic waste and scrap.

[5] Dual-use items are goods, software and technology that can be used for both civilian and military applications.

[6] Export controls implemented on a bilateral basis (e.g. sanctions) are not included in the Inventory.

Export restriction	Definition
Licensing requirement (including non-automatic)	Exporters must obtain prior approval, in form of a license, to export a good or commodity. This practice requires submission of an application or other documentation as a condition for being authorised to export. Although export licensing regimes may vary in their impact on exports, even those regimes that have a relatively limited economic impact, nonetheless increase the amount of time needed to engage in trade. Licensing schemes can operate on the basis of product lists of various types, usually lists of restricted products that require licences be applied to restrict exports by destination (e.g., specific countries) or that have other conditions attached, such as a requirement that exportation may only be for a specified purpose. Other terms equivalent to non-automatic licensing that are also covered: *export permit*.
Minimum export price/reference price for exports	The minimum allowable price for a good being exported. This practice is often used in conjunction with export taxes in order to prevent under-invoicing and can be used as a base to calculate export taxes. In some cases, minimum export prices are not binding but are used as reference prices. Other terms equivalent to minimum export price that are also covered: *administered pricing*.
VAT tax rebate reduction / withdrawal	Most countries with a VAT system will rebate the VAT on exports. By denying VAT reimbursement in whole or part, it is relatively less advantageous to export a product than to sell it domestically. This measure is usually used to encourage downstream local production of products that use the raw material input. A variant that is also covered is the removal or reduction of rebate from *other sales taxes* on exports of a product.
Restriction on customs clearance point for exports	The government specifies the ports or customs offices through which the export of a good or commodity must be channeled.
Qualified exporters list	The right to export a certain commodity is granted to specific companies by the government through a process of application and registration.
Domestic market obligation	The requirement for producers to allocate a proportion of their annual production output for sale in the domestic market. Domestic market obligations are sometimes part of production-sharing contracts or contracts allowing extraction by foreign firms.
Captive mining	When a processing company is required to own the mine that produces its inputs, or has been awarded sole mining rights with the intention that it will mine the commodity for use in its own domestic production processes and not trade it. Captive mining is a form of government support for firms with access to captive supplies, as well as a means to control the price and availability of a commodity in global markets. When captive mining concessions increase (as a share of production), exports of the relevant commodity are likely to fall.
Other export measures	Measures not elsewhere specified, but which influence *de jure* or *de facto* the level or direction of exports of industrial raw materials.

Source: OECD (2022[3]).

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