European Commission

JRC SCIENCE FOR POLICY REPORT

The aftermath of US tariffs on aluminium imports

An assessment of tariff impacts and a review of the EU aluminium industry

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July 2021

Joint Research Centre

EUR 30730 EN

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EU Science Hub
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EC Raw Materials Information System (RMIS)
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JRC124803

EUR 30730 EN

PDF	ISBN 978-92-76-38488-5	ISSN 1831-9424	doi:10.2760/46784
Print	ISBN 978-92-76-38650-6	ISSN 1018-5593	doi:10.2760/691820

Luxembourg: Publications Office of the European Union, 2021

How to cite this report: Georgitzikis K., Viorel N., Ciupagea C., Garbosa E. *The aftermath of US tariffs on aluminium imports. An assessment of tariff impacts and a review of the EU aluminium industry*. EUR 30730 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-38488-5, doi:10.2760/46784, JRC124803.

Contents

Abstract

The tariffs imposed by the US in 2018 for several aluminium products have worked only partially as intended. Tariffs contributed to reducing imports and increasing primary aluminium production in the US, but the desired impact quickly faded out. On the other hand, tariffs did not harm the EU exports to the US for most product categories, especially during the first year after implementation when EU exports of rolled products and foil surged.

Foreword

The imposition of increased tariffs on the US' imports of steel and aluminium products in March 2018 was, and still is, an impactful and controversial trade measure. The tariffs on several aluminium product groups, unequally addressing various US trading partners, affected directly the global trade flows of around USD 133 billion (value in 2017). They also indirectly affected the producers and traders along the global aluminium supply chains, as the product categories subject to tariffs represent intermediate products for a large range of strategic industries for world producers.

The EU aluminium industry must navigate a shifting global environment affected by trade measures, against the backdrop of rising challenges posed by China's structural overcapacity and growing exports and by the global distortions generated consequently, compounded with the Covid-related crisis in strategic sectors for the EU. The analyses of trends on trade flows (exports and imports) with aluminium products between main global trading blocs (large world suppliers and consumers) is a topic of interest for EU stakeholders and consumers. EU societal well-being depends on our transport, ICT environment, consumer goods and food safety, which are all parts of value chains intensively using aluminium products. Early warning monitoring systems based on trade flows analyses, as well as measures thought to prevent increasing supply dependency of the EU are welcome, and this report addresses some of these needs.

Acknowledgements

The authors of the report would like to thank Manuela Unguru (JRC Unit D3) for reviewing the report internally (JRC). The JRC appreciates the member access provided by Mrs Marlen Bertram to the valuable data provided by International Aluminium Institute's material flow analysis (Alucycle) tool.

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Elisa Garbosa and Theodor Ciuta (JRC Unit D3) are acknowledged for contributing to trade data collection and preparation, as well as partially to the graphic design of figures.

Executive summary

Aluminium and steel tariffs have been hallmarks of the US trade policy launched by President Trump. In March 2018, the United States raised custom duties by 10% on imports of several aluminium products on ambiguous 'national security' grounds. The tariffs covered imports from all countries of origin, with some specific exceptions granted. The measure was applied following a period of production and jobs decline in the US industry's primary aluminium segment. Tariffs purportedly aimed to reduce US reliance on imports and thus stimulate domestic aluminium production. They directly affected global trade flows of 133 billion USD in the case of extra-tariffed aluminium products (value registered worldwide in 2017, for eight categories of aluminium products) and 450 billion USD in the case of steel products. Moreover, the tariffed categories have a huge impact on the downstream production of many countries, as they represent intermediate products for a large range of strategic industries for world producers. US President Biden's first action related to trade policy was to restore the tariffs on aluminium products against one of the US trade partners (United Arab Emirates), which proves the political and economic importance allocated to these products in the longer run, also based on their link with tariffs on steel products.

The increased tariffs entered into force on 1 June 2018 for aluminium products originating from the EU Member States. They apply to a broad range of aluminium products, including unwrought aluminium and the full list of semi-finished aluminium products, i.e. extrusions, rolled products, wire, castings, and forgings.

In principle, import tariff measures were expected to negatively impact EU producers exporting aluminium products to the United States, given the EU's surplus (EUR 671 million in 2017 before tariff implementation) in bilateral trade for aluminium products. Considering the broad scope of the tariffs and that tariffs discourage export flows into one of the most prominent sales destinations worldwide, the US measures could also lead to substantial trade reorientation globally, presumably putting more pressure on EU producers.

On top of trade disruptions caused by the US aluminium tariffs coupled with the world economic slowdown in 2019, the EU aluminium industry faced a brand-new challenge as the Covid-19 related economic downturn affected prices and demand. The overwhelming collapse of demand worldwide could lead to a global diversion of trade in these categories of aluminium products.

China's overcapacity, caused by state-induced distortions, remains the dominating factor in the world aluminium market and is at the heart of unfair trade practices that will continue to plague this sector as long as China's imbalances are not corrected.

Policy context

The new Industrial Strategy of Europe ([1]) recognises that EU industry is facing challenges from rising global competition, protectionism, market distortions, and tensions in world trade. The aluminium industry is a genuine example, as it is a highly integrated sector in global value chains, and trade relations are at the forefront of attention. The steep additional import tariffs on aluminium goods imposed by the United States as part of a protectionist trade policy during Donald Trump's presidency unleashed turmoil on the global aluminium market. Aluminium and aluminium products are not only part of strategic value chains in the EU, but aluminium is also one of the key materials for the transition to the climate-neutral economy envisaged by the European Green Deal.

Key conclusions

Tariffs provided a short-term saving grace for US producers of primary aluminium in the first months after their implementation. However, the positive impact measured throughout production, industrial workforce and price levels faded away after mid-2019, also affected by weaker domestic demand for aluminium. The overall effectiveness of the tariffs is highly questionable, especially in the face of challenging conditions of demand and price shocks caused by the Covid pandemic.

The ex-post analysis of the period before the pandemic's outbreak demonstrated that the US aluminium tariffs had little or negligible impact on EU exports for most aluminium products. On the contrary, exports of flat-rolled products and foil, which are the most important products in the EU export mix to the US, soared. Exports to the US originating from the EU performed better than those from countries in the rest of the world, in particular for those categories of products for which EU is a main supplier.

One-third of the rise in EU imports (in volume terms) during the post-tariff period is redirected from countries that lost their share of US trade, mainly from China (three-quarters of the total EU import diversion). The

([1]) COM(2020) 102 final.

monitoring mechanism for the aluminium import flows into the EU could remain in place for as long as trade turbulence affects the aluminium sector worldwide.

The EU's position in each subsector of tariffed aluminium products depends largely on the ripple effects of Chinese overcapacity and on various retaliation measures taken by each major global players and their impact on world prices or export flows. It is also dependent on the general outlook for the global, US, and EU GDP growth rates.

Main findings

What were the pre-tariff trends in aluminium trade?

Over the period 2014-2018, China and the EU were the biggest global exporters of the extra-tariffed aluminium product group, together accounting for 22-23% of exports in the world in 2018. The EU's annual average exports of extra-tariffed aluminium products to the extra-EU countries were around 11.5 billion USD. The United Kingdom is the main destination of EU exports, accounting for more than a quarter of total EU exports of extra-tariffed aluminium product group in 2018. The United States comes second, with a share of around 15% in 2018.

US imports of the extra-tariffed aluminium product group rose by 41% in 2018 relative to 2014, from 14 billion USD in 2014 to 19.7 billion USD in 2018. Canada was the leading US supplier of the extra-tariffed aluminium product group over 2014-2018, with an average annual share of 40% (e.g. more than half of US imports of primary aluminium). The EU, the third US supplier, had an annual average share of around 9% of US imports. EU countries such as Germany, France, Austria, and Italy are important global suppliers of the extra-tariffed aluminium product aggregate to the US. Throughout 2014-2018, China was the second largest origin for US imports.

Concerning China, global exports of the whole aluminium product aggregate subject to tariffs rose significantly since 2016, and despite the tariffs, substantial growth of 24% was registered in 2018 compared to 2017. The growth was driven by exports of semi-finished aluminium products of bars, rods, and profiles (HS 7604), wire (HS 7605), flat-rolled products of plates, sheets, and strip (HS 7606) and foil (HS 7607), which rose significantly by 19%, 34%, 37%, and 19% respectively compared to 2017. Compared with 2017, China's exports to all its main destinations increased in 2018, except for the US. Regarding the EU as a destination of Chinese exports, the value of Chinese exports of the aggregated aluminium product group rose by 48% from 2017 to 2018.

What drove the US administration to impose the additional tariffs?

The principal aim of the protectionist trade measure was to revive the US latent capacity for primary aluminium after a period of severe decline in production and capacity utilisation despite the growing demand for intermediate and processed aluminium products. However, the tariffs' scope encompassed the blooming downstream segments of semi-finished aluminium products to protect the US industry from foreign competition; these would have higher costs for their input unwrought aluminium. Policy and geopolitical motivations, such as boosting US leverage in negotiations for trade agreements, cannot be excluded as drivers for tariffs' imposition.

EU and its pre-tariff position.

The announcement of US tariffs found the EU sitting as the world's second-largest exporter and the third-largest exporter to the US for the product aggregate concerned by the tariffs. The EU had high US import shares for bars, rods, and profiles (HS 7604), flat-rolled products of plates, sheets, and strip (HS 7606), foil (HS 7607), and aluminium tubes and pipes (HS 7608).

What was expected to happen? What were the risks for the EU?

A priori, the import tariffs should have resulted in reduced imports from the targeted countries, unless domestic capacity cannot cover demand. Such an outcome, which is observed in EU trade statistics, should not come as a surprise.

To what extent could the existing EU-US trade patterns and EU trade performance be affected by the increase in US tariffs?

JRC price and GDP elasticity models show that US imports from the EU are very elastic in their response to US GDP growth rates (a 1% increase in US GDP may lead to a more than 3-4% increase in US imports from EU of the commodities in groups 7601, 7604, 7605 or 7606) and inelastic to price variations (a 10% effective price increase may lead to a decrease of only 3-5% in US imports of groups 7601, 7604, 7605, 7606). The models show that the EU exports are more responsive (elastic) than world exports to US GDP growth for those aluminium commodity groups in which the EU has a large share in total US imports (7604, 7605, 7606, 7608). The EU exports to the US are also less sensitive to price variations than rest-of-the-world exports to the US for a few categories (HS 7601, HS 7604, HS 7605). High US GDP growth could offset the potential increase in import prices, leaving the US measures less efficient for US aluminium sectors than initially estimated by often reverting the expected impact trend.

Another important finding is that the US imports from the EU at higher prices than from the rest of the world for all categories of semi-finished aluminium products included in this analysis. This could be the consequence of a "virtuous" structure of EU exports, i.e. EU companies export more sub-categories of semi-finished products of higher quality and at a higher price than other exporting countries.

What happened since June 2018 on the global market?

Evolution of imports and production in the US

In 2019, the total value of US imports declined relative to the previous year by 9%. Concerning, the main origins of US imports, Canada's share was lower at about 33% compared to 2018 (35%). Following the 2018 tariff increases and subsequent trade measures imposed against China, the US imports from China faced direct negative impacts, and China's share in US imports fell from 9.5% in 2018 to 7.5% in 2019. The United Arab Emirates also had a slight decrease in US imports share (7.7% in 2019 compared to 8.1% in 2018). The EU's share in US imports rose from 9% to 12% between 2018 and 2019, and the EU became the second largest origin for US imports after Canada.

In the period after the imposition of tariffs, the US aluminium industry's output measured by the Industrial Production Index (IPI) increased by 4.4%, a higher rate than the growth of aluminium demand in North America, which increased by 2.2% between 2017 and 2019. The primary aluminium segment of the industry benefited the most from tariffs. Its output recorded a substantial growth of 23% (IPI) concentrated in 2018 and improved capacity utilisation rate from 41% to 63%. Nevertheless, the success of the US administration's intervention to support the primary industry through tariffs is partial and questionable for a long-term effect. The capacity utilisation rate did not reach the target of 80% set by the US administration to ensure viability, and a curtailment of a US smelter recently (August 2020) makes even more doubtful the attainment of this target. In addition, the survival of the remaining US smelters is undermined by the falling aluminium prices worldwide and the declining trend of the tariff-driven benefit in US aluminium prices.

US output of semi-finished products was weaker in comparison to primary and secondary aluminium output, i.e. of 3.1% growth for extruded products and 2.9% for rolled and drawn aluminium products, respectively.

Tariffs delivered a lower reduction in the overall import volume (11% in the 20-month period following the implementation of tariffs since April 2018 compared to the 20-month period preceding the imposition of tariffs) than the reduction anticipated by the US authorities (at least 13.3%).

Shares of other main global suppliers

China's global exports of the whole aluminium product aggregate subject to tariffs rose significantly since 2016. Despite the tariffs, substantial growth of 24% was registered in 2018 compared to 2017, driven by a significant rise of exports of flat-rolled products of plates, sheets, and strip (HS 7606) and foil (HS 7607).

Tariff impact on EU exports

Despite the tariffs, US imports of targeted aluminium products from the EU increased by 37% in volume and 30% in value in the 19 months following the introduction of the measures in June 2018, compared to the 19 months preceding it. The EU's share in volume of US imports for these products increased from 4.2% to 6.7% in the same period.

Details for extra-tariffed categories; focus on the two product groups for which EU has comparative advantage

The EU is the second-largest global exporter of rolled aluminium products consisting of plates, sheets strip (HS 7606) and foil (HS 7607). EU exports of rolled products were the best performing product group in the post-tariff US landscape as they rose sharply by 74% and 66% for HS 7606 and HS 7607, respectively, widening the EU share in US imports for these products significantly from about 14% and 15% respectively to 23% for each. The outstanding performance was driven by exports of common alloy sheet (not clad) products classified (HTS subheading 7606.12.30.90) and thin-gouge foil (HT 7607.11.30). EU exporters of rolled products, as well as exporters from other regions, benefited from the net of US trade measures against imports of common alloy sheet and aluminium foil from China.

Prices evolution before and after tariffs

The tariffs delivered a competitive advantage to the US primary aluminium industry against foreign supply. The tariff effect on prices for the US producers was undermined by the lower demand for aluminium in 2019 and the coronavirus outbreak in 2020, which forced the tariff component of the regional US aluminium price to plummet to levels seen before the imposition of tariffs during the first semester of 2020. At the same time, Section 232 tariffs impacted US importers and consumers as the induced extra cost for unwrought aluminium made the inputs to downstream industries more expensive.

Equally important for assessing the impact of tariffs on the recovery of the primary aluminium industry in the US is the decline in the world's aluminium price since June 2018 and during the pre-pandemic period. The gradual deterioration of the London Metal Exchange (LME) aluminium price partially offset the benefit to US producers of the rise of the US premium.

EU self-sufficiency for aluminium

The EU aluminium industry relies substantially on imports of unwrought aluminium. In 2018, imports of aluminium ingots represented almost half (49%) of consumption, up from 45% in 2017. Secondary aluminium represents about one-third of EU consumption, and the remainder is covered by primary aluminium produced domestically.

The EU is also a net importer of extruded products, aluminium wire, and castings. Imports expressed as a percentage of apparent consumption is low for bars, rods, and profiles (4% in 2019), tubes and pipes (9% in 2019), and castings (3% in 2018), and high for aluminium wire (41% in 2019). The EU's trade balance with foreign countries has been gradually deteriorating in most segments of semi-finished aluminium products.

Related and future JRC work

The European Commission is responsible for negotiating free trade agreements with third countries or trade-blocks on behalf of the EU Member States. This study proposes a JRC model able to provide trend analyses and predictions/forecasts based on trade policy scenarios. The analyses using the JRC model performed on imports of selected categories of aluminium products can provide policy support for other sectors and categories of products for which sufficiently long time series exist. The JRC will perform a similar study and run the econometric model to describe the evolutions of selected steel products affected by the recent tariff turmoil.

1 Introduction

1.1 Setting the scene of the US tariffs on aluminium

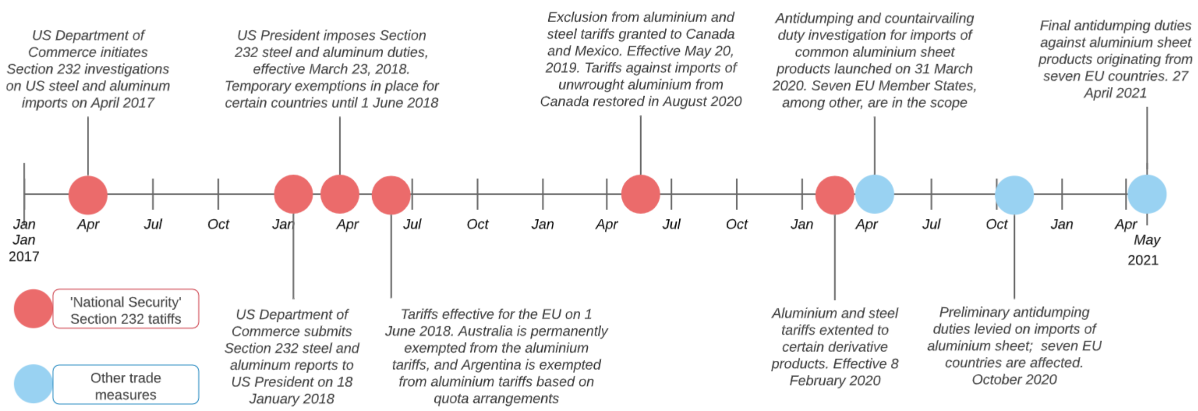
In the first semester of 2018, after decades of having a prominent role in supporting free trade, the US administration initiated a new era of protectionism on global trade that had previously been confined to just rhetoric. Several waves of tariff upsurges targeting specific products and countries were enacted with the aim of curtailing imports (Fajgelbaum et al., 2020) (Williams et al., 2019)(Flaaen and Pierce, 2019).

Sparking a 'trade war' between the US and several major economies could have an adverse impact on the worldwide economy and poses a serious threat to the global multilateral system (Demertzis and Fredriksson, 2018)(Bloomberg Economics, 2018). The negative impact of escalating trade tensions is illustrated by the International Monetary Fund's (IMF) World Economic Outlook report of October 2019, pre-dating the Covid crisis. The update found a synchronised slowdown for the global economy. Growth for 2019 downgraded to 2.9% while 3.9% in 2017 and 3.6% in 2018 (IMF, 2020a) — its slowest pace since the global financial crisis in 2008/2009 — as a result of rising trade barriers (IMF, 2019).

A major step in the march towards the trade skirmish launched by US President Donald Trump was raising tariffs in March 2018 by 25% and 10% on steel and aluminium imports into the US, respectively. The legal provision used by the US President to impose the tariffs is 'Section 232' of a 1962 trade law that allows the US President to impose trade barriers to protect the domestic industry for matters of national security. The extensive tariffs are the implementation of the 'America First' trade policy (Evenett and Fritz, 2018), which has among its declared priorities the 'national security' concept and the protection of US industries (USTR, 2018). Undoubtedly, tariffs use has also been born out of the aim to return manufacturing jobs to the US.

The set of aluminium products that face the extra-tariff is broad. It covers unwrought input materials for downstream processing and the full range of wrought aluminium products (plates, sheets, strips, foil, bars, rods, profiles, wire, tubes, pipes and fittings, forgings) and castings used for the fabrication of downstream aluminium-bearing products. The figure below summarises the timeline of the major trade measures taken on aluminium by the US that affect the EU. Further details are provided in Section 3.1.

Figure 1. Timeline of key events for US trade actions impacting the EU



Source: JRC elaboration

The tariffs caused tensions with US major trading partners and close allies such as the European Union (2). The affected counties did not perceive tariffs to be related to national security but as an intervention to protect US domestic industry. Governments worldwide responded with retaliatory duties on US products and dispute actions at the WTO. In addition, the blanket tariffs fuelled uncertainty in the steel and aluminium sectors, threatening to break down well-established transatlantic supply chains. In the case of aluminium, there is a strong interlinkage of companies operating production facilities in both Europe and the US (European Aluminium, 2017).

(2) 'European Commission responds to the US restrictions on steel and aluminium affecting the EU' http://trade.ec.europa.eu/doclib/press/index.cfm?id=1805.

The United States is not a negligible sales destination for the EU aluminium industry. In 2017, the US was the destination of about 12% of the total EU-extra exports for the aluminium products targeted by the US tariffs. In value terms, EU exports to the US of the products subject to the extra-tariffs amounted to approximately EUR 1.1 billion in 2017 (Eurostat Comext, 2020). Given that the EU is a net exporter of aluminium to the US, it is reasonable to expect that any applied import restriction measure could hurt EU exports under normal circumstances. Indirect adverse impacts comprise the increased import penetration into the EU of diverted volumes from the US, along with more intense competition for EU producers in export destinations due to redirected aluminium exports from third countries (Taube, 2018).

The disruption in the world aluminium market that US trade policy provoked in combination with the growing penetration of Chinese exports in the EU due to China's structural overcapacity, raised trade to the top of European producers' agenda. The EU has addressed its concerns on China's excess capacity in the aluminium sector at the highest political level (European Commission, 2020c).

On top of trade conflicts, the ongoing health and economic crisis is a brand-new challenge affecting enormously the aluminium industry worldwide, causing even greater risks and uncertainty. The significant slowdown in the global economy in the first half of 2020 induced an overwhelming demand shock for aluminium, the world's second most consumed metal. The EU aluminium industry could be under further pressure in the next couple of years owing to lower demand and potential exports diversion to the EU.

1.2 The importance of the aluminium sector for the EU

The aluminium industry ([3]) plays a significant role in the EU's economy. It directly employed 215,000 people and had an annual turnover of EUR 61.5 billion in 2018, creating added value of EUR 14.6 billion (Eurostat, 2020a). The Industrial Strategy for Europe ([4]) places a new focus on industrial ecosystems to encompass all players operating along a value chain. Aluminium is relevant to 10 of 14 industrial ecosystems ([5]). Hence, the aluminium sector is not a strategic industrial ecosystem per se, but it has significant interlinkages with other industries and strategic value chains in the Single Market.

The new Industrial Strategy for Europe also aims at addressing the twin challenge of the transition to a green and digital economy envisaged by the Green Deal ([6]), ensuring higher competitiveness for EU producers and enhancing Europe's strategic autonomy. In this context, aluminium is also distinguished as one of the key metals for unfolding the green transition. Due to its lightweight and hardness qualities, the demand for aluminium products used in transport, construction and packaging industries is expected to grow considerably up to 2050 (European Aluminium, 2019c). Moreover, aluminium is increasingly used across a range of clean energy technologies (Hund *et al.*, 2020).

Furthermore, the new Industrial Strategy recognises that EU industry is facing challenges from rising global competition, protectionism, market distortions, and trade tensions. The aluminium industry is a genuine example of such an industrial sector as it is highly integrated into global value chains with particular exposure to international competition and distortive government support and excess capacity in China, both for primary and semi-fabricated aluminium.

1.3 Scope of the study

1.3.1 Objectives

The EU generates a trade surplus in the EU-US aluminium trade, and any import restriction actions could lead to the decline of direct exports to the US. Furthermore, other possible impacts on the EU aluminium industry are related to redirected volumes from the US. The potential effects of the US tariff measures on the EU have been evaluated ex-ante by various studies, all of which concluded on negative impacts. For example, a JRC report estimated the macroeconomic effect in the EU as a result of the US trade tariffs on steel and aluminium (Salotti et al., 2019). A study by (Llano et al., 2019) projected the impact of tariffs on employment in Spain.

([3]) NACE 24.42 'Aluminium production' and NACE 24.53 'Casting of light metals'.
([4]) COM(2020) 102 final.
([5]) As bauxite in COM(2020) 474 final. 14 industrial ecosystems were preliminary identified in the Staff Working Document (SWD(2020) 98) accompanying the Recovery Plan (COM(2020) 456). Relevant ecosystems using aluminium are: Aerospace/defence, Textiles, Electronics, Mobility/Automotive, Energy-intensive industries, Renewable energy, Agri-food, Health, Digital, Construction.
([6]) COM(2019) 640 final.

Another study by (Taube, 2018) estimated that the German and EU aluminium industry would be harmed by direct export losses to the US and redirection to the EU of deflected US exports from third countries.

The aim of this report is:

- to perform an ex-post assessment of whether the US extra-tariffs and trade policy has had an impact on the EU aluminium trade patterns and production, with a focus on EU exports;
- to examine the historical trends in imports of aluminium products in the EU to find out whether the US tariffs in combination with the prevailing aluminium market conditions caused a diversion of aluminium imports from third countries;
- to present the dimensions and most controversial aspects of the US aluminium tariff policy, shed light to the motives behind the imposition of tariffs, and assess tariff effectiveness so far;
- to review the historical trends in the various segments of the EU aluminium industry by looking at data from 2005 to 2019 of several indicators relating to production, import dependency and corporate profitability;
- to provide a short-term outlook for the aluminium sector in the wake of the Covid-19 pandemic.

1.3.2 Approach

The methodological approach followed in this report is two-fold. In the first step, we make a detailed ex-post analysis of impacts in the EU and US per disaggregated product categories. The industry background and recent developments are put in context, as well as trends of production, trade, and market balance. Furthermore, important parameters are examined, such as price evolution, to evaluate the tariffs' impact.

In the second step, this approach is complemented by a comparative assessment of EU aluminium exports to the US.

Analyses based on prices and trends for trade flows in volume and values term are carried out within the framework of the study. The assessment exercise exploits principally statistical data for trade and production as well as historical prices.

Data used to assess the impact on trade flows exclude the period following the coronavirus outbreak due to the global trade suppression in the period after the pandemic.

1.3.3 Layout

The study is organised as follows:

- Section 2 provides a generic overview of the aluminium value chain and the aluminium industry worldwide, in the EU and the US, together with global and regional aluminium supply and demand. It also includes a presentation of China's role in the global aluminium industry;
- Section 3 puts the US aluminium tariffs in context by reviewing several essential topics for assessing their impact. It presents aspects such as the 'national security' justification, the resort at the World Trade Organisation (WTO) by affected countries claiming violation of WTO rules, the tariff exclusion requests by the US aluminium industry, the removal of tariffs against Canadian aluminium, the parallel trade measures imposed by the US against imports of aluminium products from China. Equally important for assessing impacts in the EU aluminium industry are the trade defence measures adopted by the EU and the US investigation against imports of common alloy sheet products from seven Member States;
- Section 4 discusses the overall impacts in the EU and the US aluminium industries by means of the aggregate of aluminium products subject to tariffs. It includes an analysis of the global trade in the aluminium product aggregate, focusing on the EU. Also, it provides information on how aluminium prices and the US trade patterns have been affected by the tariffs and the direct and indirect impacts on the EU trade.
- Section 5 to Section 12 examine the impacts in the US and the EU for each of the eight aluminium product categories subject to tariffs by quantifying gains and losses in trade and production. Moreover, the relevant segments of the EU aluminium industry are analysed through production volumes, trade balance, import reliance, and profitability position. Finally, for each of the eight product categories, the analysis is complemented with global trade and production trends, Chinese exports, and trade diversion to the EU.

— Section 13 looks at downstream aluminium products covered by the second round of tariffs imposed in February 2020, later than the first wave. These derivative products are not analysed in detail due to the short time elapsed since the enforcement of tariffs;

— Section 14 discusses the setbacks of the Covid-19 crisis on the aluminium sector, putting the European industry into perspective;

— Section 15 presents a synthesis of the main findings.

1.3.4 The product scope in the analysis

The aluminium products targeted by the tariffs belong to the Harmonized System (HS) chapter 76, *Aluminium, and articles thereof*. The aluminium product groups subject to Section 232 tariffs are the following:

— *Unwrought aluminium*. Alloyed and unalloyed ingots of all types (e.g. ingots for re-melting, ingots for rolling, billets) made of primary or recycled aluminium. These products are the input for the semi-finished aluminium industry, i.e. the rolling, extrusion, wire, and casting industries, to produce flat-rolled products (e.g. sheet, plate, strip, foil), extruded products (e.g. bar, rod, profile), aluminium wire products and foundry castings respectively. Aluminium unwrought ingots are classified in trade statistics under the *HS heading 7601*;

— *Bars, rods, and profiles*. These products are mainly fabricated in extrusion plants. They are mostly used in building and construction, transport, and general engineering. Bar, rod, and profiles are classified under the *HS heading 7604*;

— *Wire*. Wire products can be drawn, extruded, or rolled, and are used mostly in electrical applications and engineering. Trade of aluminium wire is provided for in *HS heading 7605;*

— *Strips, sheets, and plates*. Flat-rolled products are fabricated in aluminium rolling mills. They are used in packaging, transport, and building/construction applications. Strip, sheet, and plate are classified under the *HS heading 7606*;

— *Foil*. Aluminium foil is produced in rolling mills and is principally used in packaging applications. Aluminium foil products are classified under the *HS heading 7607*;

— *Tubes and pipes.* Tubes and pipes are primarily produced in extrusion plants, but they can also be produced from rolled products. Like the bars, rod, and profiles, they are mostly used in building and construction, transport, and general engineering. Trade of tubes and pipes is provided for in *HS heading 7608* of trade statistics;

— *Tube or pipe fittings*. Fittings of tubes and pipes are principally produced by casting or forging of plates and bars. Trade of tube and pipe fittings is provided for in *HS heading 7609* of trade statistics;

— *Castings and forgings*. Aluminium castings are produced in foundries, and aluminium forgings are fabricated by forging. The automotive industry is the main consumer of aluminium castings and forgings. Together with other aluminium articles, castings and forgings are classified in trade statistics under the *HS subheading 761699*. In the Harmonized Tariff Schedule of the United States (HTS), castings are provided in the *HTS subheading 7616.99.51.60* and forgings in the *HTS subheading 7616.99.51.70*.

The derivative aluminium products covered by the second round of tariffs in February 2020 are the following:

— *Stranded wire, cables, plaited bands and the like, including slings and similar articles, not electrically insulated*. These derivative products refer to downstream electrical wires and cables manufactured from aluminium wire. They are classified in international trade statistics, together with other products, under the *HS subheadings 761410* and *HS 761490*.

— *Bumper stampings, and body stampings for tractors suitable for agricultural use.* These downstream aluminium products are fabricated from aluminium auto sheet by stamping. They are classified in international trade statistics, together with other products, under the *HS subheadings 870810* and *HS 870829*.

Table 1. Aluminium products subject to an extra-tariff of 10% (Section 232 tariffs) and their corresponding HS/HTS codes.

Product description	**HS/HTS heading/subheading**
Unwrought aluminium	7601
Aluminium bars, rods, and profiles	7604
Aluminium wire	7605
Aluminium plates, sheets, and strip, of a thickness exceeding 0.2 mm	7606
Aluminium foil not exceeding 0.2 mm	7607
Aluminium tubes and pipes	7608
Aluminium tube or pipe fittings	7609
Other articles of aluminium: castings ([1])	7616.99.51.60
Other articles of aluminium: forgings ([1])	7616.99.51.70

([1]) In order to allow for international comparisons in our analysis, both products from the Harmonized Tariff Schedule of the United States (HTS) are referred to under the Harmonized System (HS) subheading 761699, *Aluminium; articles n.e.c.*

Source: (Federal Register, 2018)

The scope of the Section 232 tariffs excludes bauxite and alumina, the raw materials used as input for primary aluminium production. The scope also excludes aluminium waste and scrap, i.e. the feedstock for secondary aluminium production. Aluminium powder & flakes that make up a different supply chain are also not subject to tariffs. Finally, most downstream aluminium products manufactured from semi-finished products and classified to HS chapter 76, *Aluminium and articles thereof,* are excluded from the tariffs. Annex 1 lists the products in the aluminium value chain which are not subject to Section 232 tariffs.

2 Value chain and industry overview

2.1 The aluminium value chain

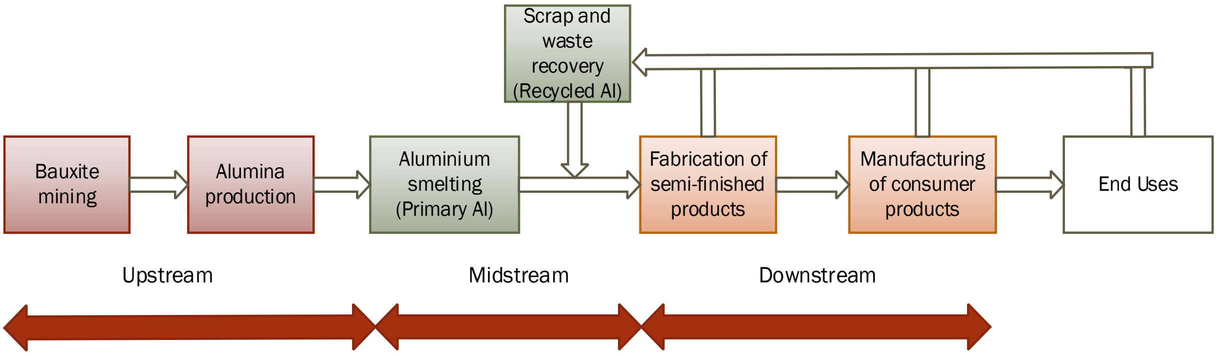
The value chain of the aluminium industry extends over many sectors and many products. It can be divided into three broad parts (Figure 2):

— the *upstream*, which comprises the mining of the basic raw material (bauxite) and the refining of extracted bauxite into alumina;

— the *middle*, covering aluminium production (unwrought aluminium) by alumina smelting (primary aluminium) and aluminium recycling (secondary aluminium);

— the *downstream*, which includes the fabrication of semi-finished aluminium products (mill products and castings) and their use to further manufacture end-use products down the chain.

Figure 2. Simplified scheme of the aluminium value chain



Source: JRC, adapted from (OECD, 2019) and (Bertram *et al.*, 2017)

The midstream and first-fabrication downstream stages of the aluminium value chain are those impacted by US tariffs and within the scope of analysis. Upstream stages of bauxite and alumina production are not covered by the tariffs.

2.1.1 Unwrought aluminium

Demand in the downstream stages is met by producing unwrought aluminium from one or more of the following metal sources: primary aluminium production, recycled aluminium production from new and old scrap, and internal remelting of new scrap (Bertram *et al.*, 2017).

Primary aluminium is obtained from the electrolytic smelting of alumina into molten aluminium metal via the Hall-Héroult process. The aluminium oxide is broken down into aluminium and oxygen using direct current in fused-salt electrolysis. Two tonnes of alumina are smelted approximately to produce one tonne of aluminium metal.

Molten aluminium derived from the above production processes can be sold directly to customers or, most commonly, is transferred to the casthouse, where it is purified, alloyed if necessary, and cast into various products. Products of unwrought aluminium shipped to customers include standard remelt ingots in various shapes (e.g. of T-bars, pigs, sows), and products of added value such as ingot for rolling (slabs), extrusion ingot (billets), continuously cast strip, ingot for forging, ingot for aluminium castings, wire rod etc. Remelt ingots are melted and cast in forms suitable for downstream processing at secondary smelters (remelters) and integrated casthouses of semis plants. Value-added products are fed straight to the fabrication of mill products, castings and forgings.

Recycled (or secondary) aluminium is produced by melting old and new aluminium-bearing scrap:

— new scrap: generated from the fabrication of semi-finished aluminium and the manufacturing of finished products, such as extrusion discards, sheet edge trimmings, turnings, millings etc.;

— old scrap: post-consumer scrap recovered from end-of-life sources (old scrap), such as used beverage cans, engine blocks, aluminium window systems, electrical conductor cables, etc.

The aluminium recycling industry can be grouped into two different sub-sectors in relation to the downstream use of products and the aluminium alloy family, i.e. remelters and refiners.

Section 5.1 provides an overview of unwrought aluminium production worldwide.

2.1.2 Semi-finished aluminium products

Semi-finished aluminium products (or 'semis') are defined as products that have undergone some processing and are supplied for further mechanical working (e.g. forming, machining, joining) into a finished form before their use. Aluminium castings are products at or near-finished shape. In the context of this study, castings are considered to belong in the 'semis' broad group together with wrought products (or 'mill' products). Aluminium alloys are classified accordingly to wrought and casting alloys.

Box 1. Aluminium alloys

Depending on the final end-use requirements, aluminium is often alloyed with other nonferrous metals to improve properties, such as strength, corrosion resistance, thermal conductivity, malleability etc. Copper, manganese, silicon, magnesium, and zinc are the most common alloying elements. Aluminium alloys are registered according to their composition under a numerical classification system based on the predominant alloying metal(s). Classifications are designated using a 4-number nomenclature, i.e. aluminium alloy series 2XXX –7XXX. For example, the 5XXX series includes magnesium as the main alloying metal. Unalloyed (commercially pure) aluminium (alloy series 1xxx) contains 99 per cent or more aluminium by weight.

Aluminium alloys are divided into wrought and casting alloys categories depending on the downstream use of the product. Also, aluminium alloys are further distinguished by how they can be strengthened and hardened:

— non-heat-treatable alloys which are strengthened only by cold mechanical working;

— heat-treatable alloys, which are mainly strengthened by suitable thermal treatment (precipitation hardening).

Various mechanical working processes produce wrought aluminium products. The input material is unwrought aluminium that is mechanically worked by rolling, extruding, drawing or forging into multiple forms. Wrought products comprise a large group of goods, from highly engineered and differentiated products that compete based on their physical and performance characteristics to more standardised products that compete primarily on the basis of price (USITC, 2017). Wrought aluminium products include:

- Flat-rolled products produced by rolling in rolling plants. They consist of plates (thickness over 6 mm, including forging blanks), sheets (thickness over 0.20 mm up to 6 mm), strips (coiled strip, thickness over 0.20 mm), and foil (products with a thickness not exceeding 0.2 mm);
- Bars, rods, and profiles (also called 'sections' or 'shapes') produced mainly by extrusion in extrusion plants. Bars and rods can also be produced by drawing or rolling;
- Tubes and pipes ([7]) made mostly by extrusion in extrusion plants, drawing, or forming and welding aluminium strips;
- Wire products produced by drawing or directly from molten aluminium;
- Forgings ([8]) made by forging processes, i.e. applying pressure to shape suitable unwrought aluminium ingots or extruded products.

Aluminium castings are produced in foundries by casting processes including die-casting, sand or permanent mould casting, and investment casting.

([7]) Tubes or pipes of a length which does not exceed twice the greatest external dimension of the cross-section are defined as tube or pipe fittings.

([8]) Although forgings are wrought products, they are often classified as finished products or downstream finished components in international trade statistics.

Box 2. Aluminium metalworking processes

— Rolling. The unwrought aluminium is heated in a furnace to homogenise the various alloying metals, then hot rolled. In the hot rolling process, an aluminium ingot or slab is passed back and forth under intense pressure between paired cylindrical steel rolls, which forces the aluminium to become thinner and longer. The aluminium is passed between the rolls until it approaches the desired thickness (gauge). Depending on the intended end-use, hot-rolled flat products also can be cold-rolled as an additional step. Before cold rolling, the hot-rolled aluminium is first cooled to room temperature, then passed between rolls to the desired gauge, and finally either wound into coils or cut to length;

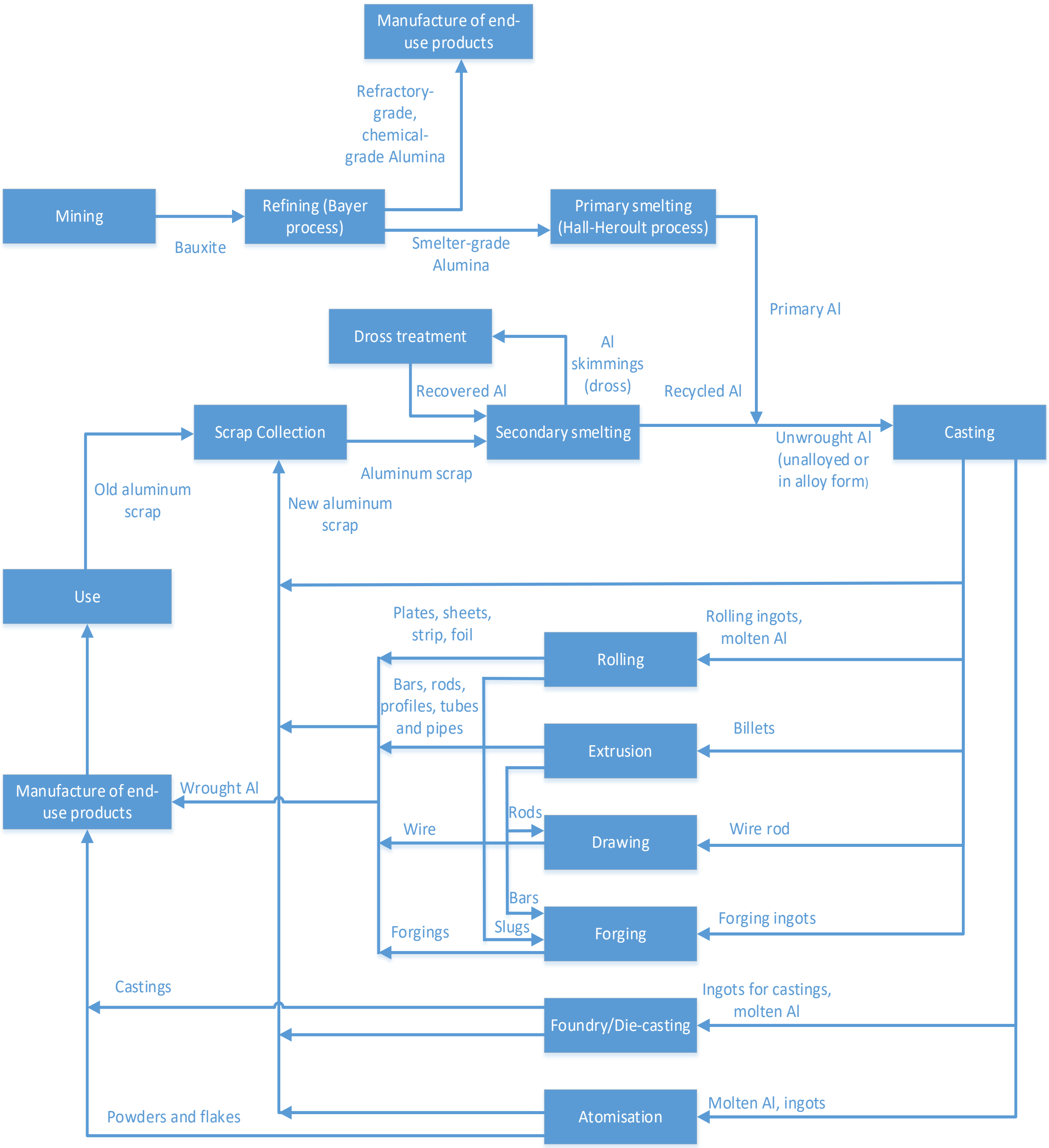
— Extrusion. A preheated solid aluminium billet (usually cylindrical in cross-section) is forced under pressure through smaller steel die opening. The elongated aluminium that emerges from the extrusion press takes the shape of the die aperture. Extruding temperature is an essential determinant of specific characteristics such as hardness and finish;

— Drawing. Aluminium rods, bars, wire, tubes and pipes (whether produced by extrusion or rolling) can be further reduced in diameter, surface-finished, or both by drawing them through a series of steel dies, or even drawing them directly from molten aluminium;

— Forging. Heated unwrought aluminium is pressed, pounded, or squeezed to shape under intense pressure between open dies (hand-forging) or closed dies (drop or die forging). Forged products are sought for end uses requiring high-strength but lighter-weight metal.

An overview of worldwide production is provided in Section 6.1 for extrusions, Section 7.1 for wire, Section 8.1 for rolled products and Section 12.1.1 for castings. Figure 3 below provides a detailed illustration of the aluminium value chain in the stage of semi-finished fabrication.

Figure 3. Schematic representation of the semi-finished fabrication stage of the aluminium value chain

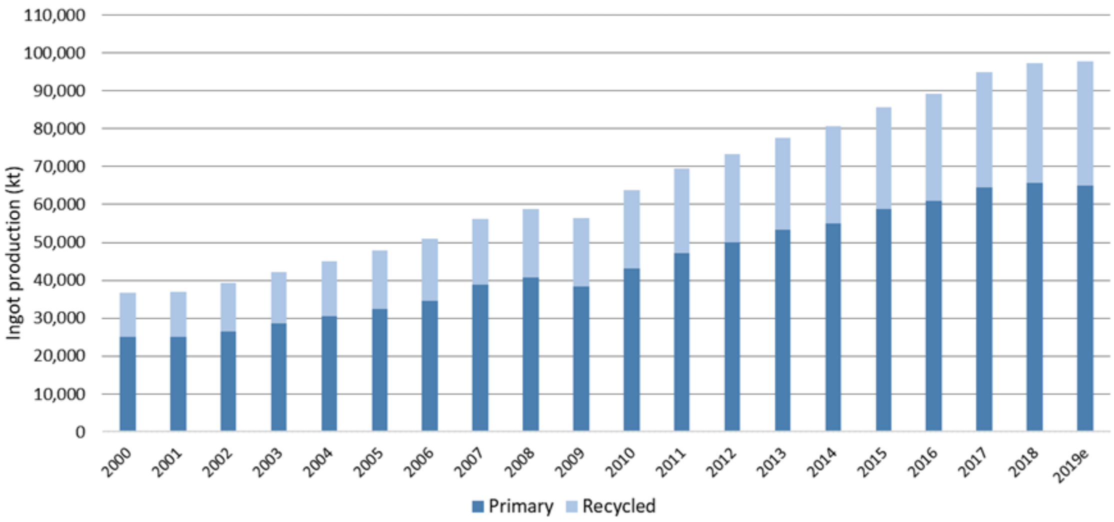


Source: JRC, adjusted from (USITC, 2017)

2.2 Global supply and demand

The material flow analysis modelling tool 'Alucycle' launched by the International Aluminium Institute (IAI) provides comprehensive, publicly available data on the global and regional aluminium stocks and flows at various stages of the value chain (Bertram *et al.*, 2017). Data shown in Figure 4 below reveal that the world aluminium ingot production rose strongly in the last decade from 56.5 Mt in 2009 to 97.3 Mt in 2018 by a compound annual growth rate of 4.8%. The growth rate was slower in 2018 at 2.5% (1.5% for primary ingots and 4.6% for secondary ingots), and the estimate for 2019 is a further slowdown in production growth to 0.4% year-over-year, i.e. -1.5% for primary ingots and 3.5% for secondary ingots (IAI, 2020a).

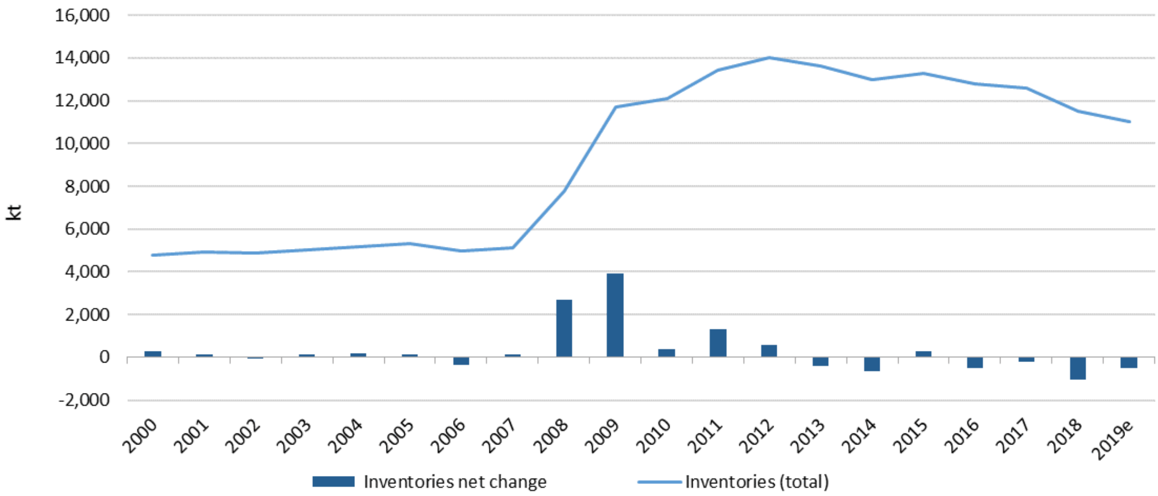
Figure 4. Global production of aluminium ingots ([9]), 2000-2019 ([10])



Source: Background data in (IAI, 2020a)

The changes in aluminium ingot inventories shown in Figure 5 reflect the evolution of the market balance. According to IAI's data, the global market balance for aluminium in 2019 is estimated at a deficit of around 0.5 Mt (a deficit of about 900 kt in China plus a surplus of 400 kt in other regions), which follows a deficit of approximately 1.1 kt Mt in 2018 (a deficit of around 200 kt in China plus a deficit of around 900 kt in other regions).

Figure 5. Net change of aluminium ingot inventories, 2000-2019 ([11])



Source: Background data in (IAI, 2020a)

When looking at global aluminium demand (Figure 6), we note the crushing annual growth of shipments of aluminium semis in China from 2006 to 2017, even in the period 2008-2009 during the global financial crisis. However, in 2018 the annual growth rate of shipments for domestic consumption in China was negative (-1.7%) for the first time during the last years. As a result, the global growth rate for aluminium demand declined at its

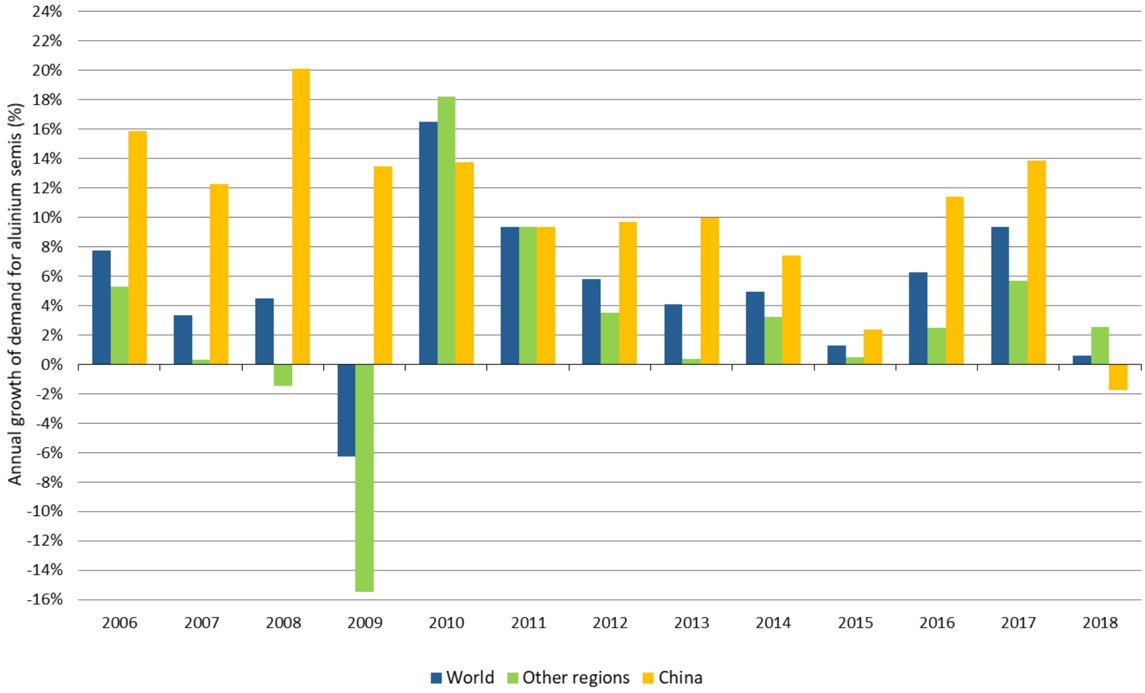
([9]) Statistical data on aluminium ingot production is unavailable at global scale. IAI's modelling tool calculated the data shown via a mass balance approach based on semis shipments, primary production, and trade flows for China, Europe, Japan, North America, Other Asia, Other Producing Countries and South America. For the Middle East and Rest of World, no robust dataset for semis shipments is available. Therefore, this regional model is based on primary production and net ingot imports data, with coefficients for semis shipment distribution and an iterative calculation.

([10]) Data for 2019 are an estimate.

([11]) Data for 2019 are an estimate.

weaker point since 2006. In the rest of the world, semis' shipments for domestic use increased by 2.6% in 2018, a rate lower than the previous year (5.7% in 2017).

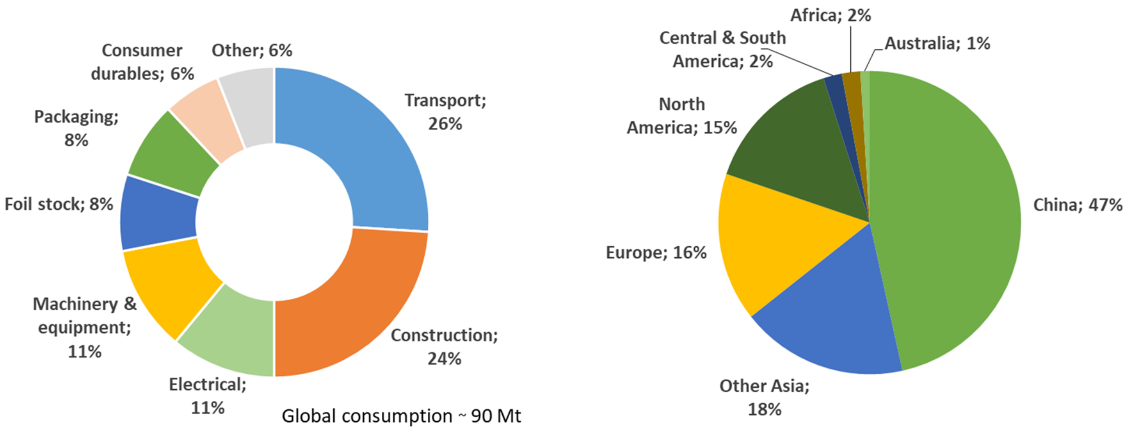
Figure 6. Year-over-year demand growth for aluminium semi-finished products in China, Rest-of-world regions and Worldwide, 2006-2018



Source: Background data in (IAI, 2020a)

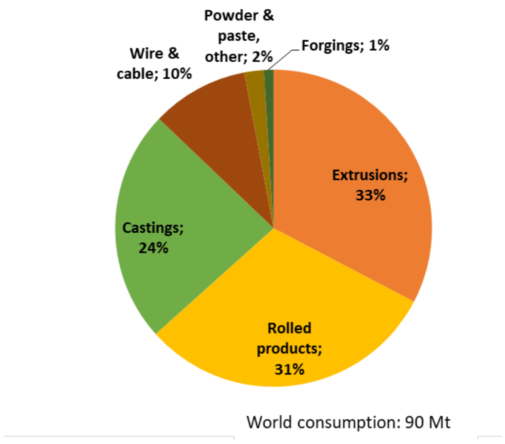
Aluminium's unique physical and chemical properties have led to its widespread use in a variety of end-use sectors across the economy through various value-added products. Aluminium is lightweight, malleable, strong in alloys, durable, corrosion-resistant, and a good conductor of heat and electricity. In quantitative terms, the largest end-use sector for aluminium is the transport sector. Aluminium products are also utilised extensively in the construction sector, electrical engineering, machinery and equipment industry, packaging industry and many other fields. Figure 7 illustrates the distribution of global end-use markets. Figure 8 shows the demand for semi-finished products per group, and Figure 9 presents the principal end-use sectors for each segment of the aluminium industry.

Figure 7. Global consumption of semi-finished aluminium across end-use sectors (left) and by world region (right), 2019



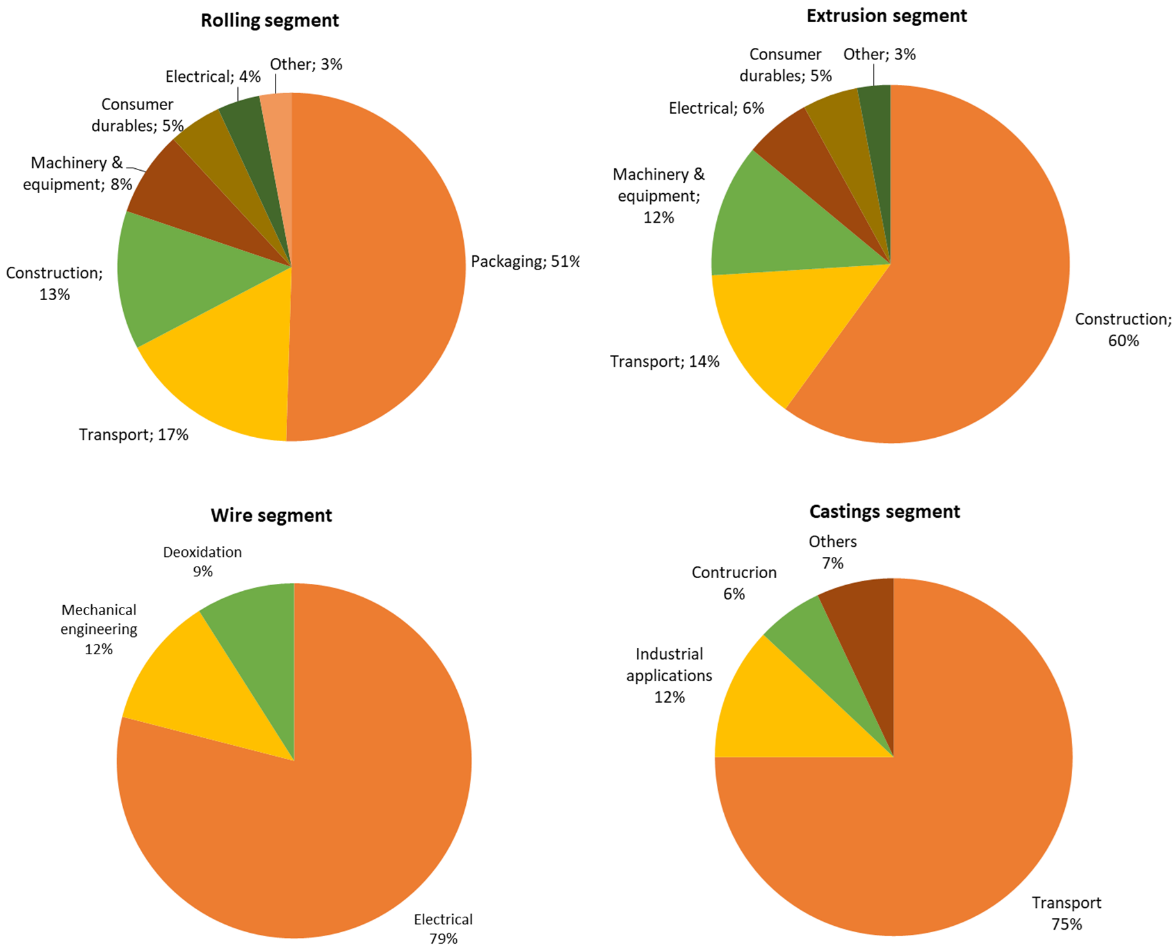
Source: Hydro and CRU data in (Hydro, 2020b)

Figure 8. Consumption of aluminium semis worldwide by product form, 2019



Source: Data from (Hydro, 2020b)

Figure 9. Composition of global demand for aluminium rolled and extrusion products (in 2019), aluminium wire (in 2016) and aluminium castings (in 2011) by end-use sectors



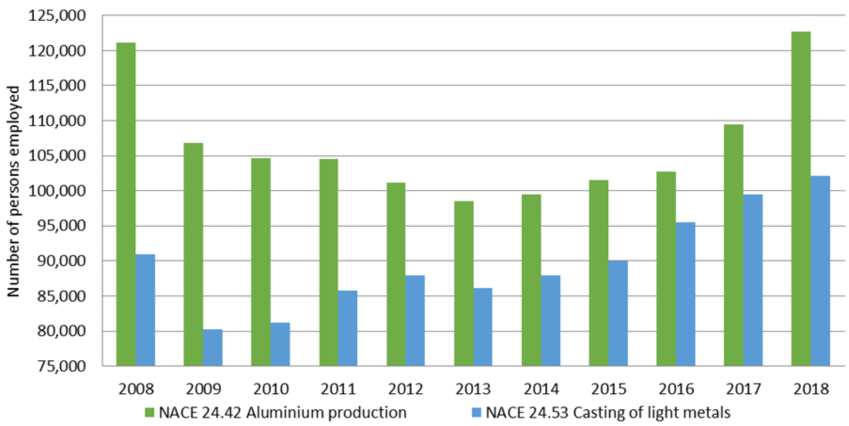
Source: Data from (Hydro, 2020b) for rolling and extrusion; (Technavio, 2017) for wire; (Metal Bulletin, 2012) for castings

2.3 EU aluminium sector

2.3.1 Economic importance and performance of the EU aluminium industry

The EU aluminium industry ([12]) included in the NACE Rev.2 class 24.42 encompassed about 1,270 enterprises in 2018 in all production segments ([13]), from alumina refining to primary production and semi-finished manufacturing. The closely related industrial segment of light metals casting ([14]) (NACE 24.53) that is also impacted by the US tariffs comprised 1,600 enterprises (Eurostat, 2020a). Aluminium castings is the predominant product in companies involved in the production of light-meal castings (CAEF, 2019). According to Eurostat data, in 2018, the NACE 24.42 sector's value added was EUR 9.2 billion, and for the NACE 24.53 sector, EUR 5.4 billion. Direct employment for NACE 24.42 in the EU and the UK stood at approximately 123,000 employees in 2018, 25% higher since 2013. As regards NACE 24.53, about 102,000 persons were directly employed in 2018 in the EU and the UK, 18% more than in 2013 (Figure 10). The overall employment in NACE sectors 24.42 and 24.53 was 225,000 persons in 2018 (EU+UK), and 215,000 persons only in the EU. Germany accounts for 31% of the total direct employment in the EU for aggregated employment in NACE 24.42 and NACE 24.53 (Figure 11). If indirect jobs in other sectors are included, the industry creates one million jobs throughout Europe (European Aluminium, 2015).

Figure 10. Direct jobs in the EU and UK aluminium and light metal castings industry (NACE 24.42 and NACE 24.53) ([15])



Source: Background data from (Eurostat, 2020a)

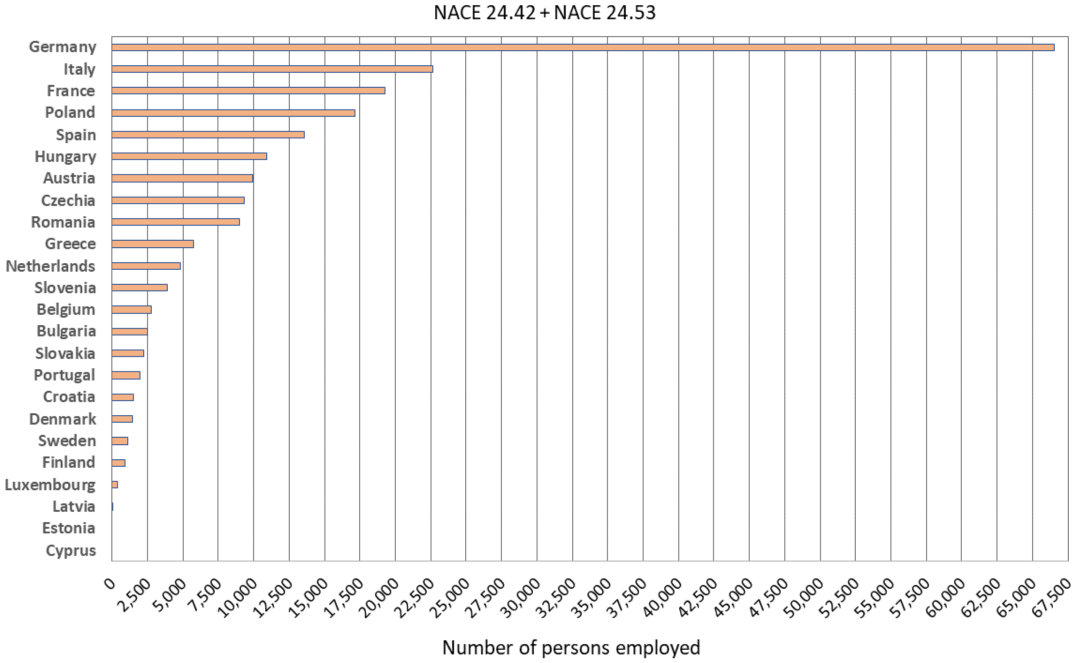
([12]) NACE 24.42 'Aluminium production' includes: production of aluminium from alumina, production of aluminium from waste and scrap, production of aluminium alloys, semi-manufacturing of aluminium, manufacture of wire of these metals by drawing, production of aluminium oxide (alumina), production of aluminium wrapping foil, manufacture of aluminium foil laminates made from aluminium foil as primary component.

([13]) Mining not included.

([14]) NACE 24.53 'Casting of light metals' includes casting of semi-finished products of aluminium, magnesium, titanium, zinc etc., and casting of light metal castings.

([15]) Data were not available for the EU at the time of drafting.

Figure 11. Direct jobs in the EU aluminium industry by countries ([16]) in 2018, NACE 24.42 Aluminium production + NACE 24.53 Casting of light metals



Source: Background data from (Eurostat, 2020a)

The overall production value of the aluminium industry was more than EUR 45 billion in 2018. If aluminium castings' production value is included, the total value rises to more than EUR 61 billion (Table 2).

Table 2. Value of production sold by the EU aluminium industry per segment, in 2018

Segment	**Value of production sold (million EUR)**	**Share (%)**
Rolled products ([1])	16,811	27.5%
Extruded products ([2])	12,923	21.1%
Unwrought aluminium ([3])	10,985	17.9%
Alumina production ([4])	3,130	5.1%
Wire products ([5])	670	1.1%
Powder & flakes ([6])	426	0.7%
Bauxite ([7])	72	0.1%
Subtotal	**45,016**	73.5%
Light metals castings ([8])	16,215	26.5%
Total	**61,231**	100%

([1]) Plates, sheets, strips, and foil. PRC codes 24422430, 24422450, and 24422500.
([2]) Bars, rods, profiles, tubes, pipes and fittings for tubes and pipes. PRC codes 24422230, 24422250, 24422630, 24422650, and PRC code 24422670.

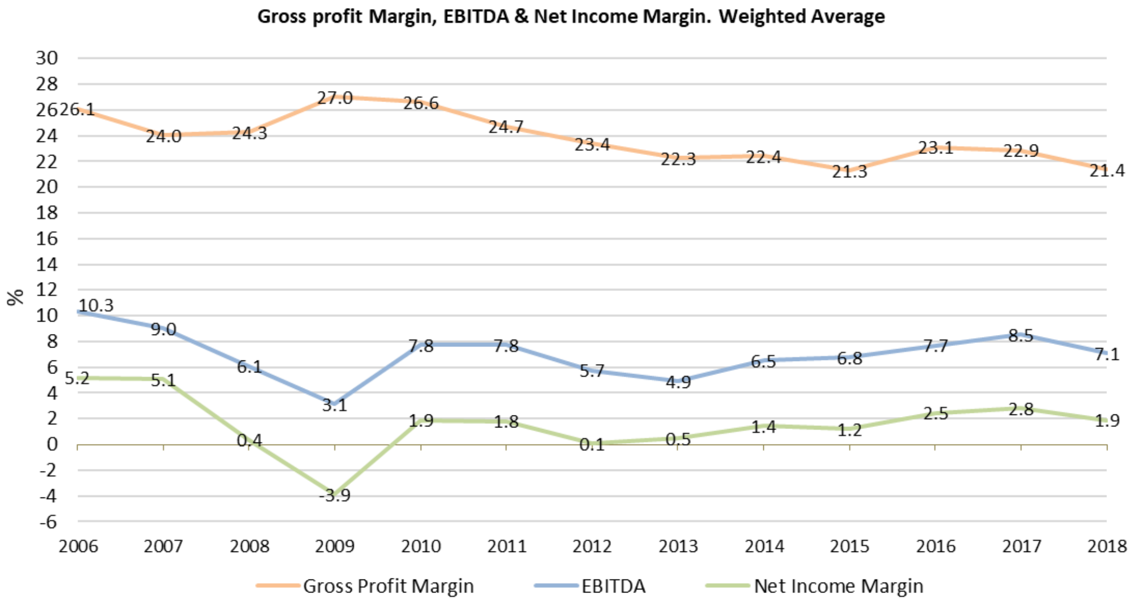
([16]) For NACE 24.42 data are confidential for Denmark, Estonia, Cyprus, Lithuania, Malta, and Slovenia. For NACE 24.53 data are withheld for Denmark, Estonia, and Lithuania.

([3]) PRC codes 24421130 and 24421154.
([4]) PRC codes 24421200, 23991500 and 20132570 (includes speciality alumina products).
([5]) PRC codes 24422330 and 24422350.
([6]) PRC code 24422100.
([7]) PRC code 07291300.
([8]) The value corresponds to the production value reported for NACE Rev.2 sector 24.53 "Casting of light metals" in 2018. About 99% of light metal castings output is made of aluminium (CAEF, 2019).

Source: Background data from (Eurostat Prodcom, 2020) (Eurostat, 2020a)

Profitability results posted by companies can be used as one of the metrics to assess the economic performance of businesses. Figure 12 below consolidates the basic profitability indicators of firms operating in the EU aluminium sector over the last years. Company-level data for the period 2006-2018 from 233 firms across various aluminium industrial segments ([17]) were used in the compilation (see Annex 13 for the list of companies and the methodology applied). The companies' turnover in the sample was close to EUR 31 billion in 2018, accounting for more than half (54%) of the total production value by the relevant industry segments shown in Table 2.

Figure 12. Trend of corporate profitability in the EU aluminium industry ([18])



Source: Background data from (S&P Global, 2020d) and company financial reports

The above figure reveals that the EU aluminium sector never returned to profitability levels seen before the financial crisis of 2008/2009, despite the strong demand (IAI, 2020a) for aluminium in the post-crisis years. The partial recovery in 2010-2011 driven by swiftly growing demand (see Figure 6) was followed by a two-year period of plummeting margins in 2012-2013. EBITDA and net income margins of the sector gradually rose from 2014 to 2017 regardless of the rather flat gross profits in the same period. The weighted average EBITDA and net profit margins achieved by the EU aluminium sector in 2017 were the best in ten years. In contrast, in 2018, aluminium companies reported a drop in earnings amid a slowdown in growth for global aluminium demand (see Figure 6) and trade tensions. Financial statements and reports for the fiscal year 2019 ([19]) released to date reveal even weaker margins than 2018.

The analysis of the distinct industrial segments reveals that the profitability performance varies among them, indicating differences in costs and other underlying characteristics such as dissimilar exposure to raw materials price volatility and diversity in the added value of their products. The primary and secondary aluminium

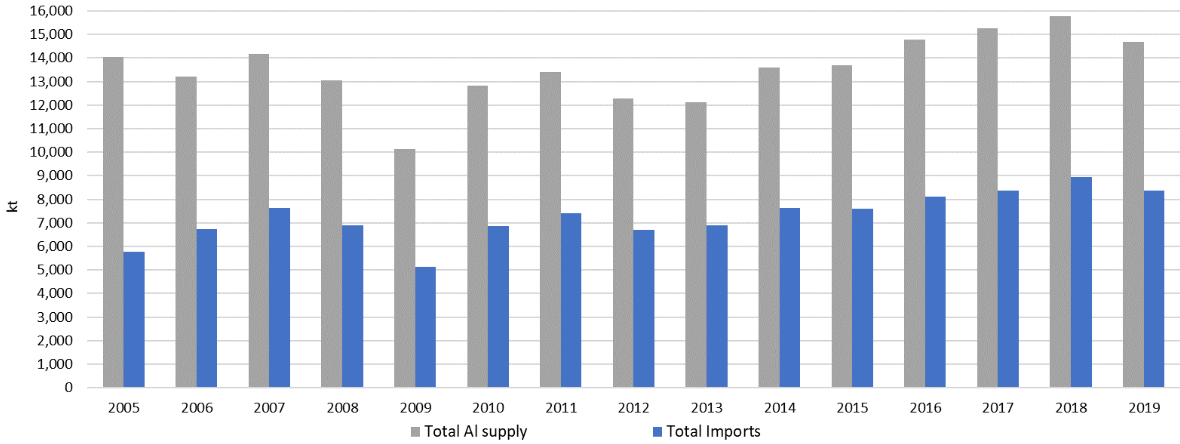
([17]) Entities from the following segments are included: Primary aluminium, Secondary aluminium, Extrusion, Rolling, Wire, Castings.
([18]) The aggregate includes the segments of primary aluminium, secondary aluminium, rolling, extrusion, wire, and castings. Companies producing aluminium castings are classified by NACE Rev.2 and industrial associations in a separate manufacturing sector than aluminium production. However, they are used in the aggregate to acquire a more representative picture of EU industry affected by the US aluminium tariffs.
([19]) Available data of income statements for 2019 are not presented as they cover a much lower market share in comparison to previous years.

segments of the sector producing unwrought aluminium are presented in Section 5.4.1.1 and Section 5.4.1.2, respectively. Insights on industrial clusters of mill products are provided in Section 6.4.1 (extrusion), Section 7.4.1 (wire) and Section 8.4.1 (rolling). Finally, the aluminium castings segment is presented in Section 12.4.1.

2.3.2 Aluminium supply and demand in the EU

The total aluminium supply in the EU peaked at 15.8 Mt in 2018, of which 57% was sourced from imports (Figure 13). Imports into the EU of aluminium products increased in total by one-third (34%) between 2012 and 2018, from 6.7 Mt to 9 Mt. In 2019, total imports of aluminium metal in the EU fell to the 2017 levels at 8.4 Mt, and the total metal supply amounted to 14.7 Mt.

Figure 13. Evolution of EU aluminium metal supply ([20]) and imports, 2005-2019

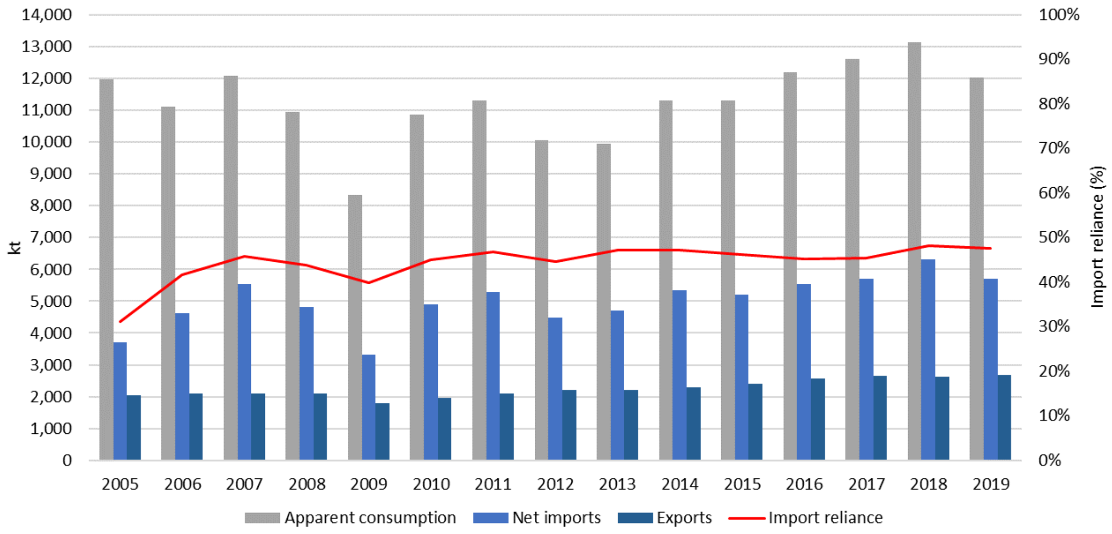


Source: Background data from (Eurostat Prodcom, 2020)(Eurostat Comext, 2020)

The apparent consumption of aluminium in the EU reached 13.1 Mt in 2018, increasing at an expeditious rate of 16% from 2015 to 2018. The EU relied on net imports for 48% of its total aluminium metal consumption in 2018 (see Figure 14), the highest level seen in the period 2005-2018, as net imports surged to 6.3 Mt. As derived from the latest available Eurostat data, the apparent consumption of aluminium metal in the Union decreased to 12 Mt in 2019. Half of the significant drop is allocated to lower domestic production of unwrought aluminium and a half to decreased imports. On the contrary, the total exports maintained a rising trend since 2010 at a CAGR of 4.1%, amounting to 2.7 Mt in 2019. About 18% of the total EU aluminium demand in the EU was destined for export in 2019.

([20]) Total supply is estimated as domestic production (volume sold) of unwrought aluminium (primary and recycled aluminium ingots), plus domestic production of powders and flakes (volume sold), plus imports of aluminium metal consisting of unwrought aluminium, semi-finished aluminium products (rolled, extrusions, wire), powders & flakes, and castings. Downstream articles of aluminium and aluminium scrap are not considered in imports. The correspondence between Prodcom codes and Combined Nomenclature trade codes is given in Annex 3.

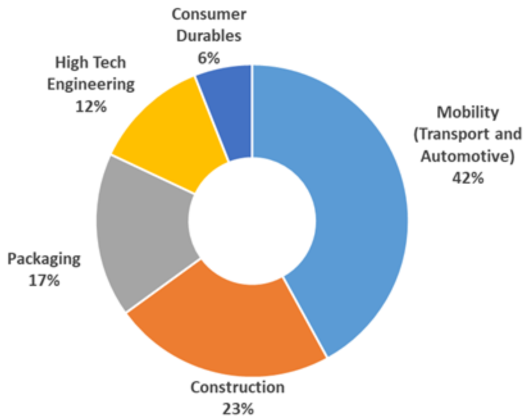
Figure 14. Evolution of EU aluminium metal apparent consumption ([21]), net imports, and exports (left axis), and import reliance ([22]) (right axis), 2005-2019



Source: Background data from (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

The transport & automotive and the construction sector account for 65% of aluminium demand in Europe. The distribution of aluminium uses across different sectors is illustrated in Figure 15 below. The breakdown for the sub-categories of extrusion and rolled products is provided in Figure 103 and Figure 135, respectively.

Figure 15. End-uses of aluminium in Europe in 2017



Source: Data from (European Aluminium, 2018a)

As concerns the outlook for aluminium demand, robust growth in aluminium consumption in Europe is expected for semi-finished products by 2050. The European Aluminium Association forecasted the average growth rate of semis consumption from 2017 to 2050 in Europe to 39% (European Aluminium, 2019c), while an even stronger growth is foreseen according to data by another study, i.e. 54% rise in semis consumption in Europe in 2040 over 2018 (IAI, 2020a)(CM Group, 2020). Environmental considerations will be the drivers for the growing demand in applications where aluminium's properties can deliver environmental benefits. The demand for transport driven by its lightweight and strength, for construction driven by the need for energy-efficient

([21]) Apparent consumption is estimated as total supply minus exports of aluminium metal consisting of unwrought aluminium, wrought aluminium products (rolled, extrusions, wire), castings and powders and flakes. Aluminium scrap, and downstream articles of aluminium are not included in exports. The variation of inventories is not considered in the estimation.

([22]) The import reliance is calculated as the ratio of net imports to apparent consumption.

buildings, and for light packaging are expected to increase by 55%, 28% and 25% respectively in 2050 compared to 2017 (European Aluminium, 2019c).

2.4 US aluminium sector

2.4.1 Economic importance of the US aluminium industry

In 2018, the US aluminium industry directly generated USD 71 billion in economic output and indirectly contributed an additional USD 103 billion to the US economy. In total, the impact of the US aluminium industry accounted for 0.88% of the US GDP. The US aluminium industry directly employed about 136,000 persons in 2018. If wholesalers are included, then the number of direct employments rises to about 162,000 jobs. The aluminium industry supports in total 690,000 jobs in the United States if suppliers and induced impacts are considered (Aluminum Association, 2018). Table 3 below reports direct employment in the US aluminium industry.

Table 3. Direct jobs in the US aluminium industry ([1]) by segment

	2013	**2016**	**2018**	**Share in 2018 (%)**	**Change 2013–2018**	**Change 2013–2018 (%)**
Alumina refining/Primary Al production	12,787	4,879	4,192	3%	-8,595	-67%
Secondary Al production	9,428	9,507	10,412	8%	984	10%
Manufacturing of sheets, plates, foil, extrusions	61,806	62,327	64,306	47%	2,500	4%
Aluminium foundries	36,484	42,117	42,614	31%	6,130	17%
Manufacturing of forgings	10,328	10,462	10,888	8%	560	5%
Manufacturing of coatings	2,814	3,132	3,288	2%	474	17%
Total	**133,647**	**132,424**	**135,700**	**100%**	**2,053**	**1.5%**
Metal service centers and wholesalers ([2])	23,142	24,631	26,563	-	3,421	-
Grand total	**156,789**	**157,054**	**162,263**	**-**	**5,474**	-

([1]) It includes alumina refining; primary aluminium production; secondary aluminium production and alloying; manufacturing of aluminium sheet, plate, foil, extrusions, forgings, coatings, and powder; aluminium foundries; metals service centres, and wholesalers.
([2]) Metals service centres are businesses that inventory and distribute metals for industrial customers and perform first-stage processing.

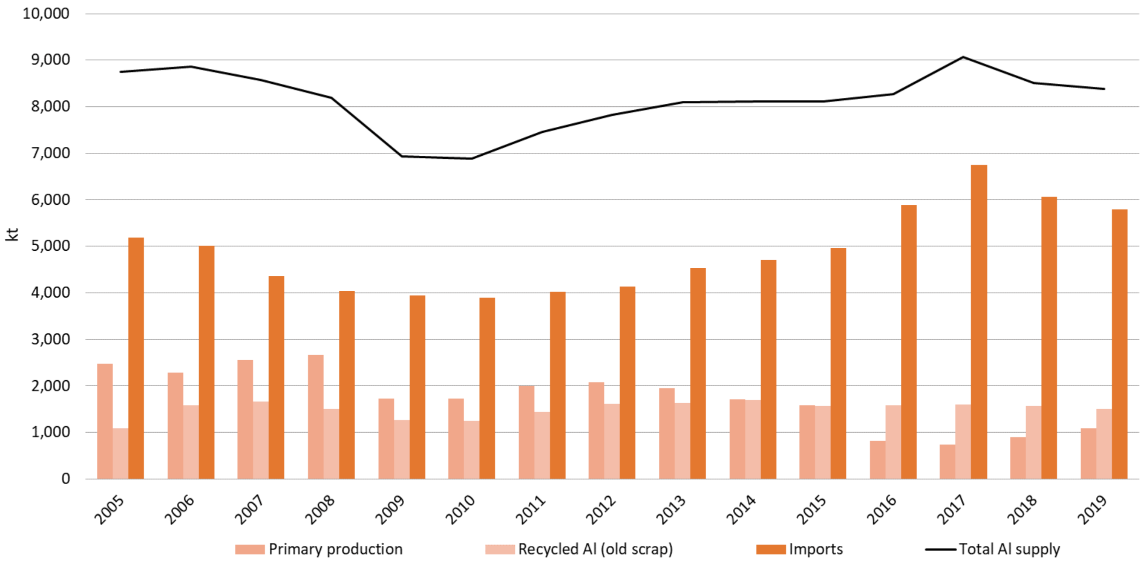
Source: Background data from (Aluminum Association, 2018) (John Dunham & Associates, 2018) (USITC, 2017)

Direct jobs grew by 1.5% between 2013 and 2018; if metal service centres and wholesalers are considered, then the growth rate of direct employment was 3.5%. The industry's upstream segment has suffered significant job losses as several smelters were either permanently shut down or temporarily idled. In particular, the alumina refining/primary aluminium segment employment shrunk by about 67% between 2013 and 2018. The losses have been offset by gains in downstream segments where employment has seen growth, especially in foundries and the fabrication of flat-rolled products and extrusions. In 2018, rolling and extrusion accounted for 88% of the total direct employment in the US aluminium industry.

2.4.2 Aluminium supply and demand in the US

Aluminium supply in the US has increased significantly by 32% between its most recent low point in 2010 and 2017, from 6.9 Mt in 2010 to 9 Mt in 2017. Aluminium supply amounted to 8.4 Mt in 2018 after the introduction of tariffs, down 7.5% over 2017 before the introduction of tariffs. In 2017, 8% of the aluminium used in the US came from domestically produced primary aluminium, 18% was recovered from old scrap, while imports of unwrought aluminium ingots and semi-finished products represented 74% of supply. In 2019, primary production accounted for 13%, recycled production from old scrap for 18% and imports of unwrought aluminium ingots and semi-finished products for 69% of the total supply. Figure 16 shows the components of the US aluminium supply.

Figure 16. US aluminium production, aluminium imports ([23]) and the total supply of aluminium metal ([24])



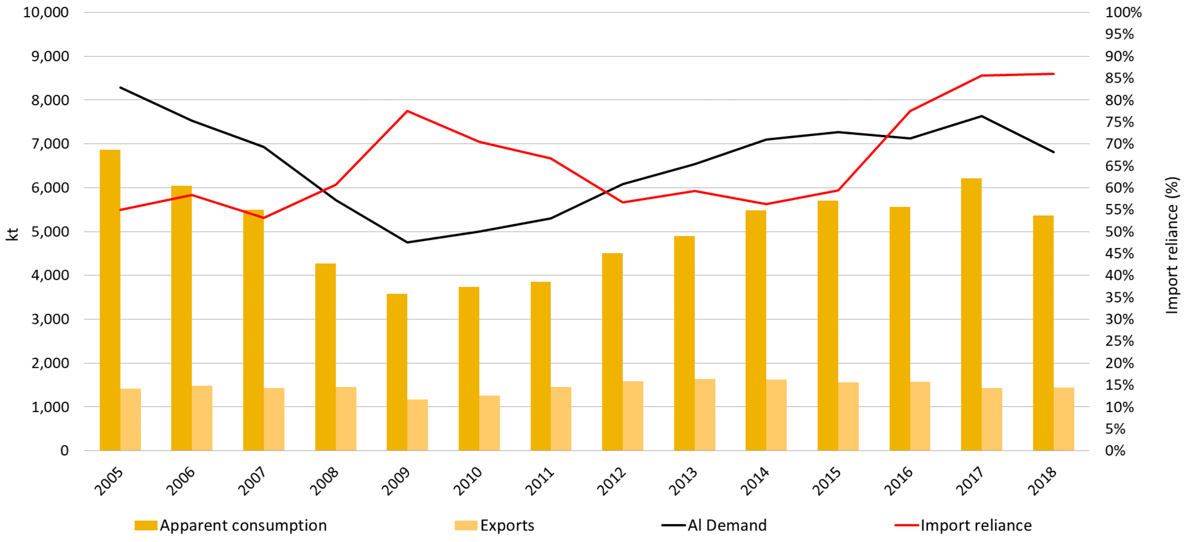
Source: Background data for 2005-2018 in (USGS, 2020d), and for 2019 in (USGS, 2020f)

The apparent consumption of aluminium in the United States grew steadily since 2009, except for 2016. The US net import reliance for aluminium as a percentage of apparent consumption has widened since 2015, i.e. from 59% in 2015 to 86% in 2017-2018.

([23]) Imports for unwrought aluminium, semi-finished products (rolled, extruded and wire) and powders & flakes. Imports of scrap are excluded.

([24]) Domestic primary metal production plus secondary recovery from old scrap plus imports. Inventories variation is not accounted.

Figure 17. US aluminium exports ([25]), apparent consumption ([26]), and demand ([27]) (left axis), and import reliance ([28]) (right axis), 2005-2018



Source: Background data in (USGS, 2020g)

Aluminium demand (shipments by domestic producers plus imports) in North America ([29]) increased by a CAGR of 3.0% in the period 2012-2018 (Figure 18). In 2018, the year of tariffs implementation, aluminium demand increased strongly by 3.8%. However, data for 2019 indicate that aluminium demand in the United States and Canada contracted an estimated 3.2%, and the apparent consumption (demand less exports) was down an estimated 1.1% from the 2018 total. In total, the overall growth of demand in North America in the years of tariffs implementation, i.e. in 2018-2019, was 0.5%, split in 1.9% rise for mill products and 3.4% drop for castings (Figure 18).

([25]) Exports of unwrought aluminium, powders and flakes, semi-finished products (rolled, extruded, wire etc.), castings & forgings. Exports of scrap are excluded.

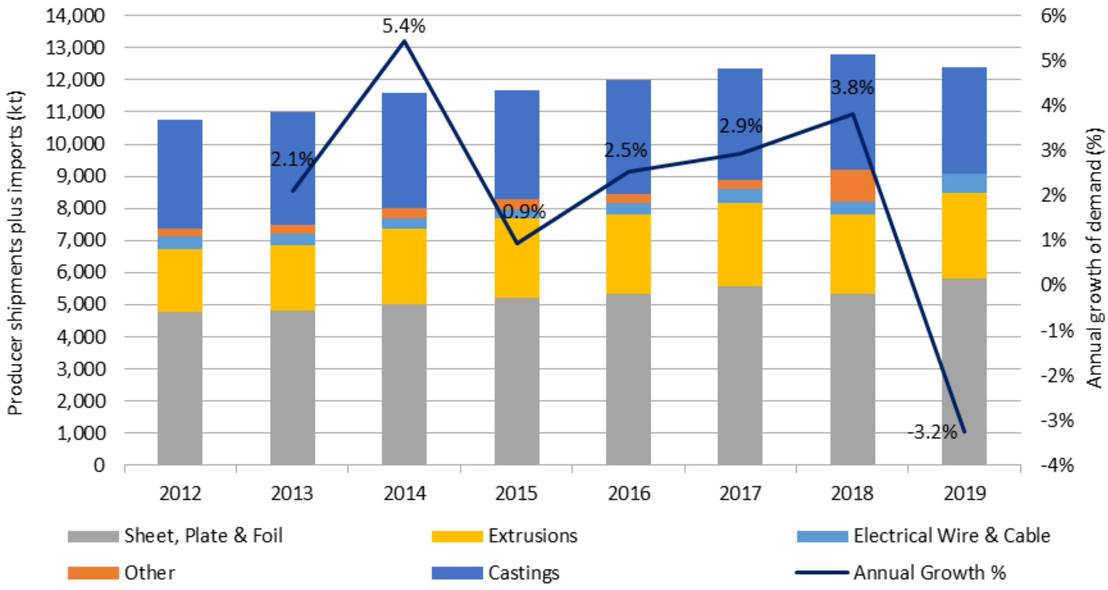
([26]) Estimated as primary metal production plus secondary recovery from old scrap plus net imports (excluding scrap) of unwrought aluminium, powders and flakes, semi-finished products (rolled, extruded, wire etc), castings & forgings and plus adjustments for London Metal Exchange (U.S. warehouses) and industry stock changes.

([27]) Apparent consumption plus exports.

([28]) The ratio of net imports (scrap is excluded) to apparent consumption.

([29]) Due to the highly integrated nature of US and Canadian markets, it is assumed that the data are representative of the US trends.

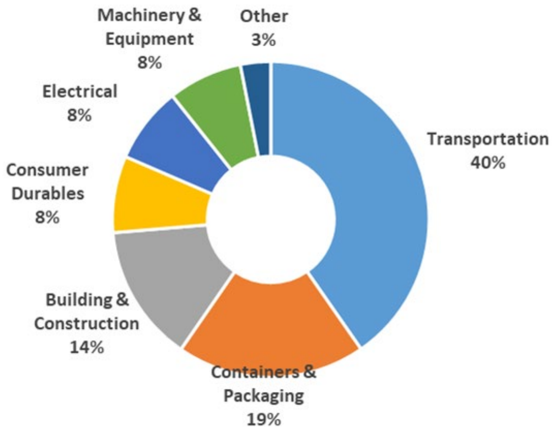
Figure 18. Aluminium demand in North America, by product group, 2012-2019 (30)



Source: Data from (Aluminum Association, 2020c) for 2012-2018, and (IAI, 2020a) for 2019

The transport sector is the largest end-use destination for aluminium in North America, accounting for 40% of total shipments for domestic consumption, followed by packaging (19%) and construction (14%).

Figure 19. Apparent consumption of aluminium in North America (US and Canada) by end-use, 2018



Source: Data from (Aluminum Association, 2020b)

2.5 China's role in the world aluminium market

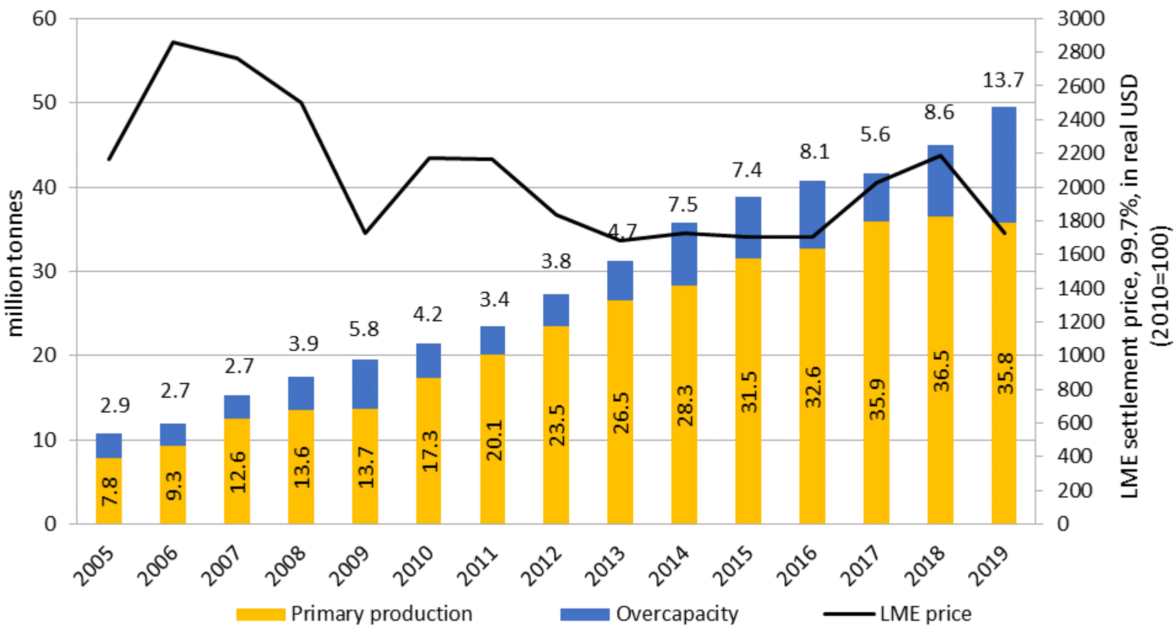
2.5.1 Chinese overcapacity

China dominates the global aluminium industry by an impressive expansion of its production capacity for both primary and semi-finished aluminium. The Chinese government and local authorities supported the extraordinary development of the aluminium industry, leading to structural overcapacity (Taube, 2017) (Le Gleuher, 2018) (OECD, 2019).

(30) In 2019, aluminium wire is reported together with the category 'Other'.

From just 11% in 2000, the Chinese primary aluminium output accounted for 56% of the world's primary aluminium supply in 2019 (IAI, 2020d). Excess of aluminium-smelting capacity in China is estimated roughly to more than 13 Mt in 2019 ([31]). Figure 20 below demonstrates an estimation of the surplus smelting capacity in China, elaborated from various sources.

Figure 20. Primary aluminium production and estimated overcapacity ([32]) in China (left axis), and annual LME aluminium price trend (right axis)



Source: Background data for China's primary production from (IAI, 2020d), and China's smelting capacity data as follows: year 2019 from (Pawlek, 2020)(Pawlek, 2019), years 2011-2018 from (Taube, 2018), years 2005-2010 from (European Aluminium, 2017)

To put into perspective the above estimations, China could match the aggregated production of Russia, Canada, India, and the United Arab Emirates - the second to fifth producer worldwide - only by restarting all idled capacities and operating at the global average utilisation rate ([33]). Aluminium industry associations worldwide expected that the aluminium primary smelting capacity in China would reach 52 Mt by 2020, a 25% increase compared to 2016 figures (Aluminum Association et al., 2018). As reported by Fitch Ratings and other analysts, the Chinese aluminium industry is likely to reach a capacity ceiling of around 45 Mt by 2022-2023 as a result of capacity-swapping policies (Fitch Ratings, 2019)(Reuters, 2020). According to Chinese sources, in May 2020 there were 36.6 Mt of primary aluminium capacity in operation out of the existing 41.2 Mt per year total capacity with new capacities in Yunnan, Inner Mongolia and other regions in a ramp-up stage (SMM, 2020). In 2021 China will host 43 million tonnes of aluminium-smelting capacity after factoring in permanent capacity closures (Aluminium Insider, 2020).

Since 2013, the Chinese government launched several policy measures to reform the aluminium sector and limit the environmental impacts in highly populated industrial regions. The supply-side reform aimed to prevent further capacity expansion by capacity swaps, shutting down obsolete plants, and increasing capacity utilisation of aluminium smelters to over 80% by 2020. The concept of capacity swaps allows new smelting capacity only if new plants replace old capacity (idled or not) by an equal or lower amount. Besides, existing plants that do not comply with land use legislation, environmental standards, or industry standards are to be closed or temporarily curtailed in winter by 30-50% to limit environmental impacts (Schüler-Zhou et al., 2020)(Le Gleuher, 2018)(Taube, 2017). The implemented measures have led to an overhaul of the sector as a significant part of the production capacity has been relocated to less populated regions with cheaper sources of energy and proximity to bauxite. In conjunction with the use by the new replacement capacity of advanced smelting

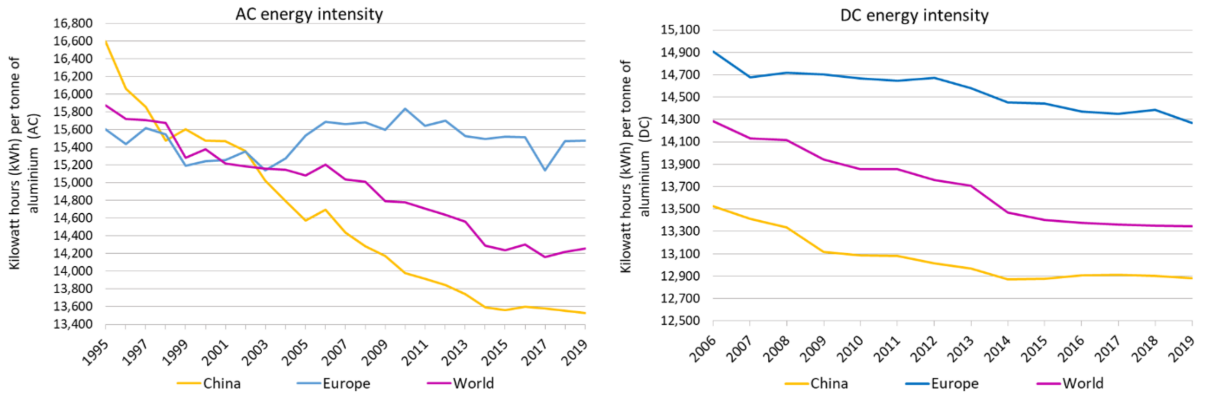
([31]) Data regarding the capacity maintained by China varies greatly depending on the source of information, and the underlying assumptions are not always clear, i.e. to avoid double counting of closed smelters or capacity relocated to other regions.

([32]) According to (Pawlek, 2019), 11 Mt of smelting capacity are alleged to be curtailed during winter months in 2018; thus, these were accounted to be equivalent to 50% of their nameplate capacity, i.e. 5.5 Mt. The same assumption was made for 2019.

([33]) 88% in 2016 in rest-of-world (IAI, 2016).

technology with higher energy efficiency, the Chinese industry is becoming more cost-efficient (Le Gleuher, 2018)(Gao *et al.*, 2017)(Fitch Ratings, 2019). Data published by the International Aluminium Institute reveal that since 2005 Chinese smelters have established an advantage compared to the world average in terms of energy consumption (AC) as their electrolysis process is more efficient (DC) (Figure 21).

Figure 21. Energy intensity in primary aluminium smelting in China and Europe (34,35)



Source: Data from (IAI, 2020b)

However, the high-carbon footprint of primary aluminium produced in China is remarkable. In 2019, coal-fired plants generated 83% of Chinese smelters' power consumption, in comparison to 8% in Europe(36) (IAI, 2020c). The carbon intensity for aluminium produced in China is three times higher than in Europe. Primary aluminium production in China generates about 20 kg of CO_2eq per kg in comparison to 6.7 kg of CO_2eq per kg in Europe (37) (European Aluminium, 2018a)(European Aluminium, 2019c).

Yet, these policy measures to confront overcapacities by a structural reform had no meaningful effect in the period 2014-2017 as capacity and production continued to proliferate (see Figure 20). The local authorities' reluctance to implement measures is cited as a significant obstacle (Aluminum Association *et al.*, 2018). Additionally, the price rise initiated within 2016 (see Figure 54) deferred initiatives to effectively control excess capacity and led to the reactivation of idle plants (Taube, 2017). At the same time, most of the newly built plants through capacity swaps eliminated old and inefficient plants that were already idle due to high operating costs (Fitch Ratings, 2019)(Taube, 2017). Nevertheless, a slowdown in the explosive growth of the primary aluminium output is noticed in the last two years 2018-2019. Following the period 2010-2017, in which China's primary aluminium output had increased at a breakneck rate (CAGR) of 11%, the pace of growth slowed down to 1.4% in 2018 and contracted in 2019 by 1.7% from 2018's record high level for the first time since 2009 (IAI, 2020d).

Concerning the downstream production of aluminium in first-stage fabricated form, Chinese manufacturers of mill products and castings were also capable of expanding production at an overwhelming rate (Figure 22), achieving a vertically integrated value chain. The massive capacity expansion for semi-fabricated aluminium products adds value to the upstream overcapacity. Data compiled by the dynamic material flow modelling tool developed by the International Aluminium Institute show that in 2018 China's production reached 16 Mt for rolled products, 17.5 Mt for extruded products, 9.5 Mt for aluminium castings and 3 Mt for wire and other products (IAI, 2020a)(Bertram *et al.*, 2017). According to these figures, Chinese manufacturers accounted in

(34) Sources outside the industry or estimates are used by the International Aluminium Institute (IAI) for "World" and "China" regions. Primary aluminium smelting energy intensity is reported as AC and DC power used for electrolysis by the Hall-Héroult processes per tonne of aluminium production. The AC value refers to the power consumed by facilities for the smelting process including rectification from AC to DC and normal smelter auxiliaries (including pollution control equipment) up to the point where the liquid aluminium is tapped from the pots. It excludes power used in casting and carbon plants. The DC value is a process efficiency metric, measuring the energy intensity of the electrolytic process as the consumption of DC power after rectification per tonne of liquid aluminium tapped from the pots.

(35) Europe: European Union, United Kingdom, Albania, Bosnia Herzegovina, Belarus, Iceland, Rep. of Moldova, Montenegro, North Macedonia, Norway, Serbia, Switzerland, Turkey, Ukraine.

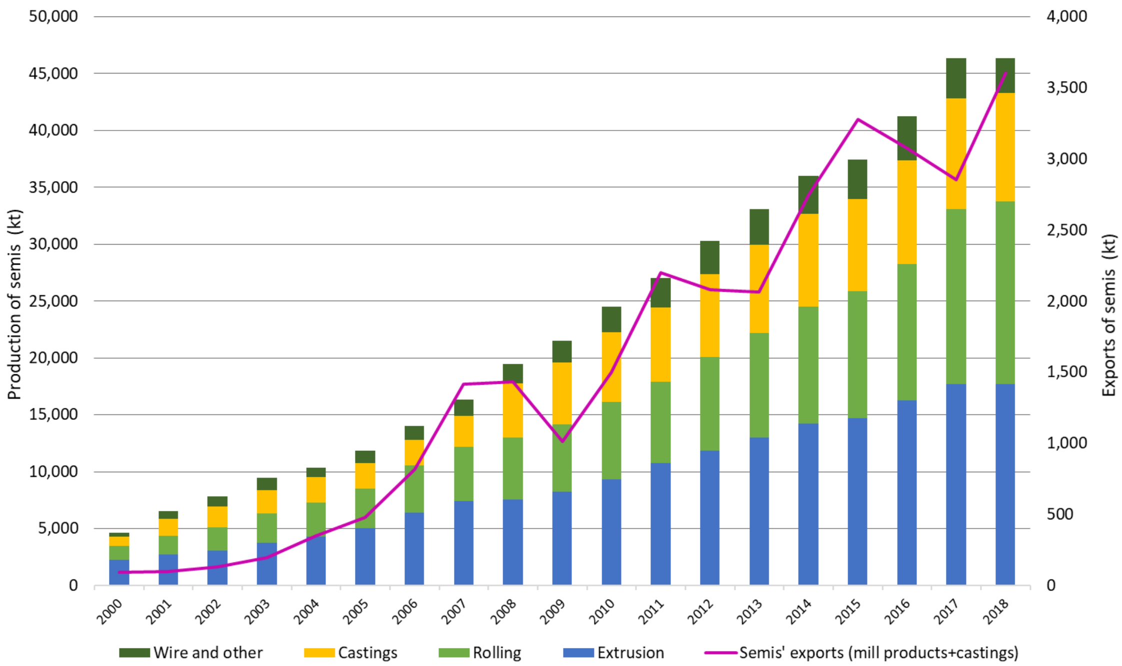
(36) The share of 8% comprises an energy mix of coal, natural gas, oil and other non-renewable.

(37) Figures include direct and indirect carbon CO_2 emissions from bauxite mining to primary ingot casting.

2018 for 50% of the global output for rolled products, 55% for extruded products, 40% for castings, and 45% for wire and other products (IAI, 2020a).

China's production growth for downstream products exceeds growth in domestic consumption. Chinese exports of mill products and castings rose rapidly in the last decade (2009-2018) by a CAGR of 14%, reaching in 2018 a record level of 3.6 Mt (Figure 22), accounting for about 8% of mill products and castings production. A much higher ratio of exports to production (24% in 2018) is estimated by the International Aluminium Institute's Alucycle tool for finished aluminium products using aluminium semis as an input (IAI, 2020a), reflecting China's dominance across the whole aluminium value chain.

Figure 22. China's domestic production ([38,39]) (left), and exports (right) of semi-finished aluminium products, 2000-2018



Source: Background data in (IAI, 2020a)

2.5.2 Market distortion

Industry associations in Europe, United States, Canada and Japan, argue that China's ascendancy through overproduction of subsidised primary and semi-finished products is depressing aluminium prices and demand in the rest of the world (European Aluminium, 2017)(Aluminum Association et al., 2018). The Chinese supply surplus of semi-finished products directed to export destinations at low prices suppresses prices of semi-finished and finished products in the destination countries. Besides, it impacts demand for unwrought aluminium produced elsewhere than China, and so depresses the aluminium price in the rest of the world. Among other impacts is the impedance of aluminium exports from rest of the world countries into China and other destinations, as Chinese exports are flooding the world market.

A report released in 2019 by the Organisation for Economic Cooperation and Development (OECD) attempted to quantify the state interventions to the aluminium industry and the related market distortions in the global aluminium value chain caused by subsidised capacity (OECD, 2019). The study concludes that non-market forces appear to explain some of the sector's increases in capacity in recent years. As attested by the study's findings, government support is common throughout the aluminium value chain as each of the 17 of the world's largest aluminium companies examined in the study received support in financial or non-financial form. Government intervention is quite large in aluminium smelting and exceptionally high in China and countries of the Gulf Cooperation Council (GCC). The report asserts that five Chinese firms received over 85% of the

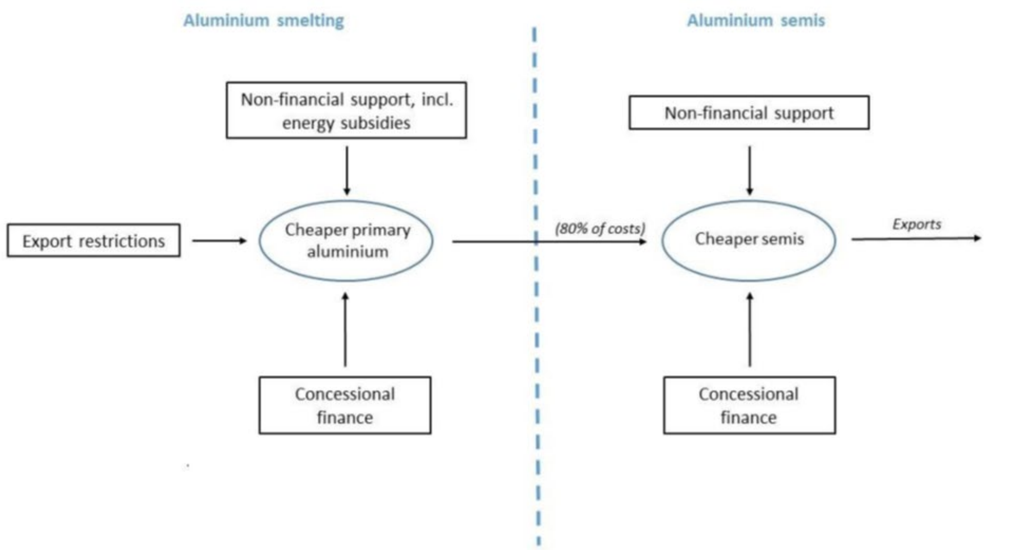
([38]) The flows in the semi-fabrication stage of the material flow modelling tool developed by the International Aluminium Institute (IAI), use statistical datasets for semis shipments and trade (Bertram *et al.*, 2017). Data for China are provided by the Shanghai Metals Market.

([39]) According to CRU data making reference to rolled and extrusion products in the period 2008-2017, Chinese production levels are considerably lower, e.g. 33 Mt provided by (IAI, 2020a) in 2017 versus 20 Mt in (Aluminum Association *et al.*, 2018).

documented subsidies of between USD 20 and USD 70 billion (depending on how financial support is estimated, i.e. concessional loans), distributed to the 17 companies over the 2013-2017 period. Massive government support to the rapidly growing aluminium smelting industry in China is mostly in the form of energy subsidies and concessional finance (OECD, 2019).

The study also highlights that apart from direct state support upstream in the value chain, trade measures such as China's export taxes on primary aluminium and VAT rebates on exports of certain aluminium products have benefited downstream producers of semi-finished and fabricated articles of aluminium. Export restrictions discourage exports of primary aluminium, making aluminium cheaper to producers of semis in China than it would otherwise have been and facilitating their exports due to a cost advantage over global competition (OECD, 2019). An export tax of 15% on primary aluminium and scrap is currently applied, and a tax rebate of 13 to 15% is in place for semi-finished products (rolled products and extrusions) (Aluminum Association *et al.*, 2018). These trade policy measures managed to shift the composition of exports towards higher value-added products (Taube, 2017). The following figure depicts graphically in a simplified way the effects of state intervention in the Chinese aluminium industry.

Figure 23. Government policies in aluminium smelting and fabrication of semis in China



Source: (OECD, 2019)

Subsidies and other state support have enabled significant capital investments in large scale and low operating costs and facilitated the use of advanced technology by Chinese smelters (see also Figure 21) that generate beneficial cost structures. All these factors have boosted the competitiveness of Chinese aluminium product worldwide (Taube, 2017).

Most aluminium associations worldwide have repeatedly called governments to address their concerns over China's vast production capacity and rising exports (Aluminium Associations, 2019)(Aluminum Association *et al.*, 2018). On 12 January 2017, the United States filed a formal complaint to the World Trade Organization on subsidies China provides to primary aluminium producers ([40]). Other aluminium-producing countries, i.e. Russia, Canada, Japan, and the European Union, requested to join the consultations. No dispute panel has been established so far. In January 2020, the European Union, Japan and the United States agreed to strengthen the existing World Trade Organization's (WTO) rules on industrial subsidies ([41]). Aluminium associations applauded the deal as an essential step towards addressing some of the trade distortions that have resulted in the long-standing difficulties faced by aluminium producers ([42]).

([40]) Dispute settlement DS519: China - Subsidies to Producers of Primary Aluminium https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds519_e.htm
([41]) https://trade.ec.europa.eu/doclib/docs/2020/january/tradoc_158567.pdf
([42]) https://www.european-aluminium.eu/media/2760/2020-01-16-joint-statement-aluminium-associations-applaud-the-eu-us-and-japan-agreement-to-strengthen-wto-rules-on-industrial-subsidies.pdf

3 The context of US tariffs and other trade measures on the aluminium sector

3.1 Timeline and status of US trade measures

In April 2017, the US Department of Commerce initiated an investigation on the effect of imports of steel and aluminium on national security under Section 232 of the US Trade Expansion Act of 1962. Section 232 enables the President of the US to impose trade barriers if the findings of the Department of Commerce's investigation show that the import of specified articles threatens US national security.

The two investigation reports on steel and aluminium, published by the Department of Commerce on 16 February 2018, concluded that "*the present quantities and circumstances*" of both steel and aluminium imports "*are weakening our internal economy and threaten to impair the national security as defined in Section 232*". Before publishing, the two reports had been submitted to the President of the United States in January 2018.

To remove the alleged threat of national security impairment, the Department of Commerce proposed to restrict aluminium imports sufficiently, by the imposition of either quota or tariff, with the aim to:

(a) increase and stabilise US production of aluminium by enabling US primary aluminium producers to operate profitably, restarting idle capacity, and utilising an average of 80% of their capacity;

(b) ensure the viability of US producers of downstream products, safeguard demand for domestic primary aluminium, and face the increased import penetration in many aluminium product groups ([43]).

Concerning the imports' restriction of aluminium products, the report recommended the following alternative measures, which were not binding for the President of the United States:
(1) a quota for all imports from all countries, equal to a maximum of 86.7% of their 2017 exports to the United States;
(2) a tariff of at least 7.7% on all aluminium imports from all countries;
(3) a tariff of 23.6% on all products from China, Hong Kong, Russia, Venezuela, and Vietnam, and limiting imports from other countries to 100% of their export volume in 2017.

Following the investigation, the United States President signed an executive order on 8 March 2018, enacting additional import duties of 10% on several aluminium product groups, pledging to boost US' domestic production and national security. These duty requirements for aluminium products were effective for all countries except Canada and Mexico, owing to their close economic links and interdependence in security matters with the United States ([44]).
On 23 March 2018, after the President of the United States issued Proclamation 9710 on 22 March 2018, tariffs came into effect; temporary exemptions were granted for the EU Member States, Argentina, Australia, Brazil, and South Korea until 1 May 2018.

On 30 April 2018, the President issued Proclamation 9739, which eliminated the exemption from the 10% extra-tariff on aluminium imports granted to South Korea. It also extended the temporary waiver from the import duties for the EU Member States, Canada, Mexico, Argentina, Australia, and Brazil until June 2018 to allow for further talks.

The President of the United States modified Proclamation 9739 on 31 May 2018, imposing tariffs to previously exempted trading partners, i.e. the EU, Brazil, Canada and Mexico. The only countries that remained exempted from duty requirements were Australia and Argentina ([45]). Australia obtained an exemption based on a 'security agreement' with the US, while for Argentina, the US placed annual duty-free quotas for controlling the volume of imported aluminium products. The total value of aluminium products subject to tariffs amounted to USD 16.6 billion (about 96% of the total imports value in 2017). Along with aluminium, a round of presidential Proclamations was issued for steel in parallel, imposing a 25% tariff and quotas on imports of a wide range of steel products. Both tariff actions are commonly referred to as "Section 232" tariffs.

Thus, effective from 1 June 2018, the US enforced an additional 10 per cent ad valorem rate of duty on the imports of several aluminium products groups originating from the EU Member States. The tariff has no set

([43]) U.S. Department of Commerce, The Effect of Imports of Aluminium on the National Security, An Investigation Conducted under Section 232 of the Trade Expansion Act of 1962, as amended, January 17, 2018.
([44]) "Presidential Proclamation 9704 on Adjusting Imports of Aluminium into the United States", issued on 8th of March 2018.
([45]) "Presidential Proclamation 9758 on Adjusting Imports of Aluminium into the United States", issued on 31st of May 2019.

expiration date. On the same date, the EU opened a case at the World Trade Organisation ([46]) concerning the measures imposed to adjust imports of steel and aluminium into the United States. Other countries with significant export shares of various aluminium products to the US — China, India, Norway, Russian Federation, Switzerland, and Turkey — also joined the consultations within the WTO framework. US trading partners support that the duties are essentially a form of safeguard or another emergency measure not taken in conformity with WTO rules ([47]), even though they were categorised as national security measures.

Following the implementation of the US extra-tariffs on EU steel and aluminium products, the EU adopted partial rebalancing measures taking as a basis the value of its steel and aluminium exports to the US affected by the US measures, which worth EUR 6.4 billion in total. Proportionate duties targeting US exports of individual products to the EU came into effect on 22 June 2018, affecting EUR 2.8 billion of US imports. The EU rebalancing measures will be active for as long as the US measures are in place, in line with the WTO Safeguards Agreement and EU legislation([48]). Apart from the EU, other exporting countries([49]) of steel and aluminium to the US have taken measures against lists of various US exports to their respective territories.

On 19 May 2019, the President of the United States issued a Proclamation adjusting Proclamation 9704, after the United States announced an agreement with Canada - the largest aluminium supplier to the United States - and Mexico to remove the Section 232 tariffs for Aluminium imports from those countries. Therefore, from 20 May 2019, Section 232 tariffs were effective for all countries except Argentina, Australia, Canada, and Mexico ([50]).

On 24 January 2020, the US President expanded the coverage of aluminium tariffs. Imports of some derivative aluminium products would bear an additional 10% duty in order *"to address circumvention that is undermining the effectiveness of the adjustment of imports made in Proclamation 9704 and Proclamation 9705"* ([51]). Again, exemptions from the tariffs were granted to Argentina, Australia, Canada, and Mexico. The new extra-tariffs came into force on 8 February 2020.

On 6 August 2020, the United States reinstated a 10% tariff on non-alloyed unwrought aluminium from Canada provided for in Harmonized Tariff Schedule (HTS) subheading 760110 ([52]). The US President justified his decision to reimpose tariffs on Canada for these key aluminium products imported by the US stating that imports had "*increased substantially*" during June 2019 through May 2020. However, on 15 September 2020, the US administration dropped the 10% tariff on Canadian aluminium, as long as shipments of non-alloyed, unwrought aluminium from Canada remain at predefined levels over the last four months of 2020. If imports exceed 105% of those levels in any month, the exclusion will be revisited, and the US authorities will retroactively impose the 10% tariffs on all shipments for that month ([53]).

Another event of major significance in the US trade actions impacting the EU aluminium industry is the initiation in March 2020 of anti-dumping duty and countervailing duty investigations against imports of common alloy aluminium sheet from 18 countries. Seven EU countries are included in the scope for alleged dumping practices in the US.

It is emphasised that the 10% tariff for the aluminium products acknowledged in both the Proclamation 9704 of 8 March 2018 and Proclamation 9980 of 24 January 2020 for certain derivative products is added to any existing US import duties. Most-favoured-nation (MFN) ad-valorem duties previously in place for aluminium products in the HS-6 nomenclature had averaged to 3.3% (WTO, 2020). For unwrought aluminium, existing MFN duties ranged from zero to 2.6%. For semi-finished products, a tariff rate ranging from zero to 6.5% was already effective before the imposition of Section 232 tariffs (see Annex 2).

([46]) WTO, dispute DS548: United States - Certain Measures on Steel and Aluminium Products, https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds548_e.htm.

([47]) Obligations of the Agreement on Safeguards https://www.wto.org/english/tratop_e/safeg_e/safeint.htm.

([48]) European Commission's press release 20 June 2018 "EU adopts rebalancing measures in reaction to US steel and aluminium tariffs", http://europa.eu/rapid/press-release_IP-18-4220_en.htm .

([49]) China, Turkey, India, Japan (not in effect yet), and Russia have levied tariffs as countermeasures https://legacy.trade.gov/mas/ian/tradedisputes-enforcement/retaliations/tg_ian_002094.asp. Canada and Mexico withdrew their retaliatory tariffs following the agreement with the US to lift Section 232 tariffs https://ustr.gov/about-us/policy-offices/press-office/press-releases/2019/may/united-states-announces-deal-canada-and.

([50]) "Presidential Proclamation 9893 on Adjusting Imports of Aluminium into the United States", issued on 19th of May 2019.

([51]) "Proclamation 9980 on Adjusting Imports of Derivative Aluminium Articles and Derivative Steel Articles into the United States", issued on 24th of January 2020.

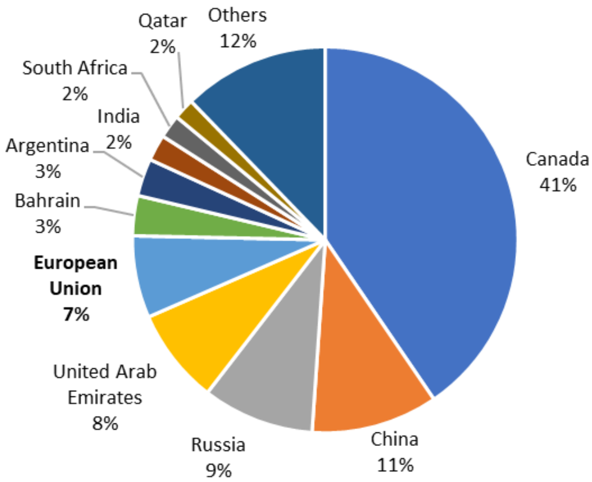
([52]) "Presidential Proclamation on Adjusting Imports of Aluminium into the United States", issued on 6th of August 2020.

([53]) US Trade Representative (USTR) Statement on Canadian Aluminium, released on 15/09/2020 https://ustr.gov/about-us/policy-offices/press-office/press-releases/2020/september/ustr-statement-canadian-aluminum.

3.2 The scope of tariffed aluminium products and their trade magnitude

The US imported USD 17.4 billion in 2017 of the aluminium product categories in the scope of Section 232 tariffs, sourced from a range of countries (Figure 24). Canada is by far the largest foreign supplier, accounting for 41% of US imports in 2017.

Figure 24. Top-10 US suppliers of products covered by Section 232 proclamations ([54]) (reference year 2017)



Source: Background data in (USITC Dataweb, 2020)

On 1st of June 2018 after the tariff suspension for Canada, Mexico and the EU expired, the value of affected US imports by extra-tariffs (USD 16.6 billion) covered nearly all (almost 96%) of US import value of the products in the scope of Section 232 tariffs. By providing exemptions to Canada and Mexico on 20 May 2019, the value of US aluminium imports affected by extra-duties fell to USD 9.3 billion, accounting for about 54% of the total import value of the aluminium product categories subject to Section 232 tariffs (Table 4). US government's revenue resulting from Section 232 tariffs for aluminium stood at USD 2.2 billion as of 19 August 2020 (CBP, 2020).

([54]) By US customs value of HS 7601, HS 7604, HS 7605, HS 7606, HS 7607, HS 7608, HTS 7616.99.51.60, HTS 7616.99.51.70.

Table 4. US imports value ([1]) for aluminium products subject to Section 232 tariffs and exceptions granted (reference year 2017)

HS/HTS code	**Total US imports value**	**Import value (2017) from tariff-excluded countries** ([2])				**Total affected US import value on 1/6/2018** ([2])		**Total affected US import value on 20/5/2019** ([2])	
		ARG	**AUS**	**CAN**	**MEX**				
	Million USD	Million USD				Million USD	% of the total imports value	Million USD	% of the total imports value
7601	10,642	514	203	5,474	34	9,925	93.3%	4,417	41.5%
7604	1,027	-	2	415	114	1,024	99.8%	495	48.2%
7605	764	32	4	460	1	727	95.2%	266	34.8%
7606	3,318	-	<1	508	10	3,318	100%	2,800	84.4%
7607	1,110	-	2	106	2	1,108	99.8%	1,000	90.1%
7608	192	-	<1	25	51	192	99.9%	116	60.5%
7609	103	-	<1	13	21	103	99.9%	70	67.3%
7616.99.51.60	213	-	1	42	23	212	99.4%	147	69.0%
7616.99.51.70	34	-	-	1	<1	34	100%	33	96.5%
Total	**17,404**	**547**	**214**	**7,043**	**256**	**16,644**	**95.6%**	**9,344**	**53.7%**

([1]) Customs value. It is the value of imports as appraised by US Customs and Border Protection (Customs). The customs value is defined as the price actually paid or payable for merchandise excluding US import duties, freight, insurance, and other charges.

([2]) Section 232 duty requirements for aluminium products were effective March 23, 2018, for most countries. As of June 1, 2018, Section 232 duty requirements for aluminium products are effective for all countries of origin except Argentina and Australia. As of May 20, 2019, Section 232 duty requirements for aluminium products were effective for all countries of origin except Argentina, Australia, Canada, and Mexico.

Source: Background data in (USITC Dataweb, 2020)

In 2017, the share of EU exports to the US accounted for 12.3% of the total EU-extra exports for the aluminium products targeted by the US tariffs (Eurostat Comext, 2020). The value of EU exports of the products subject to the extra-tariffs amounted to about EUR 1.09 billion or USD 1.2 billion, making up almost 7% of the total value of the US imports of products in the scope of the Section 232 tariffs (Table 5). After the lift 20 May 2019, the EU accounted for about 13% of the total US imports value affected by the tariffs.

Table 5. Value of EU exports to the US for aluminium products subject to Section 232 tariffs (reference year 2017)

HS/HTS code	**Product group**	**EU exports to the US**			
		EU exports value to US (million EUR)	Share (%) of the total EU-extra exports	US imports value from the EU (million USD)	Share (%) of the total US imports value
7601	Aluminium, Unwrought	137	17.4%	157	1.5%
7604	Aluminium Bars, Rods and Profiles	161	10.3%	140	13.7%
7605	Aluminium Wire	12	6.3%	16	2.1%
7606	Aluminium Plates, Sheets & Strip	528	12.6%	607	18.3%
7607	Aluminium Foil	166	10.8%	206	18.5%
7608	Aluminium Tubes and Pipes	47	19.6%	25	12.9%
7609	Aluminium Tube or Pipe Fittings	7	8.4%	10	9.7%
7616.99.51.60	Aluminium Castings	15 ([1])	NA	16	7.3%
7616.99.51.70	Aluminium Forgings	18 ([1])	NA	20	58.7%
Total		**1,091**	**12.3%**	**1,197**	**6.9%**

([1]) As there is no CN code for castings and forgings, available imports data expressed in USD were converted to EUR.

Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

As it is shown in Table 5 above, the share of EU exports in the US in 2017, one year before the imposition of tariffs, was particularly high for aluminium forgings (HTS 7616.99.51.70). It was also significant for flat-rolled products (HS 7606 and HS 7607) and extruded products (HS 7604, HS 7608, HS 7609). On the other hand, EU exports to the US were low for unwrought aluminium (HS 7601) and aluminium wire (HS 7605) as a proportion of the overall US imports. From another angle, EU exports to US of unwrought aluminium (HS 7601) and tubes and pipes (HS 7608) represent the highest proportion of the total EU-extra exports for the aluminium products subject to tariffs, whereas exports of aluminium wire (HS 7605) the lowest. In terms of value, exports of rolled products (HS 7606, HS 7607) are the most important aluminium products the EU exports to the US.

3.3 The argument of 'national security'

3.3.1 Background

The US administration does not refer to tariffs as a protectionist measure, such as safeguard measures or other trade restrictions, but justifies their implementation under the pretext of national security. The whole procedure for the issuance of additional tariffs on imports of steel and aluminium was undertaken pursuant to Section 232 of the Trade Expansion Act of 1962, which governs national security issues.

This statute allows the US President to apply import restrictions on certain products, after an affirmative determination by the US Department of Commerce that relevant imports threaten to impair US national security. The Trade Act of 1962, including Section 232, was enacted during the Cold War when national security concerns were at the forefront. The last time a US President took action under Section 232 was in 1986 (a case on metal-cutting and metal-forming machine tools) when the President sought voluntary export restraint agreements with the principal foreign exporters (Fefer *et al.*, 2020). Apart from steel and aluminium, President Trump's administration launched several investigations ([55]) in 2017-2020 under the authority of the previously little-used Section 232.

National security is not clearly defined in 'Section 232' allowing for ambiguity and broad interpretations (Fefer *et al.*, 2020). During the relevant investigation, the US Department of Commerce interpreted the scope of 'national security' concept very broadly as "*the general security and welfare of certain industries, beyond those necessary to satisfy national defence requirements, which are critical for minimum operations of the economy and government*" (US Department of Commerce, 2018). Therefore, in conjunction with applications in the defence industry, the analysis extended to the importance of aluminium products to specific critical infrastructure industries, such as electric power transmission and distribution, transport, containers and packaging, construction, and manufacturing (machinery, stampings, castings, forgings etc.).

In a narrow definition of 'national security', only the defence sector's requirements would have been considered. Defence applications in which aluminium is used include armoured vehicles, aircraft structural parts and components, naval vessels, space, and missile structural components. The demand for aluminium products destined for the US defence sector was recognised to be low in the investigation report that led to the additional tariffs ([56]) (US Department of Commerce, 2018). Consistent with the US Department of Defence, the proportion of aluminium needed for military applications represents only about 3% of US production (Mattis, 2017).

3.3.2 Primary aluminium

The investigation on aluminium conducted by the US Department of Commerce before the implementation of tariffs concluded that in order to remove the threat of impairment of national security it was necessary to reduce imports to a level that will provide the opportunity to "*increase and stabilize US production of aluminium at the minimal level needed to meet current and future national security needs*". For primary aluminium, in particular, the import restriction measures were justified by:

- the recent import trends that made the US "*almost totally reliant on foreign producers of primary aluminium*" and "*at the risk of becoming completely reliant on imports on foreign producers of high-purity aluminium that is essential for key military and commercial systems";*
- the assessment that "*the domestic aluminium industry is at risk of becoming unable to satisfy existing national security needs or respond to a national security emergency that requires a large increase in domestic production*", and in case no action was to be taken, that "*the United States is in danger of losing the capability to smelt primary aluminium altogether"* (US Department of Commerce, 2018).

A grade of primary aluminium commonly used to produce speciality and high-performance aluminium alloys required by military aircraft and other applications is 'high-purity' aluminium. Industry experts estimate that the US produced about 90 kt of high-purity primary aluminium in 2016, and the total supply (production + imports) of high-purity aluminium in the US accounted for 2.7% of the total primary aluminium demand in 2016 (CRU, 2017). Other industry sources report that the US defence industry uses 30,000 short tonnes per year of high-purity aluminium and consumes less than about 1% of all aluminium produced in the US (Aluminium Insider, 2017). In the US, Century's smelter at Hawesville is configured to deliver at large scale high-purity aluminium of 99.9% purity (Century Aluminum, 2020). During the Section 232 investigation in 2017, the facility was running at 40% of its nameplate capacity of about 252 kt per year (see Table 15).

([55]) Apart from steel and aluminium, US authorities have concluded Section 232 investigations into the imports of automobiles and certain automobile parts, uranium, and titanium sponge. In spring 2020, US authorities initiated national security probes into imports of certain electrical transformers or their parts (including laminations and cores made of grain-oriented electrical steel), mobile cranes and vanadium (Fefer and Jones, 2020)(Casey *et al.*, 2020).

([56]) The percentage is withheld in the report.

Box 3. High-Purity aluminium

'High-purity' aluminium is essentially a marketing term as there is no generally adopted nomenclature of the purity level. 'High-purity' denotes various levels of additional purity beyond the standard commercial purity of primary aluminium, i.e. at least 99.70%. According to (USITC, 2017) high-purity aluminium is at least 99.80% of Al content, while elsewhere is reported that the average purity level of high-purity aluminium is 99.90% (US Department of Commerce, 2018). Even higher purities are commercially available (Lindsay, 2014) (Nature Alu, 2020). High-purity aluminium is used in advanced technologies for the aerospace, electronics, energy storage, and chemical industry (Hydro, 2020a) (USITC, 2017)(Nature Alu, 2020).

Only a few smelters in the world can produce this aluminium grade, e.g. in Germany (Hydro, 2020a). According to (Aluminum Association, 2017), several smelters are capable of producing high-purity aluminium in North America. Also, of importance is that high-purity aluminium can be produced independently from primary smelting through a purification process of primary aluminium (Nature Alu, 2020) or from recycled aluminium inputs (Lindsay, 2014) (Aluminum Association, 2017).

The US administration did not take measures solely on imports of high-purity aluminium, potentially combined with other policy measures to ensure sufficient supply of high-purity aluminium from the single smelter being capable of producing the high-purity grade or from new processes disconnected from primary smelting but opted to apply across-the-board tariffs for all grades and forms of primary aluminium. The real intention under the guise of national security was to preserve the viability of non-competitive smelters. As the high-purity aluminium segment is small, and the volumes related to defence applications even lower, a tariff targeting high-purity aluminium grades would have only a minor impact on the US primary aluminium industry.

The result was that all domestic smelters (and secondary producers) were protected by foreign competition. As the import dependency at primary metal is expected to last and there is a one-tier structure of the aluminium premium in the US, i.e. only a single duty-paid premium exists for all producers regardless of paying or not duties, domestic producers and tariff-exempt foreign suppliers have no impetus to adjust their prices to duty-free levels. Therefore, they are expected to align their prices to the highest possible level, i.e. the duty-paid price. Section 4.3.3 describes the benefits created for US producers of unwrought aluminium as the extra duties were embedded into prices and the regional premium spiked.

3.3.3 Semi-finished products

The scope of the protectionist measures taken by the US administration was massive. Tariffs were not limited to unwrought aluminium but extended to intermediate products. Relevant conclusions for semi-finished products in the investigation report were that the enforcement of a quota or tariff on them was necessary due to "*global overcapacity, coupled with industrial policies that promote exports of downstream products*" which have had:

- "*a negative impact on the US primary aluminium industry through reduced demand for inputs from downstream companies*";
- a negative impact "*directly on the downstream companies that face increased import penetration in many aluminium product sectors*" (US Department of Commerce, 2018).

Aluminium products consumed into defence applications tend to be highly specialised with specific alloying configurations to ensure the required performance (Aluminum Association, 2017). Aluminium semis used in military applications include plates for armoured and amphibious vehicles, bars for cage armour, high-strength alloyed sheet, castings, and forgings in military aircraft structures and components and other advanced products for marine and space applications (US Department of Commerce, 2018). Again, tariffs did not target products and grades with ties in the defence sector, perhaps at an even higher tariff rate to be more efficient in their 'national security' purpose, but were applied horizontally to all product categories of semi-finished aluminium. Consumption of semi-finished products by the defence industry is low, similarly to consumption of high-purity aluminium. According to the US industry association, aluminium semis shipments in North America for defence applications were less than 5% in 2015 (Aluminum Association, 2017).

The segments of semi-finished aluminium in the US followed a different path in the last years in comparison to primary aluminium. Unlike the severe declining trend in the output (see Section 2.4.2) and employment (see Table 3) of the US primary aluminium sector, the downstream industry generally demonstrated a healthy development with plenty of investments, increasing employment rates and production, despite the rising import penetration. However, tariff's coverage for all grades and qualities of unwrought aluminium made inevitable the extension of tariffs to intermediate products (CRU, 2017). The application of a tariff rate to imports of aluminium semi-finished products provided US domestic producers a relief in competing with imports, as the costs of their input raw material increased after the implementation of tariffs that aimed to generate benefits for the US primary aluminium sector (see Section 4.3.3).

3.4 Legal challenges at the World Trade Organisation

The United States has invoked the WTO national security exception, laid out in Article XXI of the General Agreement on Tariffs and Trade (GATT) ([57]), to justify its tariffs on steel and aluminium. The European Union and eight countries – namely China, India, Canada, Mexico, Norway, Russia, Switzerland, and Turkey – have initiated dispute settlement proceedings against the US at the World Trade Organisation (WTO). One argument that complaining countries share is that US actions are against the WTO provisions and that there is no legitimate or plausible national security rationale for the tariffs. In particular, the complaining countries argue that the US measures, allegedly taken for national security reasons, are in their content and substance safeguard measures or other emergency measures implemented to protect the US steel and aluminium industries from the economic effects of imports.

The implications of the WTO ruling may extend beyond steel and aluminium. An upholding of the US view of the national security exception could inspire other countries to impose similar protectionist measures under the mantle of 'national security', while a ruling that limits a country's ability to use the exception could be regarded by US and others as an improper breach of national sovereignty (Reinsch and Caporal, 2019).

At the end of January 2019, panels to examine the duties enforced by the United States on steel and aluminium imports have been composed for all disputes, despite US arguments that the US resort to the national security exception under Article XXI of the GATT precluded WTO from examining the claims, and assessing the legitimacy and proportionality of the measures taken. As stated in the latest panels' communication on 8 February 2021, the release of the final reports was postponed from no earlier than autumn 2020 to no earlier than the second half of 2021 ([58]).

Canada and Mexico agreed with the US to terminate all pending litigation between them in the World Trade Organization after all tariffs the United States imposed under Section 232 on imports of steel and aluminium products from Canada and Mexico were eliminated in May 2019 (see Section 3.6). Therefore, Section 232 tariffs on aluminium imports are the subject of seven WTO members' complaints (see Table 6).

Table 6. Current WTO dispute settlements over tariffs enforced by the United States on steel and aluminium imports

Dispute settlement	Complainant	Request for consultations	Panel established	Panel composed
DS544	China	05/04/2018	21/11/2018	25/01/2019
DS547	India	18/05/2018	04/12/2018	25/01/2019
DS548	European Union	01/06/2018	21/11/2018	25/01/2019
DS552	Norway	12/06/2018	21/11/2018	25/01/2019
DS554	Russian Federation	29/06/2018	21/11/2018	25/01/2019
DS556	Switzerland	09/07/2018	04/12/2018	25/01/2019
DS564	Turkey	15/08/2018	21/11/2018	25/01/2019

Source: Data from (WTO, 2019)

The WTO's Dispute Settlement Body (DSB) also agreed to US requests for panels to examine the countermeasures of increased duties imposed by China (DS558) and the European Union (DS559) on US imports in response to the steel and aluminium tariffs. The dispute settlements filed against Canada and Mexico by the

([57]) https://www.wto.org/english/res_e/booksp_e/gatt_ai_e/art21_e.pdf
([58]) https://www.wto.org/english/news_e/news18_e/dsb_19nov18_e.htm

US for the same reason were settled following the mutual lift of Section 232 tariffs and countermeasures in May 2019.

3.5 Exclusions from Section 232 Tariffs

In response to the increased costs for manufacturers due to tariffs to imported intermediate products of aluminium, US companies that use imported aluminium may request certain products to be excluded from these tariffs if their demand is unmet by domestic production ([59]). The exclusion requests are made on a case-by-case basis and refer to specific products, volume and supplier. US producers of aluminium can object to any exclusion request ([60]). Available data produced by researchers of the George Mason University's Mercatus Center reveals that companies in the downstream manufacturing sectors filed approximately 19,500 waiver applications in total from March 2018 to mid-September 2021, asking for a tariff exemption. The analysis of the collected data is split into two periods ([61]), as shown below:

3.5.1 Exclusions granted until June 2019

Available data ([62]) show that US authorities granted a high number of exclusions by mid- June 2019. Of the approximately 9,200 requests ([63]) filed from the end of March 2018 to mid-June 2019, 46% had been approved, 9% had been denied, while for 45% of the applications the competent authority had not reached a decision. The total quantity requested to be excluded from the aluminium tariffs until June 2019 is estimated to correspond to approximately 9,000 kt of supply of various products. The total volume granted a tariff exclusion was about 2,600 kt, the total volume denied an exclusion is estimated to around 1,200 kt, and requests remained pending as of 17 June 2019 are estimated to approximately 5,200 kt.

Table 7 presents the estimated quantities of supply corresponding to US firms' exclusion requests and the approval rate when the EU Member States is the origin of the imports or rest-of-the-world (ROW) countries. Data reveal that, by far, applications for exclusions from Section 232 tariffs are submitted for rolled products of plates, sheets, and strip (HS 7606). The average approval rate for HS 7606 was very high (92%) for the applications processed until 17 June 2019. On the other hand, most tariffs exclusion requests were not granted for unwrought aluminium and aluminium wire.

US importers of aluminium products originating from the EU have obtained tariff waivers for 87% of the requested volumes in total, which is a much higher approval rate than ROW countries' average (66%), primarily due to the very low number of tariff exclusions granted for unwrought aluminium's imports of ROW origin. The granted product-specific exclusions from the aluminium tariffs by July 2019 show that EU suppliers achieved a higher exclusion rate than ROW US exporters for extruded products (HS 7604, HS 7608). The approval rate for tariff exclusion for imports of EU origin are much higher than the world average in the case of unwrought aluminium; however, these correspond to minimal quantities.

([59]) In the Presidential Proclamation 9776 of August 29, 2018, the President authorized the Secretary of Commerce, in consultation with other appropriate federal agency heads, to provide relief from the additional duties for any aluminium articles determined "*not to be produced in the United States in a sufficient and reasonably available amount or of a satisfactory quality and is also authorized to provide such relief based upon specific national security considerations. Such relief shall be provided for any article only after a request for exclusion is made by a directly affected party located in the United States.*"

([60]) See 'Section 232 National Security Investigation of Aluminium Imports. Information on the Exclusion and Objection Process. https://www.bis.doc.gov/index.php/232-aluminium'

([61]) The US authorities introduced a new web portal since 13/6/2019 for US companies to file exclusion requests from aluminium (and steel) tariffs https://www.mercatus.org/bridge/commentary/section-232-steel-and-aluminum-tariff-exclusion-requests-continue-apace

([62]) Data produced using the Section 232 tariff exemption requests collected from the old US Commerce Department's portal covering the period 29/3/2018 – 17/6/2019. The dataset is no longer updated and it is available at https://www.quantgov.org/download-data

([63]) HS 7609 was excluded from the analysis as the volumes reported in the aluminium dataset are considered to be an outlier, i.e. there are requests from one company corresponding to quantities 20 times higher than the US imports of HS 7609 and originating from a country which is not among the top US exporters. Probably imports of steel pipe and fittings are included in these requests.

Table 7. Exclusion requests from Section 232 tariffs and approval rates by volume and product group, 29 March 2018 - 17 June 2019

Product group (1)	**Approved (kt)**	**Denied (kt)**	**Pending (kt)**	**Total requests (kt)**	**Approval rate (%)** (2) (3)	
					EU origin of US imports	**Rest-of-the-world origin of US imports**
Unwrought Al (HS 7601)	30	805	800	1,634	96%	3%
Bars, rods, and profiles (HS 7604)	28	9	59	96	100%	72%
Wire (HS 7605)	3	96	293	392	No requests processed	3%
Plates, sheets, and strip (HS 7606)	2,142	178	3,856	6,176	90%	93%
Foil (HS 7607)	365	123	155	642	74%	75%
Tubes and pipes (HS 7608)	4	1	2	6	100%	86%
Castings and forgings	5	0	0	5	100%	100%
Total	**2,577**	**1,210**	**5,164**	**9,120**	**87%**	**66%**

(1) Data for HS 7609 is excluded as an outlier.
(2) When exclusion requests had multiple countries of origin, the total amount requested by individual companies was allocated proportionally to the volumes requests by each country in order to use volume as a proxy for the assessment of the approval rate per country.
(3) It corresponds to volumes granted an exclusion, divided by the aggregate volume of approved and denied requests.

Source: Derived from background data in (McDaniel and Parks, 2019)

Annex 4 demonstrates the exclusion requests' status by disaggregated HTS product and the relevant volumes when the EU Member States is the origin of the imports. Data reveal indirectly tariffs' limited effectiveness to restrict US imports for certain semi-finished products. Products with an average approval rate for tariff exclusion of over 90% until mid-June 2019 comprised the following HTS subheadings:

— Subheadings of extrusion products (HTS 76042910, 76042930, 76042950) comprising speciality high-value extrusions used in industrial and automotive applications;

— Subheadings of wire products (HTS 76052100, 76052900) covering speciality alloyed wire used in mechanical engineering;

— Subheadings of plates, sheets, and strip (HTS 76061130, 76061230, 76069130, 76069230, 76069260), which are general commodity grade products belonging to the broad group of common alloy sheet with a great variety of applications;

— Subheadings of foil products (HTS 76071130, 76071910) covering light-gauge foil and speciality foil for capacitors.

3.5.2 Exclusions granted from June 2019 to September 2020

Another dataset (64) monitors the period from mid-June 2019 to mid-September 2020. This period is similar in length to the period examined in the previous section; however, US companies that submitted applications for tariff waivers do not exclude Canada and Mexico as import origin, as these countries were exempted from tariffs in May 2019 (see Section 3.6). It also covers some months within 2020 when aluminium demand was

(64) The dataset covers the period 17/6/2019-17/9/2021 and it contains Section 232 tariff exemption requests collected from the new US Commerce Department's portal. Data is updated by George Mason University's Mercatus Center approximately every quarter https://www.quantgov.org/download-data

disrupted severely by the coronavirus pandemic (see Section 14), so requests having as a rationale the insufficient US capacity should be theoretically lower. However, this most recent data demonstrates that US companies' applications for tariff relief continued swiftly, with hundreds of applications registered each month. In total, US manufacturers filed about 10,000 tariff exclusion requests ([65]). There were 665 requests submitted as a monthly average in this period compared to 637 requests per month from the end of March 2018 to mid-June 2019.

Of the total number of exclusion requests from aluminium tariffs, 57% were approved, 11% were denied, and 17% remained pending at the time the data were pulled; the status for 15% of the submissions is unspecified. The total quantity of various products corresponding to the submitted applications for tariff exclusion in this period is estimated to 14,300 kt of supply. The total volume granted a tariff exclusion is estimated to around 4,450 kt; the total volume denied an exclusion to 3,700 kt, and requests corresponding to 4,050 kt of supply remained pending; exclusion claims with an unspecified status were approximately 2,100 kt.

Imports of aluminium products originating from the EU have obtained tariff waivers for 68% of the requested volumes in total that is a higher approval rate than the rest-of-the-world US imports origin (53%). Imports from EU countries achieved a much higher approval rate for tubes and pipes (HS 7608) and unwrought Al (HS 7601). Yet, these two groups represent minor volumes. The product group that makes the difference for EU exports is flat-rolled products (HS 7606), which constitutes by far the most significant product group by volume for which tariff exclusions are submitted (Table 10). It is also notable that the applications by US importers refer to much larger quantities for HS 7606 and HS 7607 compared to the period March 2018 – June 2019.

Table 8. Exclusion requests from Section 232 tariffs and approval rates by volume and product group, 17 June 2019 - 17 September 2019

Product group	**Approved (kt)**	**Denied (kt)**	**Pending (kt)**	**Total** (1) **requests (kt)**	**Approval rate (%)** (2) (3)	
					EU origin of the imports	Rest-of-the-world origin of the imports
Unwrought Al (HS 7601)	9	6	10	25	100%	26%
Bars, rods, and profiles (HS 7604)	50	1	23	74	98%	96%
Wire (HS 7605)	0	37	44	81	No requests processed	0%
Plates, sheets, and strip (HS 7606)	3,244	3,626	3,607	10,477	53%	47%
Foil (HS 7607)	1,105	29	358	1,494	94%	99%
Tubes and pipes (HS 7608)	3	1	4	8	100%	68%
Tube or pipe fittings (HS 7609)	Omitted from the analysis					
Castings and forgings	3	0	0	5	100%	100%
Total	**4,414**	**3,701**	**4,045**	**12,160**	**68%**	**52%**

(1) Requests in the dataset with an unspecified status are excluded.
(2) When exclusion requests identified multiple countries of origin, the total amount requested by individual companies was allocated proportionally to the volume requests by country, in order to use volume as a proxy for the assessment of the approval rate per country. Data were screened for outliers and adjusted as needed.
(3) It corresponds to volumes granted an exclusion, divided by the aggregate volume of approved and denied requests.

Source: Derived from background data in (Brunk et al., 2020)

(65) HS 7609 is excluded from the analysis to ensure comparability with the period March 2018 – June 2019 (See note 63)

Annex 5 shows the status of the exclusion requests by disaggregated HTS product and the relevant volumes when the EU Member States is the origin of the imports. Similarly to the previous dataset, tariffs were not effective in constraining US imports for certain semi-finished products. Products with an average approval rate for tariff exclusion of over 90% from mid-June 2019 to mid-September 2020 comprised the following HTS subheadings:

— Subheadings of unwrought aluminium products (HTS 76011060), which refers to speciality not alloyed aluminium such as aluminium of high-purity (>99.8%);

— Subheadings of extrusion products (HTS 76042100, 76042910, 76042930) including speciality high-value extrusions used in industrial and automotive applications;

— Subheadings of wire products (HTS 76052900) consisting of speciality alloyed aluminium wire used in mechanical engineering;

— Subheadings of plates, sheets, and strip (HTS 76061130, 76061160, 76061260, 76069230, 76069260) are general commodity grade products belonging to the broad group of common alloy sheet with a great variety of applications;

— All subheadings of foil products (HTS 76071130, 76071160, 76071910, 76071910, 76071930, 76071960, 76072010, 76072050).

Table 9 below shows the response provided for the approved requests as to why each company requires a tariff exclusion. The shares are derived from the corresponding volumes. Annex 6 provides the detailed breakdown per HTS-8 subheading.

Table 9. Justification provided by US importing companies for Section 232 tariff exclusion, approved requests, 17 June 2019 - 17 September 2019

Product group	Approved (% total approved requests by volume)	Justification (%)			
		Insufficient US Availability	National Security Requirement	No US Production	Other
7601	0.2%	3%	0%	97%	0%
7604	1.1%	66%	<1%	21%	12%
7605	0.0%	100%	0%	0%	0%
7606	73.5%	89%	<0.1%	11%	0%
7607	25.0%	62%	0%	36%	2%
7608	0.1%	3%	0%	76%	21%
Castings and forgings	0.1%	0%	0%	100%	0%
	100%	81%	<0.05%	18%	1%

Source: Derived from background data in (Brunk et al., 2020)

Of the granted tariff exclusions, flat-rolled products (HS 7606) and foil products (HS 7607) received by far the most exclusions by volume. For HS 7606, 89% of the tariff exclusion requests are associated with insufficient US availability. For HS 7607, the proportion of products not produced in the US is higher than HS 7606 (36% versus 11%). These observations agree with the data for US rolling capacity in Section 8.2.2, which presents the operation of US rolling mills close to their nameplate capacity for these two broad product categories. However, recent announcements for capacity expansions for automotive sheet and common alloy sheet are expected to ease the capacity limitations for HS 7606.

3.6 Exceptions granted to Canada and Mexico and the new NAFTA

The United States reached an agreement on 17 May 2019 with Canada and Mexico to end duties on imports of aluminium and steel. Both countries committed to removing the duties they had imposed in retaliation to US steel and aluminium Section 232 tariffs. In the event that imports of specific aluminium products surge meaningfully beyond historical volumes of trade, the US may reimpose after consultations 10% tariffs on products where the surge took place (Joint Statement by the United States and Canada, 2019)(Joint Statement by the United States and Mexico, 2019)(US Trade Representative, 2019b). Canadian exports of primary aluminium to the US have a prominent role in the country's aluminium industry, with about 70% of Canadian primary production destined to the US in 2018 (2.9 Mt) and 78% in 2017 (3.2 Mt) ([66]).

The deal for tariffs removal paved the way towards replacing the North American Free Trade Agreement (NAFTA). The revised United States-Mexico-Canada Trade Agreement ([67]) was announced on 13 December 2019 (US Trade Representative, 2019a) and is in force since 1st July 2020 (US Trade Representative, 2020)(Government of Canada, 2020). The new free trade agreement includes several essential provisions for North American aluminium (and steel) producers and OEM in the automotive sector, promoting North American aluminium use. In particular, it requires that at least 70% of the aluminium (and steel) that OEM purchase must originate in North America, and 75% of the automotive components must be made in North America for vehicles to qualify for tariff-free treatment (USMCA factsheet, 2019). The 70% aluminium requirement set by the new Trade Agreement is going to support long-term demand for North American aluminium semi-finished aluminium products, e.g. for automotive body sheet for closure panels, extruded parts for rails, aluminium wheels etc.

A direct consequence of Canada's exemption is that the tariffs did not apply to a significant portion of US imports of unwrought aluminium; only 41% by volume of the total US imports of unwrought aluminium in 2018 were subject to tariffs since May 2019. Alongside restarts of primary production in the US (see Section 5.3.2), most US metal supply requirements were covered by tariff-free metal. 81% of the total US unwrought aluminium supply (2018 basis) had a duty-free status since Canada's exclusion from tariffs in May 2019. The abundant tariff-free supply forced the US aluminium premium to lower levels (see Section 4.3.3). This meant lower tariff-driven gains for US producers of unwrought aluminium but benefits for US consumers of aluminium and US exporters of aluminium products. Two of the three operating companies in the US primary aluminium industry ([68]) argued in favour of restoring the tariffs for Canada (APAA, 2020). On the other hand, the Aluminium Association representing the big majority of the US aluminium industry, was firmly against waiver's lift (Aluminum Association, 2020d). Finally, the US President decided the re-enforcement of the 10% tariff against imports of unalloyed unwrought aluminium products (HS 760110) from Canada as of 16 August 2020, citing a substantial surge in imports since tariffs removal in May 2019. It is noted that the tariff exemption for value-added products of unwrought aluminium alloys classified under HS 760112 and all categories of semi-finished products originating from Canada was not affected. Nevertheless, the 10% tariff was dropped again only after two months in September 2020.

A marked increase in Canada's dominant share in US imports of unwrought aluminium (HS 7601) and extrusion products (HS 7604) is noticeable in June 2019 – January 2020, following the removal of Section 232 tariffs on Canadian aluminium exports. Canada's exports of unwrought aluminium increased by 32% (or 593 kt) on an annualised basis, and exports of bars, rods and profiles to the US stood 16% higher (10 kt on an annualized basis) in this period compared to June 2018–May 2019 when tariffs applied. Benefits for Canada are also observed for aluminium plates, sheets, and strip (HS 7606), although to a lesser extent in terms of share of sales; exports to the US were 19% higher after removing tariffs, corresponding to 23 kt on an annualised basis. In volume terms, the level of Canadian exports for all product categories after removing tariffs remained at the same (e.g. HS 7601 for unwrought aluminium) or lower levels than 2017, before the imposition of Section 232 tariffs. Section 5.3.1 discusses further the impact on exports of unwrought aluminium.

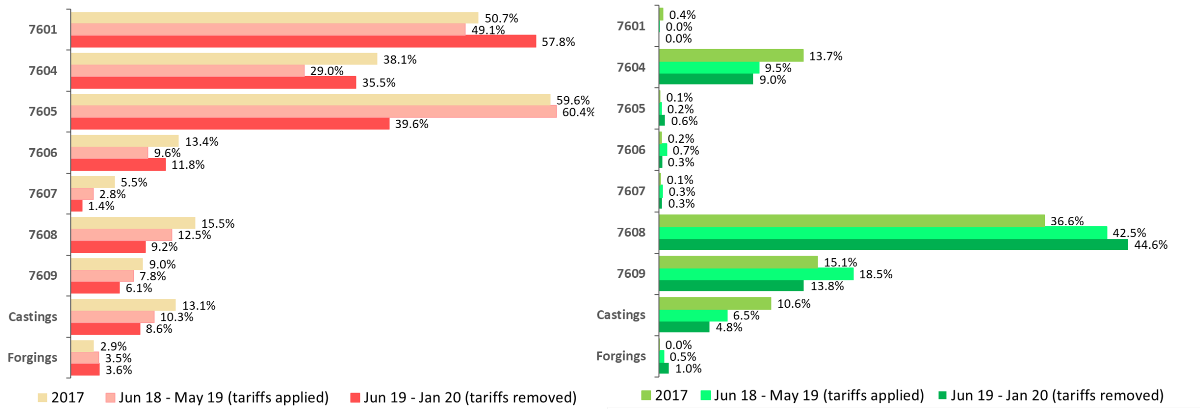
On the other hand, Canada's share in US imports of aluminium wire (HS 7605) fell substantially despite tariff immunity; exports to the US dropped by 27% (annualised decrease of 41 kt) after tariffs' removal. Canadian exports of aluminium foil (HS 7607), aluminium tubes and pipes and fittings for tubes and pipes (HS 7608 and HS 7609) and castings also lost a portion of their share in the US despite the lifting of the tariffs. In annualised terms, Canada's exports to the US of foil products fell by 57% (or 5 kt) of tubes and pipes by 30% (1 kt), and of castings by 26% (0.4 kt) (Figure 25).

([66]) The assumption made is that that all Canadian exports of value-added unwrought aluminium products classified under HS 760120 are produced from primary aluminium.

([67]) Referred to as USMCA by US administration and as CUSMA by Canadian Administration.

([68]) Century Aluminium, and Magnitude 7 Metals.

Figure 25. Canada's (left) and Mexico's (right) share in US imports after the removal of tariffs (Jun 19 – Jan 20) in comparison to the pre-tariff period (2017) and the period with tariffs applied (Jun 2018 – May 2019)



Source: Calculations based on background data in (USITC Dataweb, 2020)

Mexico's leading position in US imports for aluminium tubes and pipes (HS 7608) was expanded regarding exports from Mexico to the US. In contrast, losses in exports' share are observed for fittings for tubes or pipes (HS 7609) and castings, for which Mexico is a significant supplier to the US. In volume terms, Mexico's exports for HS 7608 and HS 7609 remained moderately steady after the lifting of tariffs. In contrast, exports fell by 10% (2 kt) for bars, rods, and profiles (HS 7604), 33% for castings (0.3 Kt) and 66% (6 kt on an annualised basis) for aluminium plates, strip, and sheet (HS 7606) (Figure 25).

3.7 US investigation for common alloy sheet products

On 13 March 2020, the United States competent authority notified the commencement of the preliminary phase of anti-dumping (AD) and countervailing duty (CVD) investigation concerning imports of common alloy aluminium sheet (CAAS) from various countries (USITC, 2020a). The US Department of Commerce initiated the investigation on 31 March 2020. Imports originating from 18 countries, including seven EU Member States (Croatia, Germany, Greece, Italy, Romania, Slovenia, and Spain) were in the scope of the AD probe (USITA, 2020).

The scope of the AD/CVD investigation had massive coverage. US imports of common alloy sheet ([69]) from the eighteen in-scope countries stood at about 677 kt in terms of volume and approximately USD 2 billion by value, accounting for 69% by volume and value respectively of the total US imports of common alloy sheet in 2019.

([69]) The HTS 8-digit subheadings under which the common alloy sheet products are classified comprise the entire HS 7606 'Aluminium Plates, Sheets & Strip' product category, but not all products at the higher resolution of HTS 10-digit subheadings are within the scope of the US investigation. The subheadings of the Harmonized Tariff Schedule of the United States 7606.11.3060, 7606.11.6000, 7606.12.3090, 7606.12.6000, 7606.91.3075 7606.91.3090, 7606.91.3095, 7606.91.6080, 7606.91.6095, 7606.92.3035, 7606.92.3075, 7606.92.3090, 7606.92.6080, 7606.92.6095 were used for the aggregate of the 'common alloy sheet'. Aluminium plates with thickness of over 6.3 mm and can/lid stock are excluded.

Box 4. US anti-dumping and countervailing investigation into common alloy sheet originating from 18 countries, including seven EU Member States

The products under investigation are classified in subheadings 7606.11.30, 7606.11.60, 7606.12.30, 7606.12.60, 7606.91.30, 7606.91.60, 7606.92.30, and 7606.92.60 of the Harmonized Tariff Schedule of the United States. The common alloy aluminium sheet (CAAS) subject to the trade investigations is a flat-rolled aluminium product having a thickness between 0.2 mm and 6.3 mm, in coils or cut-to-length, regardless of width. The aluminium sheet subject to investigation includes both unclad, as well as multi-alloy, clad aluminium sheet. Unclad CAAS can be produced from a 1XXX, 3XXX, or 5XXX series alloy, while multi-alloy clad CAAS is produced using a 3XXX series alloy core, to which cladding layers are applied to either one or both sides of the core. CAAS is used in applications such as building and construction, electrical, infrastructure, marine, and transportation, among others. Common uses for the products under investigation include gutters and downspouts, building facades, street signs and license plates, electrical boxes, pontoon boats, and tractor-trailers for trucks. Excluded from the scope of the investigations is aluminium can stock for the manufacture of aluminium beverage cans, lids, or tabs.

The common alloy products from Bahrain, Brazil, Croatia, Egypt, Germany, Greece, India, Indonesia, Italy, Oman, Romania, Serbia, Slovenia, South Africa, South Korea, Spain, Taiwan, and Turkey were alleged to be sold in the United States at less than fair value. They were also suspected to be subsidised by the governments of Bahrain, Brazil, India, and Turkey. The investigation was initiated in response to a petition filed on 9 March 2020 by the Aluminum Association and its members, i.e. Aleris, Arconic, Constellium, JW Aluminum, Novelis, and Texarkana Aluminum. The submitted petitions represent the highest number of petitions filed simultaneously for any single product since 2001.

https://www.usitc.gov/investigations/701731/2020/common_alloy_aluminum_sheet_bahrain_brazil_croatia/preliminary.htm

https://www.trade.gov/press-release/us-department-commerce-initiates-antidumping-duty-and-countervailing-duty-1

The US Department of Commerce published its preliminary findings on CVD investigation for subsidy rates on 14 August 2020 and its preliminary affirmative determination that imports of CAAS from 18 countries were being sold in the US at less than their fair value on 6 October 2020 (ITA, 2020). Liquidation of all imports of the subject commodities entered or withdrawn from warehouse for consumption was suspended, unless importers posted a deposit in an amount based on the estimated weighted-average dumping margin or the estimated countervailable subsidy rate.

The US Department of Commerce announced its final CVD and AD determinations on 2 March 2021 (ITA, 2021). The issuance of duty orders took place on 27 April 2021 after final affirmative determinations from the US International Trade Commission (ITC) (Federal Register, 2021a)(Federal Register, 2021b).

The final countervailable subsidy rates are determined for producers from Bahrein (6.44%), India (4.89 to 35.25%), and Turkey (2.56% to 4.34%). The final dumping margins determined by the US agencies refer to producers from Bahrain (4.83%); Brazil (49.61 to 137.06%); Croatia (3.19%); Egypt (12.11%); Germany (49.40% to 242.80%); India (0% to 47.92%); Indonesia (32.12%); Italy (0% to 29.13%); Oman (5.29%); Romania (12.51% to 37.26%); Serbia (11.67% to 25.84%); Slovenia (13.43%); South Africa (8.85%); Spain (3.80% to 24.23%); Taiwan (17.50%); and Turkey (2.02% to 13.56%). At the end of the investigation process, the US authorities concluded negative determinations in the AD investigations of CAAS from Greece and South Korea and the CVD investigation of CAAS from Brazil (ITA, 2020)(Federal Register, 2021d)(Federal Register, 2021c).

Section 8.5.3 provides more details on the impacts of the US decision on anti-dumping duties for rolled products.

3.8 Additional trade measures applied by the US to aluminium products

On top of Section 232 tariffs, the US administration enforced additional trade measures with impacts on the US aluminium trade patterns.

3.8.1 Anti-dumping and countervailing duties for Chinese aluminium products

The United States International Trade Commission (USITC) launched anti-dumping (AD) and countervailing duty (CVD) investigations on imports of certain aluminium foil and common aluminium sheet product from China in March 2017 and December 2017, respectively; the latter investigation was self-initiated by the US Department of Commerce. Preliminary CVD duties were determined in August 2017 for foil. For common aluminium sheet, preliminary CVD duties were established in April 2018 and preliminary AD duties in June 2018. The investigations in their final phase concluded that unfairly traded imports from China were causing injury to US producers. As a result of the USITC's affirmative determinations, the US Department of Commerce issued orders imposing final anti-dumping and countervailing duties on specific Chinese producers in March 2018 for foil and November 2018 for common aluminium sheet (USITC, 2018b)(USITC, 2018a)(USITC, 2019b)(USITC, 2019a). Figure 141 and Figure 163 demonstrate the timeline of events and the effect on Chinese exports for specific common alloy aluminium sheet and foil products.

Box 5. Products for which anti-dumping and countervailing duty investigations concluded in the US after the enforcement of Section 232 tariffs

— Common alloy aluminium sheet (CAAS) is a thin flat-rolled aluminium product produced in a variety of gauges. It has a thickness of 6.3 mm (US) or less but greater than 0.2 mm, in coils or cut-to-length, regardless of width. CAAS within the scope of the investigations included both non-clad and multi-alloy, clad aluminium sheet. Non-clad CAAS can be produced from a 1XXX, 3XXX, or 5XXX series alloy, while multi-alloy clad CAAS is produced using a 3XXX series alloy core, to which cladding layers are applied to either one or both sides of the core. CAAS is used in a wide variety of applications, including building and construction, electrical, infrastructure, marine, and transportation, where properties such as strength, lightweight, formability, and corrosion resistance are desired. The common aluminium sheet was classifiable at the time under the following eight HTS headings 7606.11.3060, 7606.11.6000, 7606.12.3090, 7606.12.6000, 7606.913090, 7606.91.6080, 7606.92.3090, 7606.92.6080. These exclude aluminium can stock used in the manufacturing of aluminium beverage cans, lids, and tabs for such cans, which is imported under HTS statistical reporting numbers 7606.12.3045 and 7606.12.3055. The US Department of Commerce enforced duties on Chinese common alloy aluminium sheets after determining dumping and subsidisation of the imports from China. Exporters from China sold in the US common alloy aluminium sheets at prices ranging from 50% to 60% less than fair value. China was also providing subsidies to its producers of common alloy aluminium sheets at final rates ranging from 46% to 116%.

https://www.usitc.gov/investigations/701731/2018/common_alloy_aluminum_sheet_china/final.htm

— The goods covered by the investigation was aluminium foil having a thickness of 0.2 mm or less, in reels exceeding 25 pounds, regardless of width. Aluminium foil is made from an aluminium alloy that contains more than 92% aluminium. Regardless of specifications, all aluminium foil meeting the description is included in the scope, including aluminium foil to which lubricant has been applied to one or both sides of the foil. The products under investigation were classifiable at the time under Harmonized Tariff Schedule of the United States (HTS) subheadings 7607.11.3000, 7607.11.6000, 7607.11.9030, 7607.11.9060, 7607.11.9090, and 7607.19.6000. Excluded from the scope of the investigation was the aluminium foil that is backed with paper, paperboard, plastics, or similar backing materials on one side or both sides of the aluminium foil, as well as etched capacitor foil and aluminium foil that is cut to shape. The investigations concluded that Chinese companies were dumping at margins ranging from 49% to 106%, while the subsidy rates were calculated between 17% and 81%.

https://www.usitc.gov/investigations/701731/2017/aluminum_foil_china/final.htm

Furthermore, in March 2017, USITC determined that revoking at their sunset the anti-dumping and countervailing duty orders on certain aluminium extrusions from China, which were imposed in April 2011, would be likely to lead to continuation or recurrence to of dumping or a countervailable subsidy. As a result, the existing anti-dumping and countervailing duty orders on imports of this product from China remained in place.

Box 6. Products for which anti-dumping and countervailing duty investigations concluded in the US prior to the imposition of Section 232 tariffs

The merchandise covered by the order is aluminium extrusions which are produced in a wide variety of shapes and forms, including, but not limited to, hollow profiles, other solid profiles, pipes, tubes, bars, and rods. Aluminium extrusions that are drawn subsequent to extrusion (drawn aluminium) are also included in the scope. Imports of the subject to duties merchandise are imported under the following categories of the Harmonized Tariff Schedule of the United States (''HTS''):

— Aluminium products subject to Section 232 tariffs: 7604.21.0000, 7604.29.1000, 7604.29.3010, 7604.29.3050, 7604.29.5030, 7604.29.5060, 7608.20.0030, 7608.20.0090, 7609.00.0000.

— Merchandise entering as parts of other aluminium products of Chapter 76 subheadings (not subject to Section 232 tariffs): 7610.10.0010, 7610.10.0020 7610.10.0030, 7610.90.0020, 7610.90.0040, 7610.90.0060, 7610.90.0080 7615.10.3015, 7615.10.3025, 7615.10.7125, 7615.10.7130, 7615.10.7135, 7615.10.7155, 7615.10.7160, 7615.10.7180, 7615.10.9100, 7615.19.1015, 7615.19.1025, 7615.19.3015, 7615.19.3025, 7615.19.5020, 7615.19.5040, 7615.19.7035, 7615.19.7045, 7615.19.7060, 7615.19.9000, 7615.20.0000, 7616.10.9090, 7616.99.1000, 7616.99.5020, 7616.99.5030, 7616.99.5040, 7616.99.5050, 7616.99.5060, 7616.99.5070, 7616.99.5075, 7616.99.5090.

— Merchandise entering as parts of products of other HTS chapters: a long list of HTS subheadings.

The magnitude of the dumping margins likely to prevail was determined by the US Department of Commerce up to 33.3%, while the net countervailable subsidies to range between 20.8% to 374.1%.

https://www.usitc.gov/investigations/701731/2016/aluminum_extrusions_china/full_review.htm

3.8.2 US-China trade confrontation

Since mid-2018, the US and China have been engaged in a trade dispute extended well beyond steel and aluminium, which has resulted in several rounds of retaliatory tariffs. Aluminium products are within the long list affected by the trade measures launched by the US against China.

The US authorities launched an investigation in August 2017, under Section 301 of the Trade Act of 1974, into the Chinese government due to the growing trade deficit with China and alleged intellectual property theft. Section 301 allows the US President to impose tariffs or quotas when other countries are engaging in unfair trade practices. The investigation found that unfair Chinese trade practices on technology transfer, intellectual property, and innovation harm the US industry. In response, the President of the United States announced tariffs on Chinese goods in June 2018. The import tariffs triggered the ongoing tariff-centric "trade war" between the US and China, taking effect in an escalating way depending on the progress of trade negotiations between the US and China. China retaliated with tariffs applied on USD 110 billion of US products. Products are sorted in five different tariff actions, and up to March 2020, the US administration has enforced additional tariffs for Chinese products on four successive rounds (USTR, 2020)(Bown, 2019). In particular (USTR, 2020):

- Tariffs for "List 1" products took effect on 6 July 2018 on imports from China worth USD 34 billion. Products are subject to an additional ad valorem 25 per cent duty;
- Tariffs for "List 2" products took effect on 23 August 2018, on USD 16 billion imports from China. Products are subject to an additional ad valorem 25 per cent duty;
- Tariffs for "List 3" products took effect on 24 September 2018, on USD 200 billion of imports from China. "List 3" products were initially subject to an additional ad valorem duty of 10 per cent, which was raised to 25 per cent on 10 May 2019;
- Tariffs for "List 4A" products took effect on 1 September 2019, on the first part of Chinese imports of USD 300 billion (USD 112 billion). Chinese products were subject to additional ad valorem duty of 15 per cent, which was reduced by half to 7.5% on February 14, 2020.
- Tariffs for "List 4B" products on the second part of Chinese imports of USD 300 billion were set to go into effect on 15 December 2019, at an additional ad valorem rate of 15%, but they were suspended indefinitely.

Therefore, for many aluminium products subject to the 10% 'national security' tariffs, additional Section 301 tariffs are applied to US imports from China (see Annex 8 and Annex 9). The anti-dumping and countervailing duties recently placed by the US on several Chinese imports (see Section 3.8.1) are not affected, and they are applied on top of any other duties.

Following the Section 232 tariff increases and the subsequent trade measures imposed against China, the US imports from China faced direct negative impacts. China's share in global US imports fell from 9.5% in 2018 to 7.5% in 2019, bringing China from the second to the fourth position of the top origins for US imports in 2019, with Canada, EU and United Arab Emirates occupying the lead three positions in 2019.

3.8.3 Sanctions to Russian producer

On 6 April 2018, the mining and metals company United Co. Rusal PLC was added to a list of Russian companies and individuals sanctioned by the US authorities. US firms were not allowed to enter or have any business connection with individuals or companies subject to US jurisdiction. At the same time, non-US companies that maintained relations with UC Rusal were also subject to sanctions (US Department of the Treasury, 2018). Trading of Rusal's aluminium was suspended at the London Metal Exchange (LME) and the Chicago Exchange (COMEX) (DERA, 2018). As UC Rusal was the world's largest aluminium producer outside China with a share of around 7% (14% excluding China), the sanctions disrupted global supply chains. The widespread uncertainty in the market led the aluminium price to a spike (see Section 4.3.2). A "window" period was granted to US companies with contracts with the sanctioned company, which was extended several times to avoid supply disruption (USGS, 2020e). The sanctions were lifted as of 27 January 2019, after the companies undertook significant restructuring and corporate governance changes (Financial Times, 2019).

3.9 EU trade defence measures

The US tariffs on aluminium products have a discouraging effect on exports of aluminium to the US. Therefore, in combination with the prevailing global market conditions defined by the magnitude of Chinese production (see Section 2.5), US tariffs may lead to substantial trade diversion of excess production of third countries to the EU. An immediate measure taken in April 2018 by the European Commission was introducing a surveillance system for monitoring aluminium imports into the EU (European Commission, 2018).

Box 7. Surveillance and monitoring for aluminium imports in the EU

On 26 April 2018, the European Commission issued Regulation (EU) 2018/640 introducing a prior surveillance system to monitor imports of certain aluminium products of a value exceeding a net weight of 2,500 kg per tariff line. The goods subject to monitoring fell under the HS codes 7601, 7604, 7605, 7606, 7607, 7608, 7609 and 7616.99. The subject goods were first released into the EU upon producing a surveillance document based on intentions to import. Imports of products originating in Norway, Iceland and Liechtenstein were exempted from the obligation. This mechanism was in force from 12 May 2018 to 15 May 2020.

Commission Implementing Regulation (EU) No 2018/640 of 25 April 2018 introducing prior Union surveillance of imports of certain aluminium products originating in certain third countries

The prior surveillance regime has been replaced by an ex-post monitoring system since 15 May 2020, based on actual import data rather than an intention to import. The information is collected and transmitted by the Member States customs authorities, and the European Commission publishes a monthly report. The mechanism provides advanced statistical information permitting rapid analysis of import trends from all third countries. The monitoring covers aluminium (and steel) products previously subject to prior surveillance and the derivative products added to the original list of products subject to the US Section 232 tariffs since February 2020.

https://webgate.ec.europa.eu/siglbo/post-surveillance

Furthermore, a series of investigations have been launched after the implementation of US tariffs to shield the European aluminium industry from dumped imports.

On 14 February 2020, the European Commission launched an anti-dumping investigation into aluminium extrusions originating from China following a complaint submitted by European Aluminium on behalf of European producers of aluminium extrusions (European Commission, 2021a). Since 25 August 2020, imports of aluminium extrusions from China are subject to registration by national customs authorities. In case anti-dumping measures are subsequently applied, duties will be retroactively imposed against those imports from the date of registration (European Commission, 2020a). On 13 October 2020, provisional anti-dumping duties ranging between 30.4% and 48% were imposed on aluminium extrusion imports from China (European

Commission, 2020b). While the investigation continues (February 2021), imports in the Union are subject to a deposit equivalent to the amount of the provisional duty.

Box 8. Anti-dumping investigation into Chinese aluminium extrusions

The products under investigation are classified under CN codes ex 7604 10 10, ex 7604 10 90, 7604 21 00, 7604 29 10, 7604 29 90, ex 7608 10 00, 7608 20 81, 7608 20 89 and ex 7610 90 90 (TARIC codes 7604 10 10 11, 7604 10 90 11, 7604 10 90 25, 7604 10 90 80, 7608 10 00 11, 7608 10 00 80, 7610 90 90 10).

The products subject to the investigation are bars, rods, profiles (whether or not hollow), tubes, pipes; unassembled; whether or not prepared for use in structures (e.g. cut-to-length, drilled, bent, chamfered, threaded); made from aluminium, whether or not alloyed, containing not more than 99,3% of aluminium ('the product under investigation'). The investigation does not cover the following products: i. products attached (e.g. by welding or fasteners) to form subassemblies; ii. welded tubes and pipes; iii. products in a packaged kit with the necessary parts to assemble a finished product without further finishing or fabrication of the parts ('finished goods kit').

Case AD664 - Aluminium extrusions

On 14 August 2020, the European Commission opened an anti-dumping investigation into imported aluminium flat-rolled products from China after European Aluminium lodged a complaint on behalf of European producers (European Commission, 2021a).

Box 9. Anti-dumping investigation into Chinese aluminium flat-rolled products

The products allegedly being dumped are classified under CN codes 7606 11 10, 7606 11 91, 7606 11 93, 7606 11 99, 7606 12 20, ex 7606 12 92 (TARIC code 7606 12 92 95), ex 7606 12 93 (TARIC code 7606 12 93 86), ex 7606 12 99 (TARIC codes 7606 12 99 25 and 7606 12 99 86), 7606 91 00, ex 7606 92 00 (TARIC code 7606 92 00 86) and ex 7607 11 90 (TARIC codes 7607 11 90 44, 7607 11 90 48, 7607 11 90 51, 7607 11 90 53, 7607 11 90 60, 7607 11 90 71, 7607 11 90 73, 7607 11 90 75, 7607 11 90 77, 7607 11 90 91, 7607 11 90 93).

The flat-rolled aluminium products subject to the investigation are plates, sheets, strips, and foil, whether or not alloyed, whether or not further worked than flat-rolled, delivered:

— in coils or coiled strips, in cut-to-length sheets, or in the form of circles; of a thickness of 0.2 mm or more but not more than 6 mm;

— in plates, of a thickness of more than 6 mm;

— in coils or coiled strips, of a thickness of not less than 0.03 mm but less than 0.2 mm.

The following flat-rolled products are excluded from the investigation: i. Aluminium beverage can body stock, end stock and tab stock; ii. Aluminium body panels products for use in the automotive industry; iii. Aluminium flat-rolled products for use in the manufacture of aircraft parts.

Case AD668 - Aluminium flat-rolled products

On 22 October 2020, the European Commission initiated an anti-dumping investigation into imports of certain aluminium converter foils from China after receiving a complaint from European companies(European Commission, 2020d). On 4 December 2020, the Commission launched an anti-subsidy proceeding concerning imports of aluminium converter foils originating in China (European Commission, 2021a).

Box 10. Anti-dumping and anti-subsidy investigation into aluminium converter foil from China

The products allegedly being dumped are classified under CN code 7607 11 19 (TARIC codes 7607 11 19 60 and 7607 11 19 91).

The product subject to the investigation is aluminium converter foil of a thickness of less than 0.021 mm, not backed, not further worked than rolled, in rolls of a weight exceeding 10 kg.

The following products are excluded from the investigation: i. Of a thickness of not less than 0.008 mm and not more than 0.018 mm, not backed, not further worked than rolled, in rolls of a width not exceeding 650 mm and of a weight exceeding 10 kg (TARIC code 7607 11 19 10); ii. Of a thickness of not less than 0.007 mm and less than 0.008 mm, regardless of the width of the rolls, whether or not annealed (TARIC code 7607 11 19 30); iii. Of a thickness of not less than 0.008 mm and not more than 0.018 mm and in rolls of a width exceeding 650 mm, whether or not annealed (TARIC code 7607 11 19 40); iv. Of a thickness of more than 0.018 mm and less than 0.021 mm, regardless of the width of the rolls, whether or not annealed (TARIC code 7607 11 19 50).

Case AD673 - Aluminium converter foil

Case AS675 - Aluminium converter foil

On 17 December 2020, the European Commission initiated an expiry review of the anti-dumping measures applicable to imports of certain aluminium foil originating in China after receiving a request by EU producers (European Commission, 2021a).

Box 11. Expiry review of the anti-dumping measures applicable to imports of household aluminium foil from China

The product concerned is defined in Commission Implementing Regulation (EU) 2015/2384 of 17 December 2015, namely aluminium household foil of a thickness of not less than 0.008 mm and not more than 0.018 mm, not backed, not further worked than rolled, in rolls of a width not exceeding 650 mm and of a weight exceeding 10 kg, classified within CN code ex 7607 11 19 (TARIC code 7607 11 19 10)

EU companies requested the continuation of an anti-dumping duty against imports of dumped household aluminium foils originating in China, claiming that the removal of the duty will not lead to a substantial increase of imports of Chinese aluminium household foil and a decrease of their prices.

Case R730 - Aluminium foil (certain)

On 21 December 2020, the European Commission initiated an investigation concerning imports into EU of certain aluminium household foil in large reels (so-called 'AHF Jumpo Rolls') originating in China, targeting the possible circumvention of the currently applicable antidumping measures on imports from China, by means of imports of Jumbo Rolls from Thailand. On the same date, the European Commission also launched an investigation concerning circumvention of anti-dumping measures in force on imports of certain aluminium household foil in rolls (so-called 'AHF Rolls') originating in China by circumvention practices in Thailand (European Commission, 2021a).

Box 12. Anti-circumvention investigation of anti-dumping measures on imports of certain aluminium foil originating in China by circumvention practices in Thailand

Jumpo Rolls: The products under investigation are classified under CN code 7607 11 19 (TARIC codes 7607 11 19 10, 7607 11 19 30, 7607 11 19 40, 7607 11 19 50) and 7607 11 90 (TARIC codes 7607 11 90 44, 7607 11 90 46, 7607 11 90 71, 7607 11 90 72). The measures currently in force and possibly being circumvented are anti-dumping measures that were first imposed by means of Regulation (EC) No 925/2009, extended through Regulation (EU) 2015/2384 and Regulation (EU) 2017/271 as last amended by Implementing Regulation (EU) 2017/2213. The measures took the form of an *ad valorem* duty ranging between 6.4% and 30%.

The product concerned by the possible circumvention is aluminium household foil originating in China but consigned from Thailand (whether declared as originating in Thailand or not), in the following forms:

— a thickness of not less than 0.008 mm and not more than 0.018 mm, not backed, not further worked than rolled, in rolls of a width not exceeding 650 mm and of a weight exceeding 10 kg (TARIC code 7607 11 19 10);

—a thickness of not less than 0.007 mm and less than 0.008 mm, regardless of the width of the rolls, whether or not annealed (TARIC code 7607 11 19 30);

—of a thickness of not less than 0.008 mm and not more than 0.018 mm and in rolls of a width exceeding 650 mm, whether or not annealed (TARIC code 7607 11 19 40);

—of a thickness of more than 0.018 mm and less than 0.021 mm, regardless of the width of the rolls, whether or not annealed (TARIC code 7607 11 19 50);

—of a thickness of not less than 0.021 mm and not more than 0.045 mm, when presented with at least two layers, regardless of the width of the rolls, whether or not annealed (ex TARIC codes 7607 11 90 45 and 7607 11 90 80, currently 7607 11 90 44, 7607 11 90 46, 7607 11 90 71, 7607 11 90 72).

Small Rolls: The products under investigation are currently falling under CN code 7607 11 11 (TARIC code 7607 11 11 11) and 7607 19 10 10) and CN code 7607 19 10 (TARIC code 7607 19 10 11). The antidumping measures on imports of AHF Rolls from China were first imposed by means of Regulation (EU) No 217/2013, taking the form of an *ad valorem* duty ranging between 14.2% and 35.6%. The anti-dumping measures were extended for another five years by means of Regulation (EU) 2019/915 ("Expiry Regulation").

The product concerned by the possible circumvention is aluminium household foil originating in China but consigned from Thailand (whether declared as originating in Thailand or not), of a thickness of 0.007 mm or more but less than 0.021 mm, not backed, not further worked than rolled, whether or not embossed, in low weight rolls of a weight not exceeding 10 kg.

Case R732 - Aluminium foil (jumbo rolls)

Case R733 - Aluminium foil (small rolls)

Annex 16 provides an overview of the anti-dumping measures adopted by the European Commission on imports of aluminium products into the EU since 2010 (expired or in force in February 2021).

4 Aluminium product aggregate targeted by Section 232 tariffs

In this chapter, the JRC carried out an analysis of the global aluminium sector for the selection of extra-tariffed aluminium product categories with a focus on the United States and EU. It aims firstly to identify the leading global trade partners and the recent evolutions of trade flows globally, secondly to examine the impact of tariff imposition in the US and EU and the main trade aggregates, and lastly to look at the trends of prices by regions and categories of products and to analyse their behaviour.

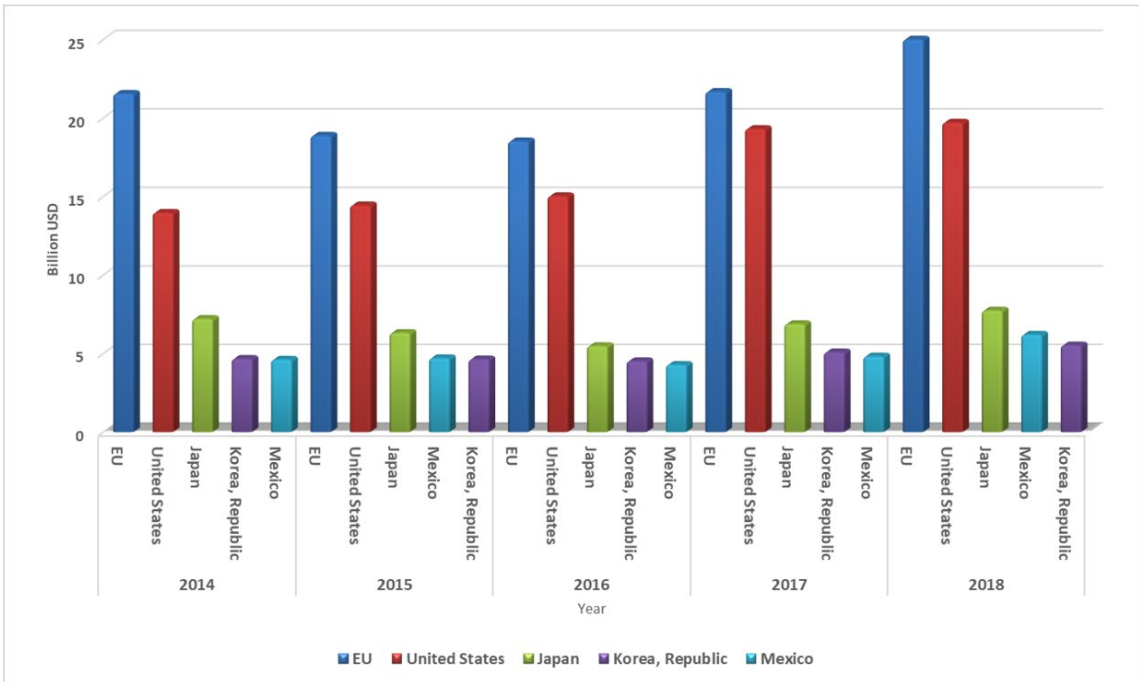
For this purpose, the aluminium commodities subject to extra-tariffs (listed in Table 1) are grouped into a product aggregate named "extra-tariffed aluminium products". In order to allow for comparison analysis, the two US HTS products withinthe scope of the tariffs — 7616.99.51.60 and 7616.99.51.70 — are referred to by the HS subheading 761699 ' *Aluminium; articles n.e.c.*', which cover them alongside other products.

4.1 Overview of the aluminium product aggregate

4.1.1 Main suppliers and importers

EU and the United States were by far the leading global importers of the aluminium products included in the extra-tariffed aggregate over the period 2014-2018. Within the EU, Germany, France, Italy, the Netherlands, and Poland are the most important importing countries.

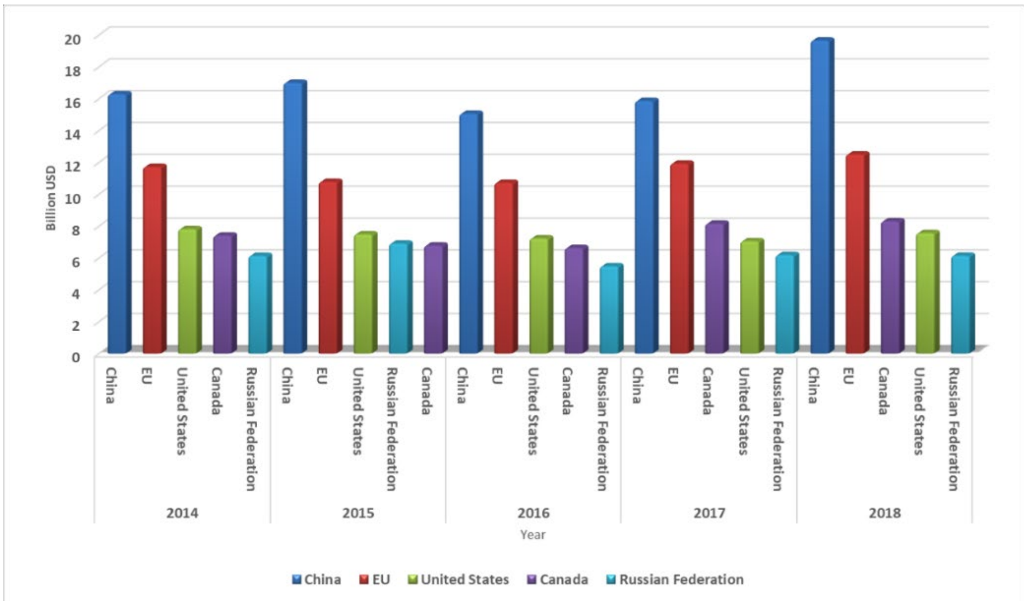
Figure 26. Main five global importers of extra-tariffed aluminium product group over the period 2014-2018 (total import value; billion USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

As shown in Figure 27, over the period 2014-2018 China and EU (intra-EU trade flows excluded) were by far the biggest global exporters of the extra-tariffed aluminium product group, together accounting for almost one-quarter of world's exports in 2018. EU–countries such as Germany, Italy, Netherlands, France, and Spain are among the leading global aluminium product aggregate suppliers.

Figure 27. Main five global exporters of extra-tariffed aluminium product group over the period 2014-2018 (total import value; billion USD; EU as a trading bloc)



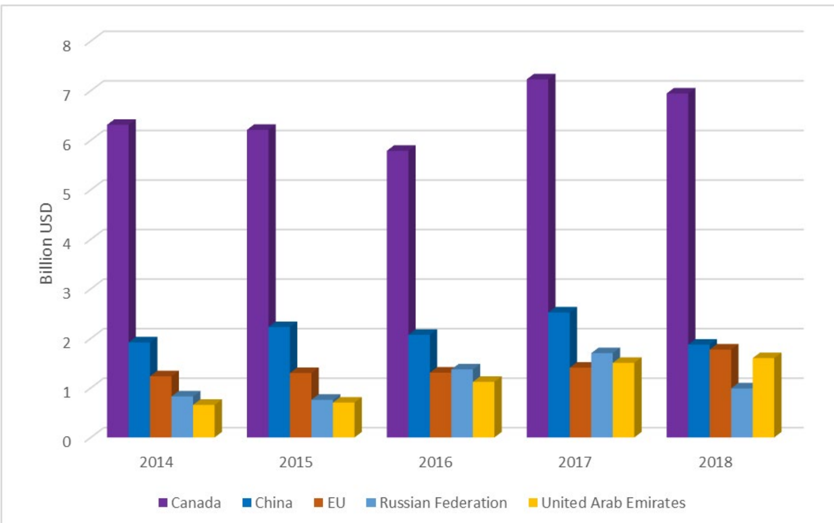
Source: UN Comtrade data, accessed via (WITS, 2020)

4.1.2 US imports

United States imports of extra-tariffed aluminium product groups rose significantly by 42% over the period 2014-2018, from 13.9 billion USD in 2014 to 19.7 billion USD in 2018.

In 2018, the top five importers (Figure 28) accounted for two-thirds of total US imports of the extra-tariffed aluminium product group. Canada was the main US supplier over the entire period, with an average annual share of 40 per cent. Unwrought aluminium (HS 7601 category) is the main contributor to the US imports from Canada (three-quarters of the US' annual average imports of aluminium product aggregate from Canada over the period 2014-2018). The other three product groups with significant average annual contributions are HS 7604 (around 6%), HS 7605 (around 7%) and HS 7606 (around 8%).

Figure 28. US imports of extra-tariffed aluminium product group: top five supplier countries over the period 2014-2018 (import value; billion USD; EU as a trading bloc)



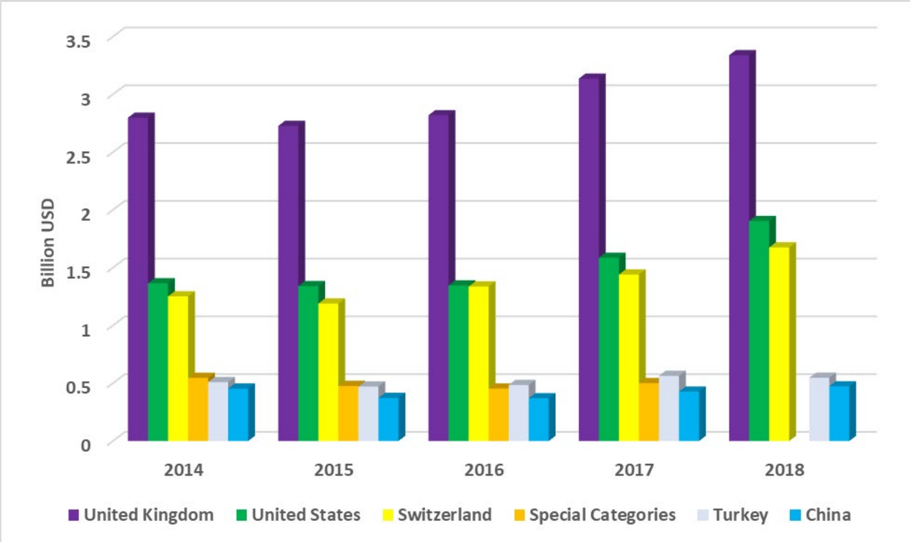
Source: UN Comtrade data, accessed via (WITS, 2020)

EU was the third US supplier by value, with an annual average share of approximately 9% of the US total imports of the extra-tariffed aluminium product group. The value of the US imports from the EU showed an increasing trend during 2014-2018, starting from about 1.3 billion USD and arriving at USD 1.8 billion.

4.1.3 EU exports

Over the period 2014-2018, the EU's annual average exports of extra-tariffed aluminium products to the extra-EU countries were around 11.5 billion USD. US was the main destination of EU exports before Brexit, account for 15% of total EU exports of extra-tariffed aluminium product group in 2018 (Figure 29). The United Kingdom, US and Switzerland accounted for more than half of extra-EU exports in 2018 (UK: 27%). In 2018, Germany (42% of aggregate EU) and France (11%) were the most prominent EU exporters, accounting together for more than half of the total extra-EU exports of the examined product group aggregate; Italy and Austria are the third and fourth-largest EU exporters, with shares of 8% and 9% respectively.

Figure 29. Leading destination countries of the total EU exports of extra-tariffed aluminium product group over the period 2014-2018 (import value; billion USD; EU as a trading bloc) ([70])

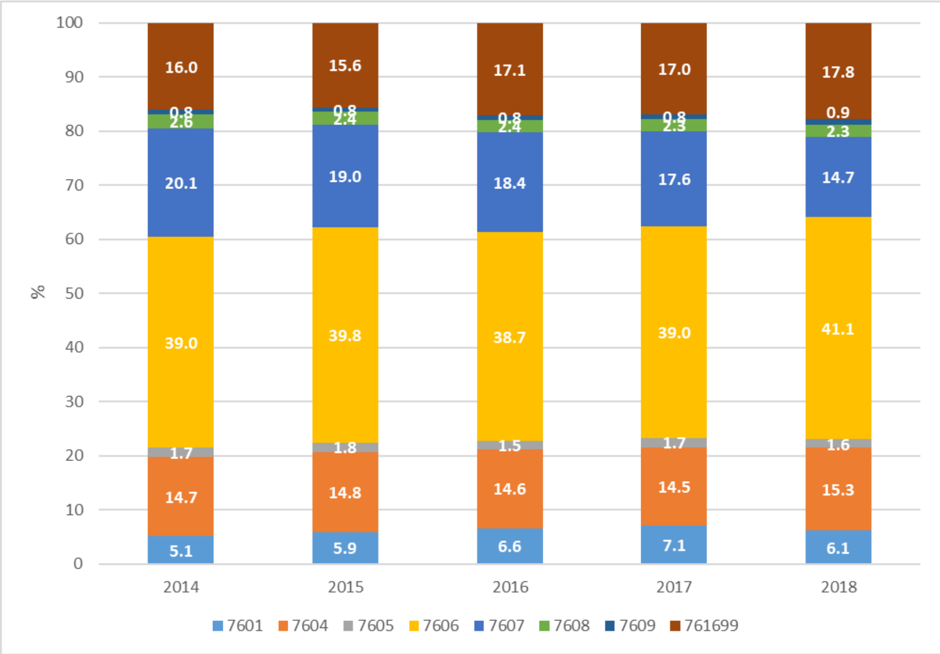


Source: UN Comtrade data, accessed via (WITS, 2020)

With regards to the structure of the EU total exports of extra-tariffed aluminium product aggregate in the period 2014-2018, four components – HS 7606 (5-year average share of 39.5%), HS 7607 (5-year average share of 18%), HS 761699 (5-year average share of 17%) and HS 7604 (5-year average share of 15%) stand out (Figure 30).

([70]) The partner "Special categories" is used by a reporting country if it does not want the partner breakdown to be disclosed https://unstats.un.org/unsd/tradekb/Knowledgebase/50042/Areas-not-elsewhere-specified

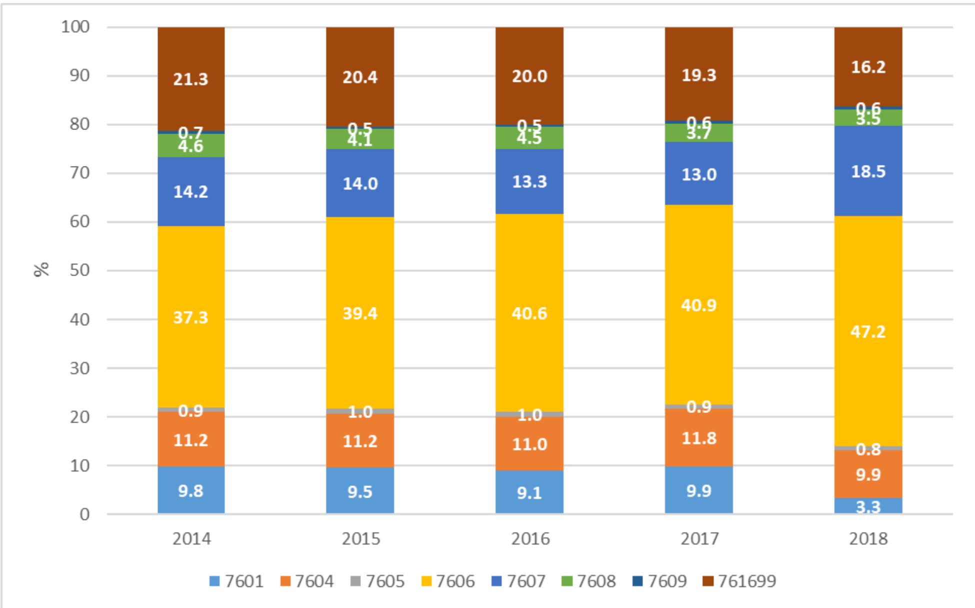
Figure 30. Structure of the total value of EU exports of aluminium product group by HS 4-digit/HS 6-digit component over the period 2018-2018 (EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

As in the case of the total EU exports, the same four components dominate the EU exports of the extra-tariffed product group to the US over the period 2014-2018: again, 7606 (highest annual average of 41%), HS 761699 (annual average of 19%), 7607 (annual average of 15%) and 7604 (annual average of 11%) (Figure 31).

Figure 31. Structure of the total value of EU's exports of extra-tariffed product group to the US by HS 4-digit/HS 6-digit component over the period 2018-2018

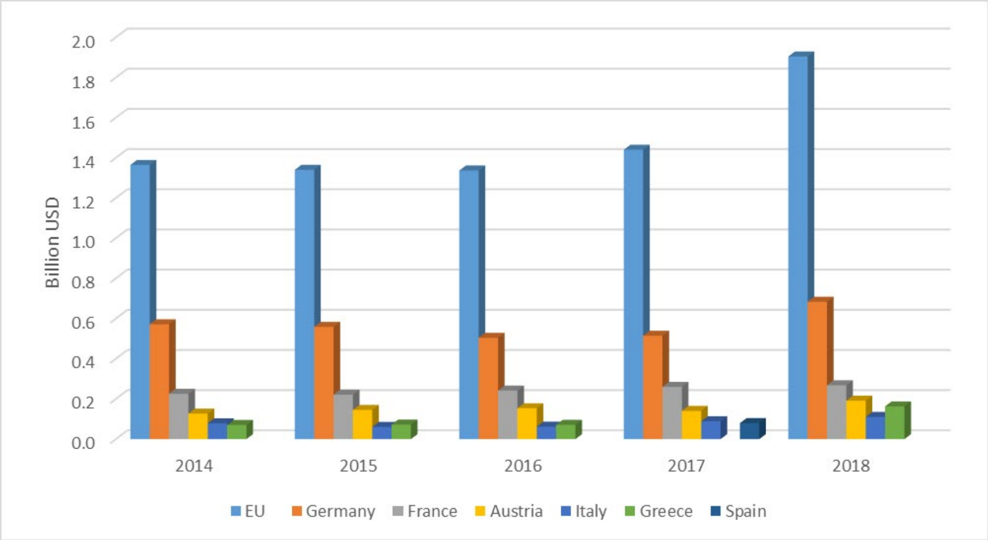


Source: UN Comtrade data, accessed via (WITS, 2020)

The following figure shows the EU exports of the aggregate product group to the US from an EU country's perspective, i.e. how important these exports to the US are at a national level. It aims at identifying the EU Member States' aluminium industries most exposed to commercially conditions in the US.

Together, Germany and France accounted for half of the EU's total annual exports of aluminium product group to the US in 2018.

Figure 32. EU exports of extra-tariffed aluminium product group to the US and its main five supplier countries over the period 2014-2018 (billion USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

4.1.4 Chinese exports of aluminium product aggregate

China's global exports of the whole extra-tariffed aluminium product aggregate rose significantly since 2016 (24% growth in 2018 compared to 2017 and 30% compared to 2016 (Figure 33).

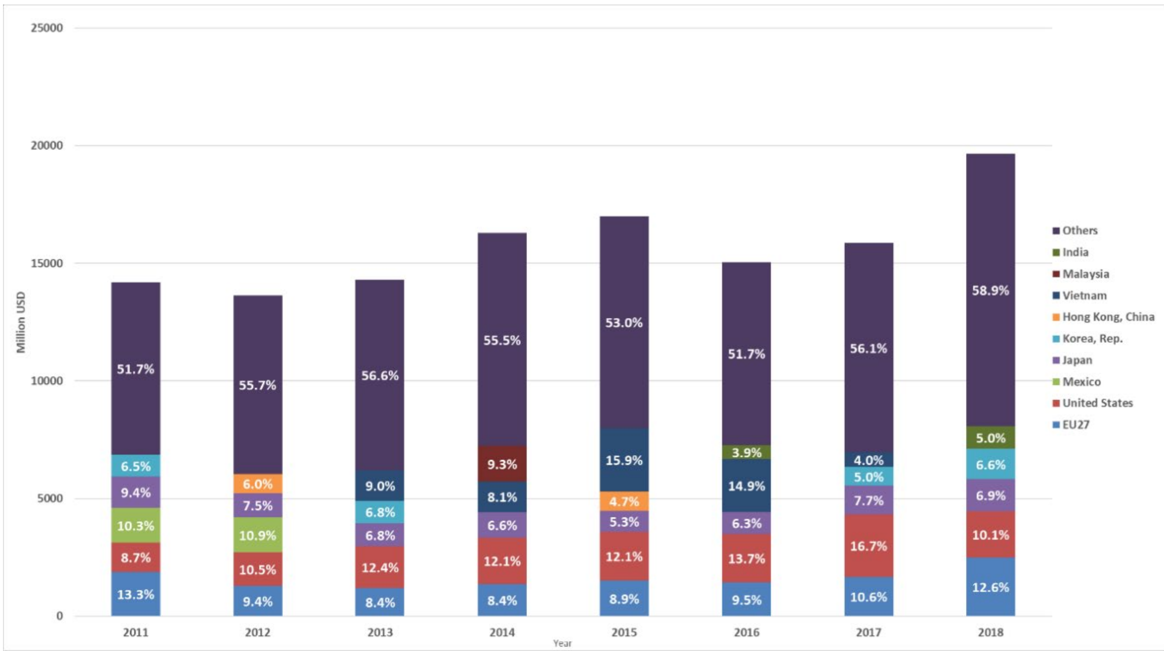
As far as the product aggregate's component is concerned, China's exports of HS 7604 (19%), HS 7605 (34%), HS 7606 (37%) and HS 7607 (19%) rose the most, as compared to 2017 - the year before Section 232 tariff imposition.

In 2016 and 2017 (i.e. two years preceding the imposition of US tariffs), the EU and US were by far the leading destinations of China's exports of this product group, account together for around a quarter of them.

As compared with 2017, China's exports to its main destination increased in 2018: Korea: + 63%; EU: +48%; Japan: +12%. Exports to the US were the only exception, falling by a quarter in 2018; the US share in China's export of the aluminium product group decreased from around 17% in 2017 to 10% in 2018.

The contribution of each compounding product group to this evolution is examined in the following sections, dedicated to the individual product groups.

Figure 33. China's exports of the extra-tariffed aluminium product aggregate over the period 2011-2018 (export value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

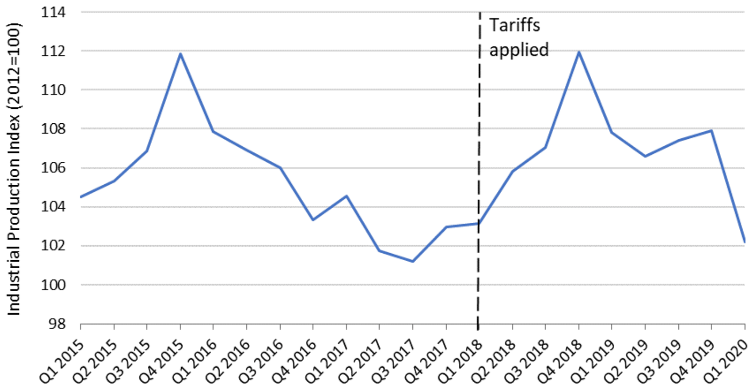
4.2 Impact of tariffs

4.2.1 Impact in the US

4.2.1.1 Production

Figure 34 below shows the trend on US industrial production of aluminium and aluminium products using the Industrial Production Index ([71]). Data from the Federal Reserve's Industrial Production database are shown for the industrial sector NAICS 3313 'Alumina & aluminium production & processing' ([72]).

Figure 34. Industrial Production Index, quarterly, NAICS 3313 'Alumina & aluminium production & processing'



Source: Data from (Board of Governors of the Federal Reserve System, 2020)

([71]) The Industrial Production Index (IPI) is an economic indicator published by the Federal Reserve Board of the United States that estimates the real production output (weighted by value added) by industry based on measures of physical output, or (where output data are not available) total production-worker hours. Growth in the production index is an indicator of growth in the industry.

([72]) The output of the industry represented by NAICS 3313 represents well the aluminium product group subject to tariffs. It does not comprise castings and forgings and includes alumina in comparison to the product group subject to tariffs.

The following table summarizes comparative data on industrial production estimates for the US aluminium industries. The Industrial production index is used to compare US production in the post-tariff period (April 2018-December 2019) with the pre-tariff period (July 2016-March 2018). The overall US production of primary and semi-finished aluminium products (NAICS 3313) increased by 4.4% on average in the period after the imposition of tariffs (Table 10). In the same period, the aluminium demand in North America rose by 2.2%; thus, the US aluminium sector increased its output at a higher rate in the period after the imposition of tariffs. The subsector with the most substantial growth has been primary aluminium (23.6%). The output of the downstream industry of aluminium sheet, plate, and other rolling and drawing products rose 2.9%, and the output of the extrusion industry grew by 3.1% in the same period.

Table 10. US aluminium production before and after the implementation of tariffs(1)(2), Industrial production index (IPI) (2012 = 100)

Sector	**NAICS code**	**Monthly average IPI, Pre-tariff**	**Monthly average IPI, Post-tariff**	**% Change**
Alumina and aluminium production and processing	3313	103.3	107.8	4.4%
Primary aluminium production	331313 partial	57.1	70.6	23.6%
Secondary smelting and alloying of aluminium	331314	126.5	135.2	6.9%
Rolled (e.g. sheet, plate, foil) and drawn aluminium products (wire)	331315, 331318 partial	105.2	108.2	2.9%
Extruded aluminium products	331318 partial	121.0	124.7	3.1%

(1) The post-tariff period refers to April 2018-December 2019 after the tariffs took effect (21 months), and the pre-tariff period to July 2016-March 2018 before the tariffs took effect (equal duration of 21 months).

(2) Data for the segments of aluminium foundries (NAICS 331524) and non-ferrous forgings (NAICS 332112) are not available.

Source: Data from (Board of Governors of the Federal Reserve System, 2020)

4.2.1.2 Employment

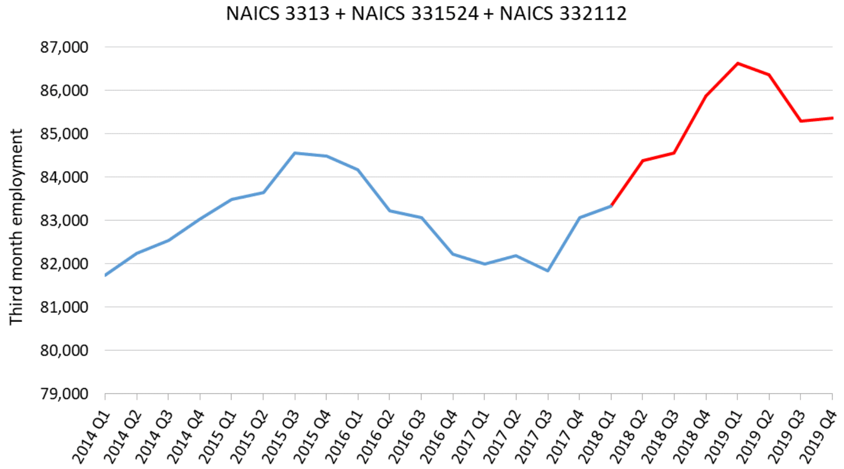
Quarterly data published by the US Department of Labour show that twenty-one months (Q2 2018 to Q4 2019) after the enforcement of 10% tariffs on US imports of aluminium, direct employment in the US aluminium industry ([73]) has risen in total by about 2,000 jobs (Figure 35). The increase corresponded to 2.4% of the total workforce of the US aluminium industry in March 2018. The increase of direct employment for NAICS 3313 'Alumina and aluminium production' was 4% in the same period. The attained rates are higher compared to the overall increase (1.1%) in the rest of the US metals industry ([74]) during the same period and higher than the global employment growth (1.8%) in the whole US manufacturing sector ([75]). However, the positive momentum for employment growth in the US aluminium industry sectors protected by tariffs had already started in Q4 2017, six months before the imposition of tariffs.

([73]) The coverage of the aluminium industry is extended beyond NAICS 3313 'Alumina and aluminium production' to include NAICS 331524 'Aluminium foundries, except die-casting' and NAICS 332112 'Nonferrous forging' which represent sectors with products protected by the tariffs. Impacts in employment for downstream manufacturing sectors that use tariffed aluminium products is not accounted.

([74]) NAICS 331 'Primary metal manufacturing' + 'NAICS 332 'Fabricated metal product manufacturing' minus the aluminium-related subsectors NAICS 3313, NAICS 331524, NAICS 332112.

([75]) NAICS 1013.

Figure 35. Direct employment in the US aluminium industry, in number of employees (Q1 2014 – Q4 2019)



NB: In red the period after the implementation of tariffs

Source: Data from (US Department of Labor, 2020)

Nevertheless, as it is evident from Figure 35, the positive trend in the growth of employment across the US aluminium industry was already in place for six months before the imposition of tariffs. The US aluminium sector continued to hire workers after the implementation of tariffs and peaked in the first quarter of 2019. However, the boost in employment faded out in Q2-Q3 2019, meaning that aluminium companies had to lay workers off, despite tariff protection. This finding is in line with JRC's econometric modelling results, which show that the short-time effects of trade measures on US aluminium segments are dampened after 6-7 months on average.

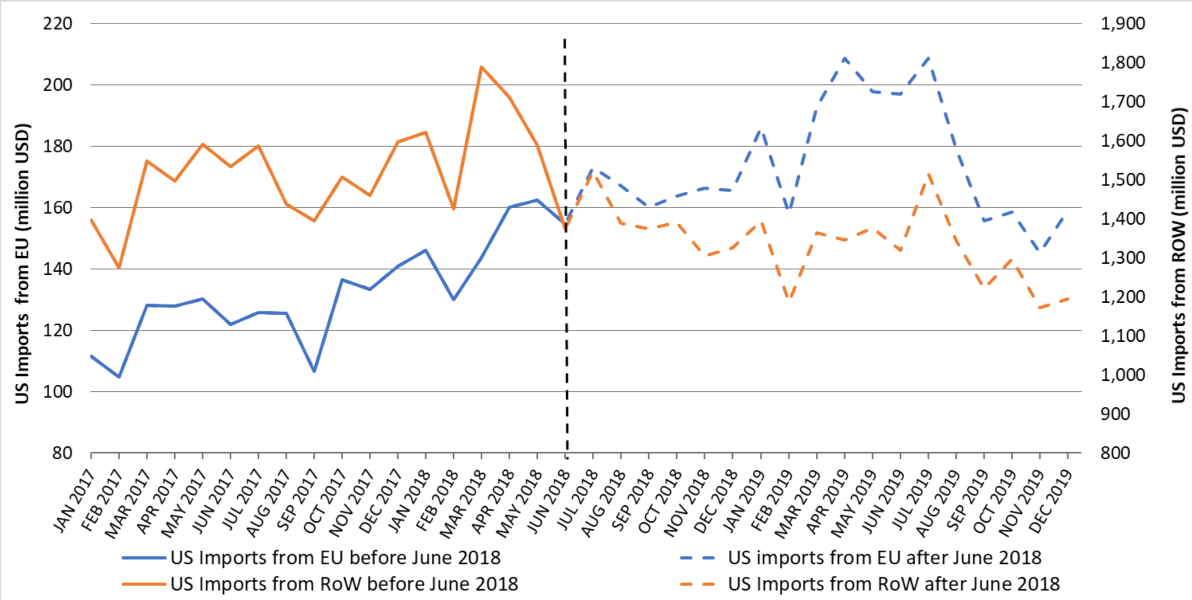
It is noted that economic research found that in 2018 the various tariff waves enacted by the US administration were associated with a relative reduction in overall employment of the US manufacturing sector. Greater losses erased the small boost from the import protection effect of tariffs by rising input costs and retaliatory tariffs (Flaaen and Pierce, 2019). Other researchers projected a net loss for employment across the US economy one to three years after tariffs - against imports of steel, aluminium, motor vehicles and parts, and some subset of products imported from China - have been in effect, also taking into consideration the impacts from the retaliation by US trading partners. Despite positive impacts on some sectors, the negative impacts on others outweigh the positive impacts in every instance and scenario examined (Francois and Baughman, 2019).

4.2.1.3 US imports

On a yearly basis, the total US value of imports declined in 2019 relative to 2018 by 9%. Concerning, the main origins of US imports, Canada's share was lower in 2019 at about 33% compared to the previous year (35%). Following the 2018 tariff increases and subsequent trade measures imposed against China, the US imports from China faced direct negative impacts, and China's share in US imports fell from 9.5% in 2018 to 7.5% in 2019. The United Arab Emirates also had a slight decrease in US imports share (7.7% in 2019 compared to 8.1% in 2018). The EU's share in US imports rose from 9% to 12% between 2018 and 2019, and the EU became the second largest origin for US imports after Canada.

Figure 36 shows the evolution of US imports – in value terms, from the EU and the rest of the world respectively – during the period of reference, starting January 2017 till the end of 2019. It gives a picture of the effect of the imposition of extra-tariffs, considering that the moment in which tariffs became effective is in the middle of the period selected.

Figure 36. Evolution of monthly US imports before and after Section 232 tariffs for the extra-tariffed aluminium product group ([76]) (value terms)



Source: UN Comtrade data, accessed via (WITS, 2020)

The graph confirms that in the case of US imports from the EU, the imposition of extra-tariffs, during a period in which the US economic growth and therefore the demand for intermediate products of aluminium were still increasing, led to a mix of opposite effects on various components of the aggregate extra-tariffed group, with no clear negative impact on EU exporters, at least during the first year. On the contrary, the effect on the US imports from the rest of the world (except EU) seemed to have encountered the US administration's expectations in the short run. The explanation is twofold:

— firstly, the different structure of the US imports from the two regions, with HS 7601 category (primary aluminium) having a lion share in US imports from the rest of the world, but being quite a small share in total imports from the EU; this category of imports has been heavily affected by the new tariffs;

— secondly, the different price and demand elasticities of US imports for the two exporting regions show that EU exporters were supposed to benefit from a trade diversion following the increased tariffs due to a lower sensitivity to price variations and a higher response to the US economic growth than the rest of global exporters.

During the period between July 2018 and the end of 2019, the total value of US imports from the EU remained — except for the last quarter — above the value before the imposition of extra-tariffs. In contrast, the US imports from the rest of the world were with two months exception well below the initial value.

Table 11 below reports the annualised imports — in volume terms — after the US imposed duties on imports of certain aluminium products. The total imports of the extra-tariffed products fell by an overall rate of 11% by volume after tariffs' enforcement, corresponding to an annual quantity of about 723 kt. By far, the largest decrease by volume (almost 800 kt) is observed for unwrought aluminium, which strongly impacted the overall imports drop. Despite the tariffs, imports of flat-rolled products (HS 7606, HS 7607) to the US rose by almost 140 kt (an increase of 10%), whereas imports of bars, rods, and profiles (HS 7604) remained marginally stable. Imports of aluminium wire, tubes and pipes, tubes or pipes fittings, castings and forgings declined in total by about 61 kt. Detailed disaggregated data by HTS 8-digit code are available in Annex 10.

([76]) Aggregate of HS 7601, HS 7604, HS 7605, HS 7606, HS 7607, HS 7608, HS 7609, HS 761699 (as a proxy for castings and forgings)

Table 11. Comparison of annualised US imports before and after Section 232 tariffs for the extra-tariffed aluminium product group [1][2]

Product description	**HTS code**	**Annualised imports after tariffs (kt)**	**Annualised imports' change compared to imports prior to tariffs (kt)**	**Annualised imports' change compared to imports prior to tariffs (%)**
Unwrought aluminium	7601	3,953	-799	-17%
Aluminium bars, rods, and profiles	7604	233	-2	-1%
Aluminium wire	7605	257	-45	-15%
Aluminium plates, sheets, and strip, of a thickness exceeding 0.2 mm	7606	1,229	+113	10%
Aluminium foil not exceeding 0.2 mm	7607	296	+26	10%
Aluminium tubes and pipes	7608	21	-5	-20%
Aluminium tube or pipe fittings	7609	7	-1	-7%
Other articles of aluminium: castings and forgings	7616.99.51.60, 7616.99.51.70	16	-10	-40%
Total		**6,012**	**-723**	**-11%**

(1) The pre-tariff imports were derived from trade data in a 20-month period preceding the implementation of tariffs (August 2016 to March 2018). The post-tariff imports refer to a 20-month period following the imposition of tariffs (April 2018-November 2019).

(2) Imports data sourced from the United States International Trade Commission's database (USITC Dataweb, 2020) refer to 'General Imports'. General imports measure the total physical arrivals of merchandise from foreign countries, whether such merchandise enters the US customs territory immediately or is entered into bonded warehouses or Free-trade zones under Customs and Border Protection (Customs) custody.

Source: Background data in (USITC Dataweb, 2020)

As one can see, the extra-tariffed categories that are of interest to EU exporters didn't experience dramatic changes after the imposition of extra tariffs, moreover in the case of HS 7606 and HS 7607 groups the change was in the opposite direction than expected. Obviously, the positive evolution of US demand during this period may have had a bigger impact than the increase in prices perceived by the exporters to the US.

The investigation report issued by the US Department of Commerce (US Department of Commerce, 2018), which triggered the application of the aluminium tariffs, estimated that a tariff rate of 7.7% on imports of unwrought aluminium and the other aluminium product categories listed above should have the same impact as an 86.7% quota. In other words, the claim was that a 7.7% tariff would be equivalent to an import volume reduction of 13.3%. Thus, the 10% tariff finally applied by the US President of the US tariff would lead to a higher import cut than 13.3%. Nevertheless, the overall decrease in imports has proved to be lower at 11%.

4.2.1.4 US exports

Unsurprisingly, US exports of tariffed aluminium products overall decreased by 12%, or 228 kt on an annualised basis. The most significant declines are felt by US exporters of bars, rods, and profiles in terms of percentage points (-34 per cent), and by producers of plates, sheets, and strip in terms of volume (-137 kt). The negative effect on US exports can be attributed to the duties on imports of unwrought aluminium, making the US output of downstream products more costly, thus, less competitive. The increase of the regional aluminium premium in the US after the imposition of tariffs is discussed in Section 4.3.3.

Table 12. Comparison of annualised US exports before and after Section 232 tariffs ([1]) for the extra-tariffed product group

Product description	HTS code	Annualised exports after tariffs (kt)	Difference with exports before tariffs (kt)	Difference with exports before tariffs (%)
Unwrought aluminium	7601	521	17	3%
Aluminium bars, rods, and profiles	7604	180	-92	-34%
Aluminium wire	7605	28	-11	-27%
Aluminium plates, sheets, and strip, of a thickness exceeding 0.2 mm	7606	743	-137	-16%
Aluminium foil not exceeding 0.2 mm	7607	105	-8	-7%
Aluminium tubes and pipes	7608	55	1	3%
Aluminium tube or pipe fittings	7609	13	0	-1%
Other articles of aluminium: castings and forgings	7616.99.51.60 - 7616.99.51.70	9	0.5	-2%
Total		1,653	-228	-12%

([1]) Post-tariff period is April 2018 – November 2019 (20 months), and pre-tariff period August 2016 – March 2018 (20 months).

Source: Background data in (USITC Dataweb, 2020)

4.2.2 Impact in the EU

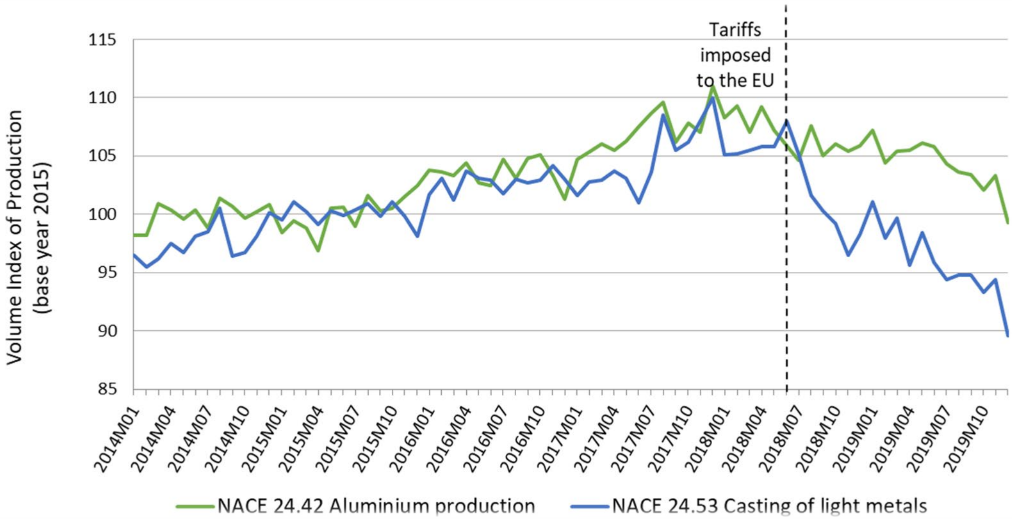
Impacts triggered by the US tariffs could be direct on EU exports or indirect from export flows diverted from the US into the EU.

4.2.2.1 Production

The output of EU industrial sectors ([77]) impacted by the US tariffs had been on a downward path in 2018 and 2019 (Figure 37). The production level of NACE 24.42 'Aluminium production' and NACE 24.53 'Casting of Light metals' reached a peak at the end of 2017 following a period of steady growth trend and afterwards fell continuously until December 2019 by 13 and 17 percentage points, respectively, below their former higher value. The index for NACE 24.42 has been relatively steady since the imposition of tariffs in June 2018 and the first half of 2019; in the second semester of 2019, a drop of about 6% is recorded. On the contrary, the declining trend in the industrial output of NACE 24.53 has been relatively steady and faster than NACE 24.42.

([77]) The economic activity classified under NACE 24.42 'Aluminium production' includes production of unwrought aluminium (HS 7601), and semi-finished aluminium products (HS 7604, HS 7605, HS 7606, HS 7607, HS 7608, HS 7609) targeted by the tariffs. It also covers production of alumina which is not in the scope of the tariffs. The economic activity classified under NACE 24.53 'Casting of light metals' comprises production of aluminium castings that are within the scope of the tariffs. Aluminium castings are the predominant product in (about 99%) of light metal castings output (CAEF, 2019).

Figure 37. Industrial Production Index (78) (NACE 24.42 and NACE 24.53), seasonally and calendar adjusted data, 2015=100



Source: Background data from (Eurostat, 2020c)

4.2.2.2 EU exports to the US

Table 13 below provides the annualised EU exports based on background data published by the US International Trade Commission and Eurostat (79). Trade data analysed refer to a 19-month period after the imposition of Section 232 tariffs to EU exports (June 2018 to December 2019), and a period of the same length before the imposition of tariffs (November 2016 to May 2018). The year 2020 was not considered in order to exclude the impact of the Covid-19 pandemic. Annex 11 and Annex 12 list detailed data by disaggregated HTS 8-digit code.

(78) The industrial production index (sometimes also called industrial output index or industrial volume index) is a business cycle indicator which measures monthly changes in the price-adjusted output of industry

(79) USITC data are preferred for the analysis instead of Eurostat in order to allow comparisons within the US market at a more disaggregated level than Harmonised Schedule (HS) trade codes. In addition, it allows to consider the 10-digit HTS subheadings 7616.99.51.60 (castings) and 7616.99.51.70 (forgings) subject to the 10% import duties, for which no HS or CN8 trade code exists. Eurostat data are reported in parenthesis.

Table 13. Comparison of annualised EU exports to the US before and after Section 232 tariffs ([1]) by broad 4-digit HS product groups

Description	HS/HTS code	Annualised EU exports after tariffs (kt)	Difference with EU exports before tariffs (kt)	Difference with EU exports before tariffs (%)	EU share by volume in total US imports after tariffs (%)	EU share by volume in total US imports before tariffs (%)
Data source		USITC (ESTAT)	USITC (ESTAT)	USITC (ESTAT)	USITC	USITC
Unwrought aluminium	7601	10.9 (8)	-38.6 (-32.4)	-78% (-80%)	0.3%	1.0%
Aluminium bars, rods, and profiles	7604	21.7 (25.8)	-1.6 (-0.8)	-7% (-3%)	10.1%	9.5%
Aluminium wire	7605	4.6 (4.6)	0.5 (0.8)	12% (20%)	1.8%	1.4%
Aluminium plates, sheets, and strip, of a thickness exceeding 0.2 mm	7606	285.0 (284.0)	120.8 (125.7)	74% (79%)	23.4%	14.2%
Aluminium foil not exceeding 0.2 mm	7607	69.1 (66.3)	27.4 (27.4)	66% (71%)	23.3%	15.4%
Aluminium tubes and pipes	7608	2.6 (5.2)	0.1 (0.1)	3% (2%)	12.8%	9.1%
Aluminium tube or pipe fittings	7609	0.4 (0.4)	-0.1 (0.1)	-23% (38)	5.3%	6.4%
Other articles of aluminium: castings and forgings	7616.99.51.60 and 7616.99.51.70	1.9 (NA)	-1.8 (NA)	-49% (NA)	12.2%	14.3%
Total		396.2	106.7	37%	6.7%	4.2%

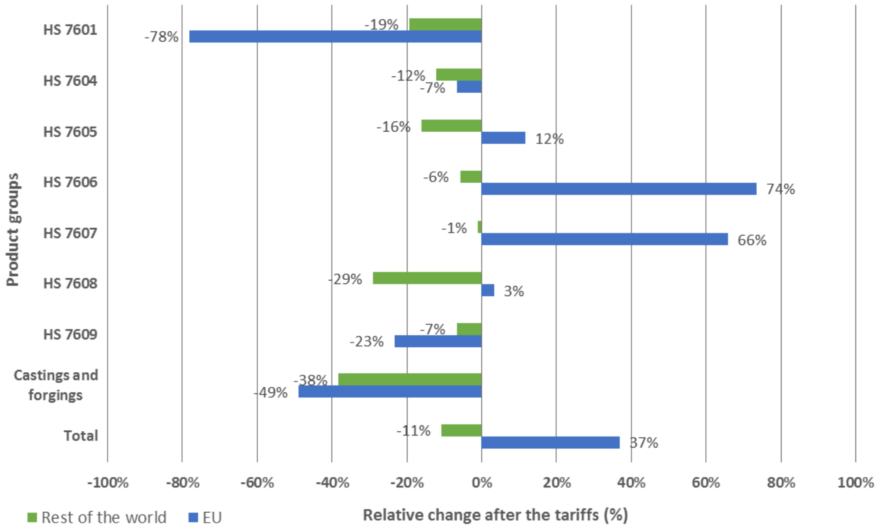
([1]) The period after the implementation of tariffs to EU exports is June 2018 – December 2019 (19 months), and the period before tariffs' enforcement against the EU is November 2016 – May 2018 (19 months of equal duration).

Source: Background data in (USITC Dataweb, 2020) (Eurostat Comext, 2020)

Notwithstanding the tariffs, the total EU exports for the aluminium products subject to additional 10% duties grew considerably by 107 kt on an annualised basis, increased by 37% compared to the EU exports prior to the application of US tariff measures (see Table 13).

The boost of EU exports has been significant for rolled products (HS 7606 and HS 7607) in terms of volume, is also mirrored by the increase of shares in total imports of the US. This is a robust outcome for EU exporters, as these two categories account for a large share in the overall aggregate. Exports of extruded products (HS 7604 and HS 7608), the next significant export flows to the US, have also increased their US imports share. Exports of wire products (HS 7605) are higher, maintaining their low share of sales in the US. Exports of aluminium tube or pipe fittings (HS 7609) are reduced with a small loss in their share of sales. Negative impacts are recorded for exports of aluminium castings and forgings (HTS 7616.99.51.60, HTS 7616.99.51.70) that have decreased considerable but retained a large share in US imports. Finally, EU exports of unwrought aluminium products (HS 7601) have declined substantially; nevertheless, they correspond to a meagre share of the US imports. Figure 38 displays the variation of EU exports after the enforcement of tariffs compared to countries in the rest of the world.

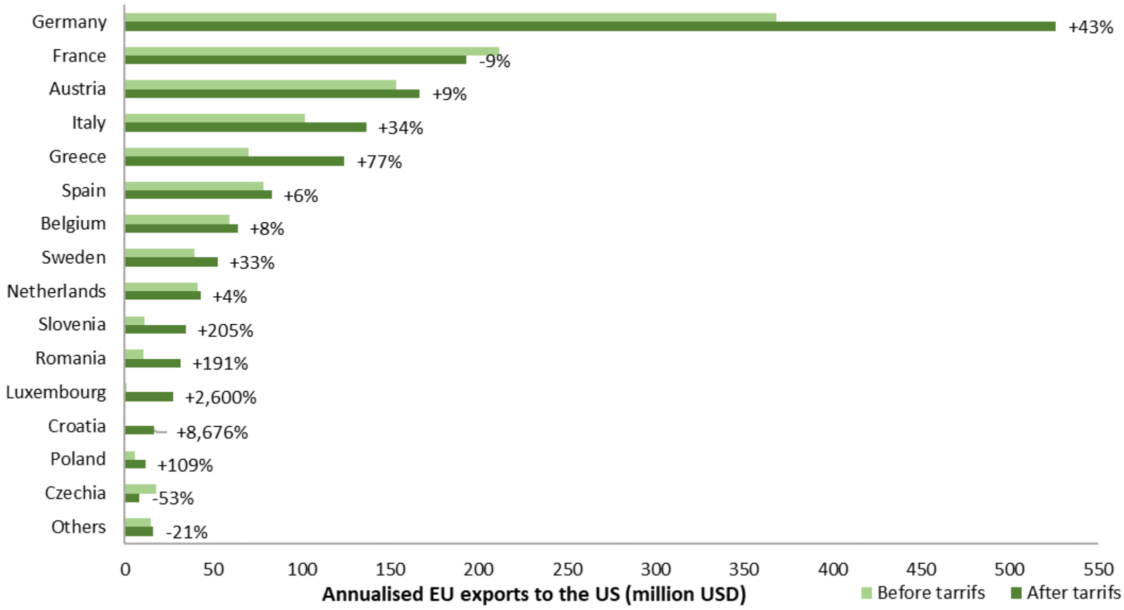
Figure 38. Change in EU exports to the US after the imposition of tariffs by product groups compared to the rest of the world, by volume



Source: Background data in (USITC Dataweb, 2020)

Figure 39 provides the breakdown by EU countries of the annualised exports value for the aluminium product group subject to tariffs. The overall rise in the value of EU exports is 30% or USD 351 million on a 12-month basis, although the LME benchmark price was about 7% lower than the period before the placement of tariffs. Germany, the top EU exporter to the US, has registered the uppermost growth in the annualised exports value (USD 158 million). Italy, Greece, Sweden, Slovenia, Romania, Luxemburg, Croatia, and Poland, in declining order of exports value to the US, also increased their exports substantially. The surge in the exports value has been particularly strong for Greece (USD 54 million), Italy (USD 35 million) and Luxemburg (USD 26 million). Conversely, France and Czechia experienced losses in terms of value.

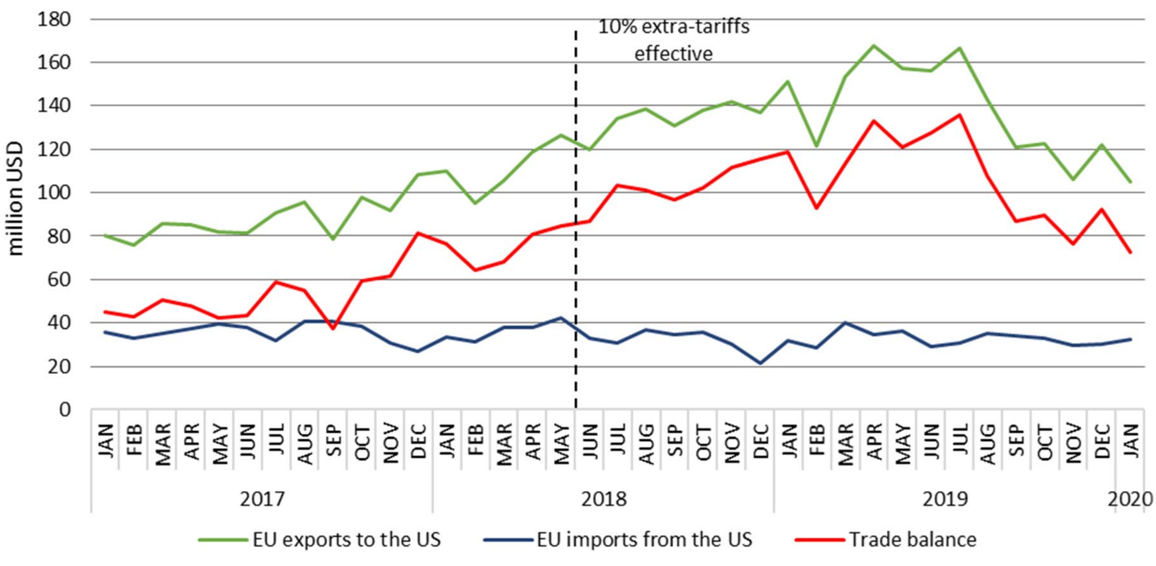
Figure 39. Total annualised EU exports to the US by value and by Member States for aluminium products subject to Section 232 tariffs



Source: Background data in (USITC Dataweb, 2020)

In the period June 2018 – July 2019 after the implementation of tariffs, the annualised EU trade surplus with the US increased by 62% compared to the previous 12-month period (June 2017 – May 2018, before tariff's imposition), i.e. from USD 770 million rose to USD 1,250 million. The average aluminium price in the post-tariff period is only 2% higher than in the pre-tariff period. Nevertheless, it is noticeable that during the last six months of the post-tariff period represented in Figure 40 (August – January 2020), the EU trade surplus had a declining trend due to the decrease of exports value and lower aluminium prices (see Figure 54). The drop in the second half of 2019 can be attributed to an import front-loading in the US of common alloy sheet products (belonging to HS 7606) during the first semester due to AD/CV duties against China imposed in 2018 (CRU, 2019b). The real evolution of EU exports to the US may suggest that price elasticities are lower than demand elasticities of imports, as EU imports respond much more to variations in US demand than to price variations. The econometric analysis based on JRC's model of US imports for the extra-tariffed categories can be used in the future to validate such assumptions.

Figure 40. EU-US trade balance for the extra-tariffed aluminium product group



Source: Background data in (USITC Dataweb, 2020)

4.2.2.3 EU export prices to the US

A question of interest is whether EU producers had to lower their export prices, bearing some of the tariffs' cost to retain a share in the US. Unit values derived by dividing the imports value at the border, i.e. without any ad-valorem tariffs applied, by the corresponding quantity can be used as a proxy for export prices. A decline in export prices may suggest that EU exporters absorbed a proportion of the tariff's cost, cutting their profit margins. However, unit values depend on other factors that may change across time, e.g. quality. Table 14 estimates export prices for certain aluminium products to characterize the effect on producer prices brought by the tariffs placed on aluminium imports from the EU.

Table 14. Impact of US tariffs on EU export prices for selected products at HTS 8-digit subheading (1) (2)

Description	HTS code	Average of monthly export price prior to the imposition of tariffs (3) (USD/kg)	Average of monthly export price after the imposition of tariffs (3) (USD/kg)	Per cent change in export prices (4)
Aluminium alloy, hollow profiles	7604.21.00	4.95	4.62	-7% **
Aluminium alloy, profiles (o/than hollow profiles)	7604.29.10	5.24	5.80	11% *
Aluminium alloy, bars and rods, having a round cross-section	7604.29.30	2.78	3.36	21% ***
Aluminium alloy, bars and rods, other than with a round cross-section	7604.29.50	5.01	4.57	-9%
Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension of 7 mm or less	7605.19.00	3.36	2.86	-15%
Aluminium alloy, wire, with a maximum cross-sectional dimension over 7 mm	7605.21.00	1.52	1.66	9% **
Aluminium alloy, wire, with a maximum cross-sectional dimension of 7 mm or less	7605.29.00	5.72	5.32	7%
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	7606.11.30	1.42	1.59	12% **
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	7606.11.60	4.48	4.49	0%
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	7606.12.30	1.78	1.72	-4%
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	7606.12.60	2.58	2.37	-8% **
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	7606.91.30	1.25	2.08	66% ***
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	7606.92.30	1.60	1.91	20% **
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	7606.92.60	1.92	2.33	21% ***
Aluminium, foil, w/thickness n/o 0.01 mm, rolled but not further worked, not backed	7607.11.30	2.15	2.52	17% ***

Aluminium, foil, w/thickness over 0.01 mm but n/o 0.15 mm, rolled but not further worked, not backed	7607.11.60	1.72	1.97	15% ***
Aluminium, foil, w/thickness over 0.15 mm but n/o 0.2 mm, rolled but not further worked, not backed	7607.11.90	1.61	2.33	45% ***
Aluminium, foil nesoi, w/thickness o/0.15mm but n/o 0.2 mm or 0.15mm or less & not cut to shape, not rolled, not backed, nesoi	7607.19.60	7.05	6.98	-1%
Aluminium, foil, w/thickness n/o 0.2 mm, backed, covered or decorated with a character, design, fancy effect or pattern	7607.20.10	8.06	9.50	18% ***
Aluminium, foil, w/thickness n/o 0.2 mm, backed, nesoi	7607.20.50	5.50	4.42	-20% ***
Aluminium alloy, tubes and pipes	7608.20.00	9.07	9.72	7%

([1]) The export price is derived from the customs value of imports as appraised by the US Customs and Border Protection divided by the corresponding quantity. The customs value is defined as the price actually paid or payable for merchandise excluding US import duties, freight, insurance, and other charges. In addition, the London Metal Exchange (LME) baseline price of each month is subtracted from the unit value calculated as described above, in order to reflect the variation in global aluminium prices. However, the assumption of spot transactions is an approximation that may differ considerably from the real market conditions, as shipments may be subject to long-term or short-term contracts without referring to the LME price of the month the shipment took place.
([2]) The unit values were scrutinized for outliers. For this reason, the estimation dropped observations for which relative changes in the unit value were larger than 30% from month to month. After excluding the high month-to-month variance in unit values, products at the HTS-8 subheading level for which the standard deviation of the two groups of observations (before and after the tariffs) was larger than 1.5 were discarded and are not reported in the table, in order to exempt those products with high variance at their import unit value.
([3]) Data for the pre-tariff period refer to January 2017 – May 2018, and for the post-tariff period to June 2018 – November 2019
([4]) ***, **, and * denote statistical significance at the 1 ($p < 0.01$), 5 ($p < 0.05$), and 10 ($p < 0.1$) per cent level respectively.

Source: Background data in (USITC Dataweb, 2020)

The product-specific data at the level of HTS-8 subheadings suggest that EU exporters haven't reduced their prices for most of the tariffed aluminium products shipped to the US. This finding is aligned to the results JRC got from its modelling analyses, which will be further explained in this study. The value of products for which a price increase is noted (at levels of statistical significance over 90%) is 22% of the total EU exports value to the US in 2017 for the tariffed products. Exemptions in the general trend are the products of hollow profiles of aluminium alloys (HTS 7604.21.00), clad plates, sheets, and strip of aluminium alloys (HTS 7606.12.60), and backed aluminium foil (HTS 7607.20.50), for which the estimated export prices are concluded to be lower after tariffs' enforcement (statistically significant price decrease at level > 90%). The export value of these products represents 15% by value of the total EU exports to the US in 2017. As regards the products for which no statistically significant price variation has been detected after tariffs' enforcement, these correspond to 47% by value of the EU exports in 2017. The remainder of the products (16% of exports value) has been discarded from the analysis due to high variance.

The above results are in line with studies that researched the impacts in the US of the various tariff measures enforced in 2018-2019. These studies concluded that, in general, export prices targeted by tariffs did not fall, as the cost of the tariffs passed through to consumers and importers to a great extent through duty-inclusive producer prices (Flaaen and Pierce, 2019) (Cavallo et al., 2019)(Fajgelbaum et al., 2020)(UNCTAD, 2019).

4.2.2.4 EU imports of the extra-tariffed product aggregate

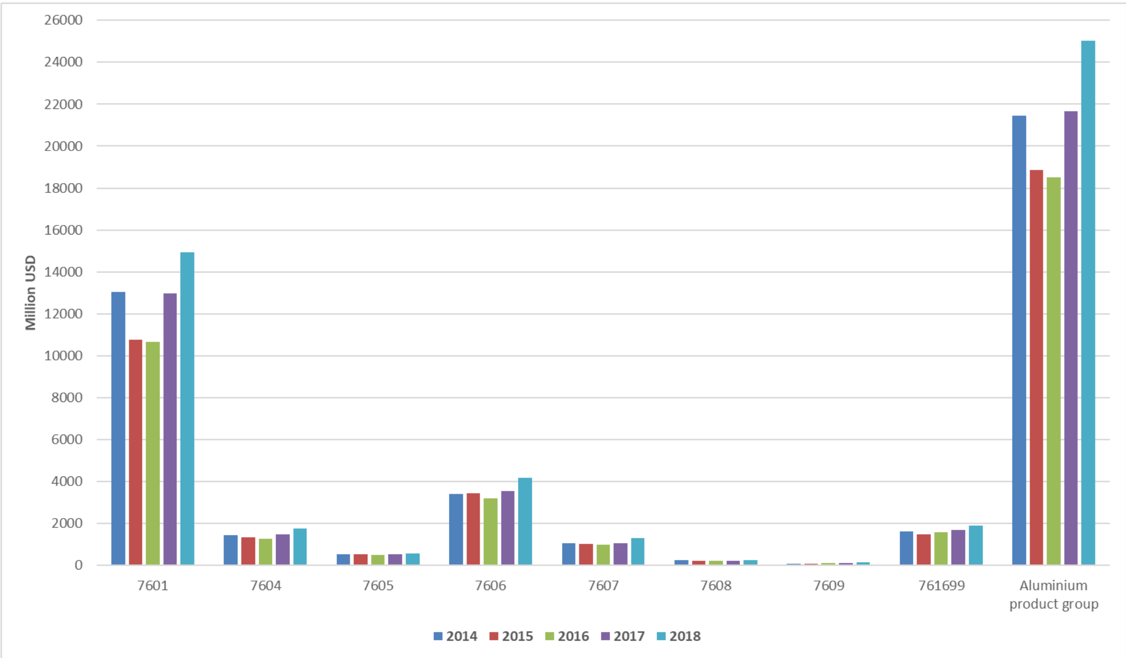
As compared to 2014, extra-EU imports of the extra-tariffed aluminium product group increase by 16% in 2018, rising significantly in both 2017 (17% compared to the total value in 2016) and 2018 (15% as compared to 2017 total value).

Two product groups – HS 7601 and 7606 – contributed more than 60% to the annual average EU imports of extra-tariffed aluminium product group over the entire period.

Primary aluminium (HS 7601) had an annual average contribution of 47%; its import value rose significantly in both 2017 (22% as compared to the import value in 2016) and 2018 (15% as compared to 2017 value).

The second major contributor to the extra-EU imports of the extra-tariffed aluminium product group is aluminium; plates, sheets, and strip (HS 7606), with an annual average contribution of 17%. As compared to 2014, extra-EU imports of HS 7606 increase by 20% in 2018.

Figure 41. Extra-EU imports of the extra-tariffed aluminium product group and its components over the period 2014-2018 (EU as a trading bloc; mil. USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

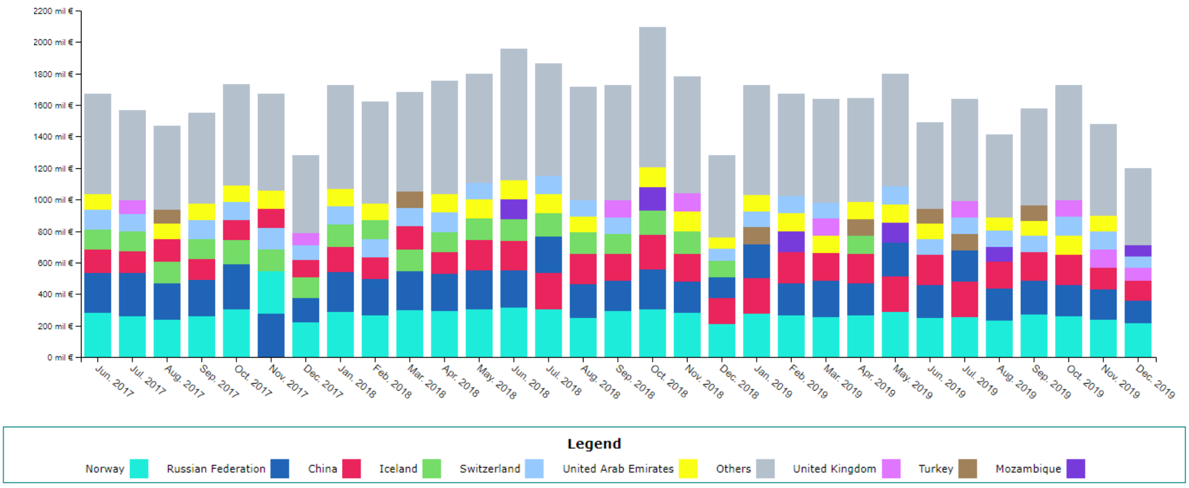
4.2.2.5 Imports re-orientation to the EU

Figure 42 shows the main country suppliers (plus China) of the monthly EU imports of aluminium product aggregate over the period June 2017-December 2019.

Norway, the Russian Federation and China were the main suppliers of the whole extra-tariffed aluminium product aggregate to the EU, contributing with more than 30 per cent to the monthly EU imports over the period June 2017-December 2019.

As compared to the period July-December 2017, the EU average monthly imports of aluminium products rose by 13% in the second half of 2018 and declined by 2.5% in the same period of 2019. China's average monthly contribution to the EU imports rose from 8.3% in the second half of 2017 to 9.5% in June 2018-December 2018 (i.e. the period immediately after the US' imposition of extra-tariffs on the aluminium products for the EU), and to 11.4% in the second half of 2019.

Figure 42. Evolution of the EU monthly imports of the aluminium product aggregate by main country suppliers over the period June 2017-December 2019 (mil. Euro)

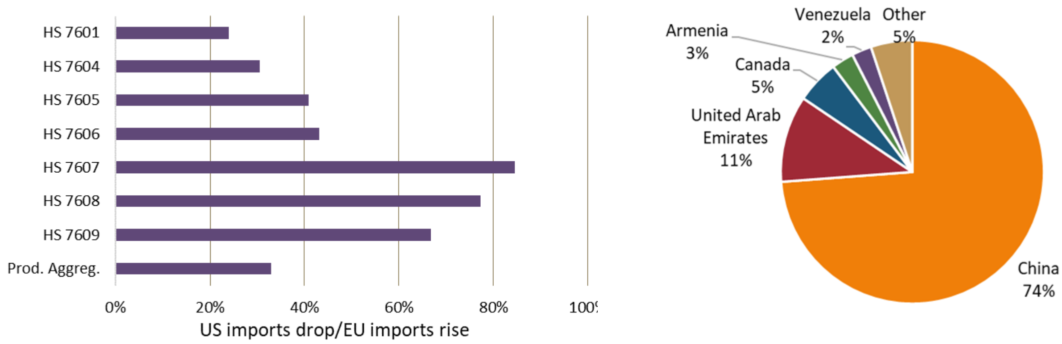


Source: Data from (Eurostat Comext, 2020)

EU imports increased in total for the aggregate product group ([80]) by about 540 kt in the post-tariff period, although the figure represents a very eclectic aggregate. A large share of this increase can be attributed to trade diversion as it corresponds to export volumes lost in the US ([81]) after the implementation of tariffs by countries that simultaneously increased their exports to the EU in the post-tariff period ([82]).

The following figure reports how much of the EU imports surge by volume originated from countries that their exports to the US registered a drop in the post-tariff period, and the breakdown per country for the total diverted volume.

Figure 43. Import diversion in the EU from countries with lower exports to the US after the imposition of tariffs (left), and breakdown per country (right)



Source: Background data from (Eurostat Comext, 2020)

In terms of volume, the most significant export redirection is recorded for HS 7606 (86 kt), and HS 7607 (52 kt). Import diversion in the EU from the US for aluminium foil products (HS 7607) accounted for the highest proportion of EU imports rise among tariffed product categories (Figure 43). China redirected to the EU the greatest amount of export volumes from the US (135 kt) that represents almost half (48%) of the total increase of annualised Chinese exports (280 kt) to the EU in the same period ([83]).

The contribution of each individual product group is analysed in the next chapters.

4.3 Price developments on aluminium products global market

4.3.1 Imports unit prices

Before analysing in detail the role of pricing mechanisms and the prices variations in driving the volume and values of global trade flows between the main players in aluminium, we looked at the evolution of import unit prices during the latest 23-24 years. In cases for which data were missing in the international statistics, the time series appear interrupted, with gaps for non-available data. The data shown hereunder can be used also for econometric modelling, as the time series are sufficiently long to support sound econometric/statistical results:

- The unit prices of US imports from the EU;
- The unit prices of US imports from the rest of the world (RoW, i.e. US trade partners except EU);
- The unit prices of RoW imports from the EU, where RoW represents EU trade partners except US.

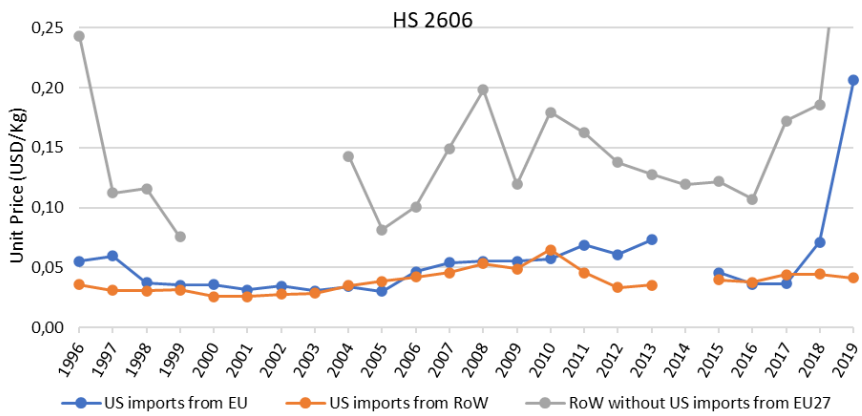
As it is explained in Annex 15 of the report, when introducing methodologically the JRC econometric model of imports, the general theory of international trade states that imports of a country for any category of goods (or for one product or all goods) is usually influenced by the importing entity's output global demand, by price levels and/or their variations, by other variables influencing output and costs perceived by the importing entity (such as investment decisions, taxes and costs associated to imports). An importer would tend to reduce the volume of the imports when prices go up or when expectations for high disruptions in prices or supply are

([80]) Except for castings and forgings.
([81]) Countries with the top-5 losses in the US market by HS6 are considered.
([82]) The pre-tariff imports were derived from trade data in a 20-month period preceding the implementation of tariffs (August 2016 to March 2018). The post-tariff imports refer to a 20-month period following the imposition of tariffs (April 2018-November 2019).
([83]) Post-tariff period is April 2018 – November 2019 (20 months), and pre-tariff period August 2016 – March 2018 (20 months).

present. The opposite is valid for the growth of internal demand and decrease in prices and their volatility. Looking at a function of imports annual variations, one would expect to see a negative coefficient associated with the changes in prices or price volatility and a positive sign of the coefficient associated with internal demand (production, value added, etc.). This means that, when a country imposes or increases a tariff on imports for a certain category of prices, the actors in the trade flows would expect to see a rise of general unit prices of imports (if counteractive measures are not taken) and consequently a reduction of imports for that category, if other influencing variables remain constant.

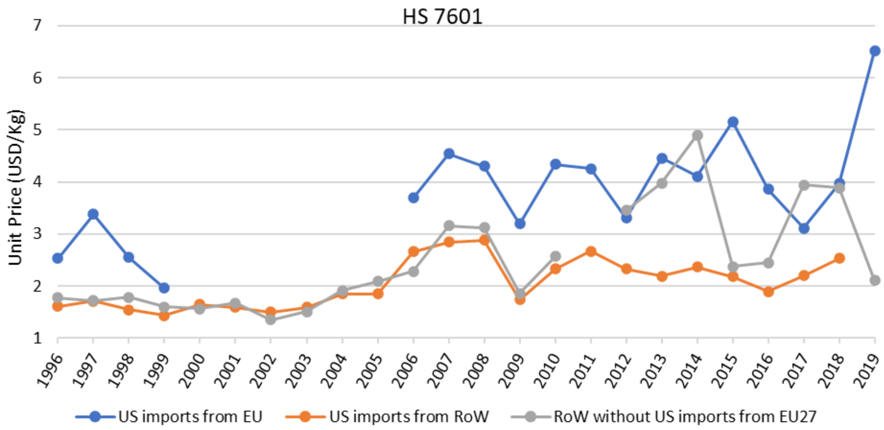
The data for import unit prices are reported for the eight categories of extra-tariffed products as well as for aluminium ores and concentrates (HS code 2606, which the tariffs did not target in 2018) in the graphs hereunder:

Figure 44. Import Unit Prices (USD/Kg) for global imports of Aluminium ores and concentrates 1996-2019



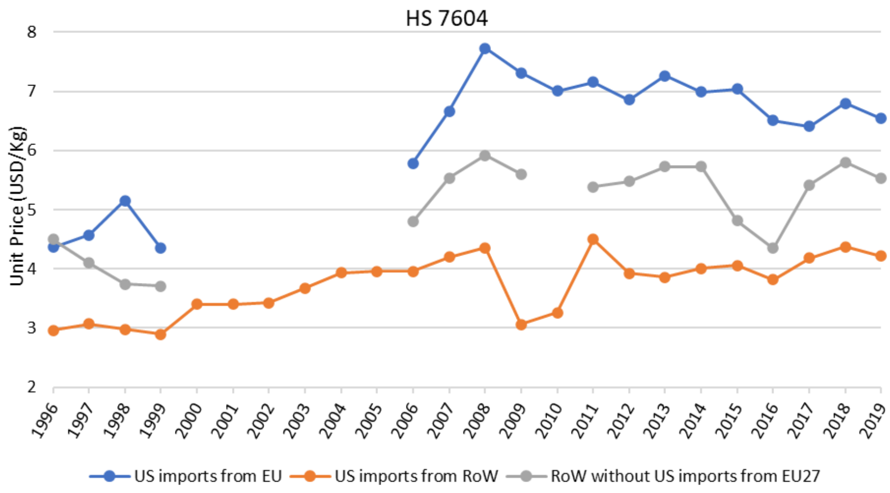
Source: Background data from (UN Comtrade, 2020)

Figure 45. Import Unit Prices (USD/Kg) for global imports of HS 7601 'Aluminium unwrought' 1996-2019



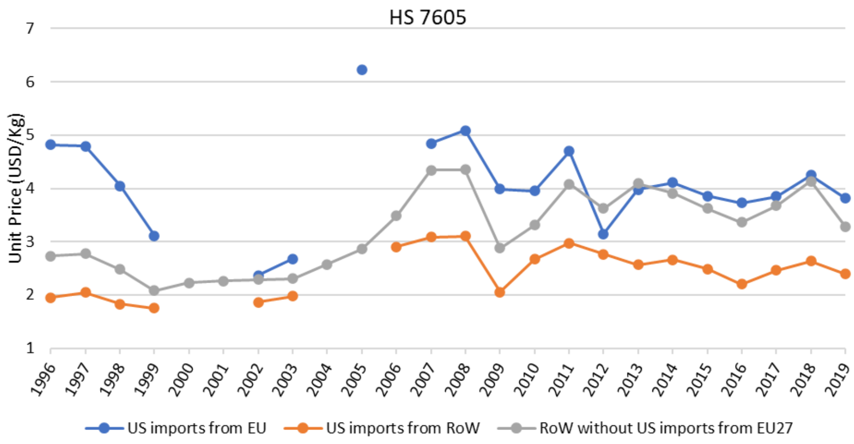
Source: Background data from (UN Comtrade, 2020)

Figure 46. Import Unit Prices (USD/Kg) for global imports of HS 7604 'Aluminium: bars, rods and profiles', 1996-2019



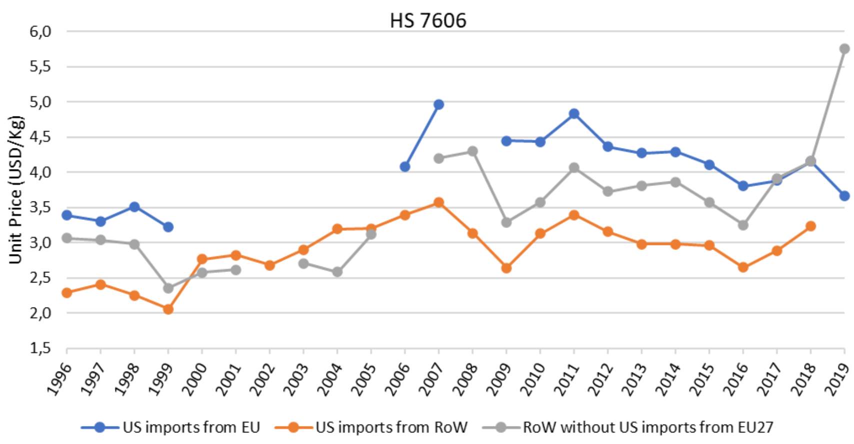
Source: Background data from (UN Comtrade, 2020)

Figure 47. Import Unit Prices (USD/Kg) for global imports of HS 7605 'Aluminium wire', 1996-2019



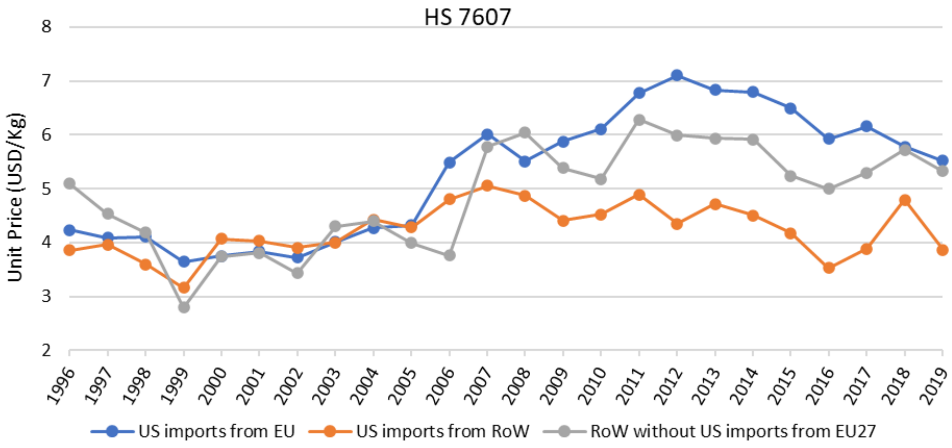
Source: Background data from (UN Comtrade, 2020)

Figure 48. Import Unit Prices (USD/Kg) for global imports of HS 7606 'Aluminium: plates, sheets and strip, thickness exceeding 0.2mm', 1996-2019



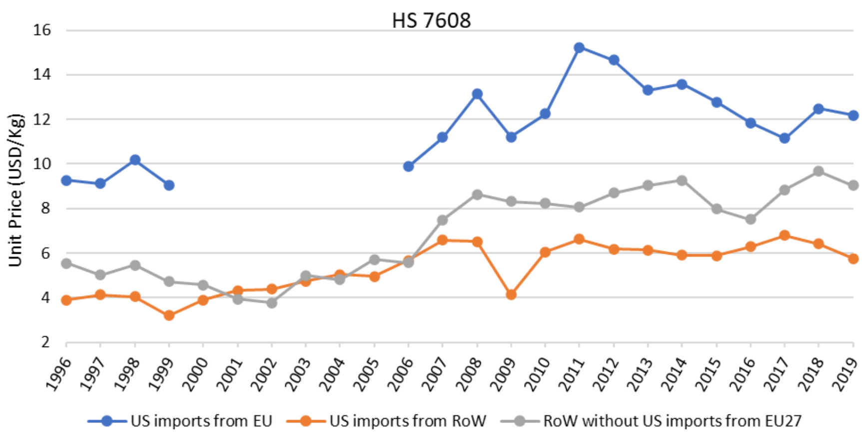
Source: Background data from (UN Comtrade, 2020)

Figure 49. Import Unit Prices (USD/Kg) for global imports of HS 7607 'Aluminium foil of a thickness not exceeding 0.2mm', 1996-2019



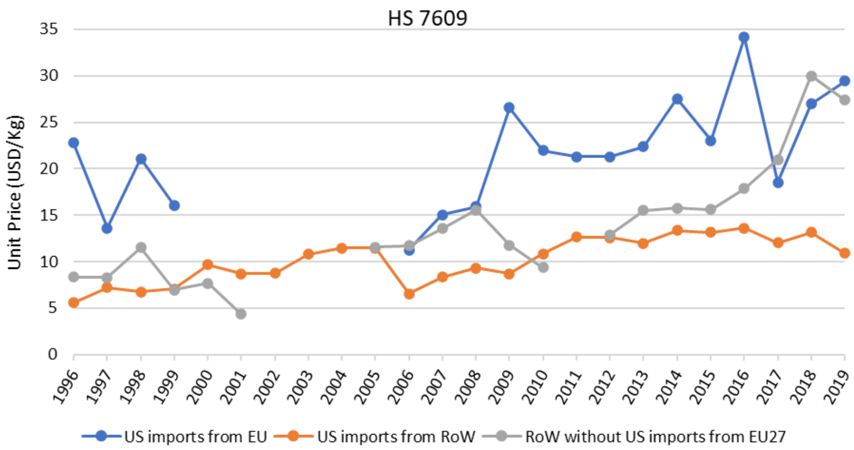
Source: Background data from (UN Comtrade, 2020)

Figure 50. Import Unit Prices (USD/Kg) for global imports of HS 7608 'Aluminium tubes and pipes', 1996-2019



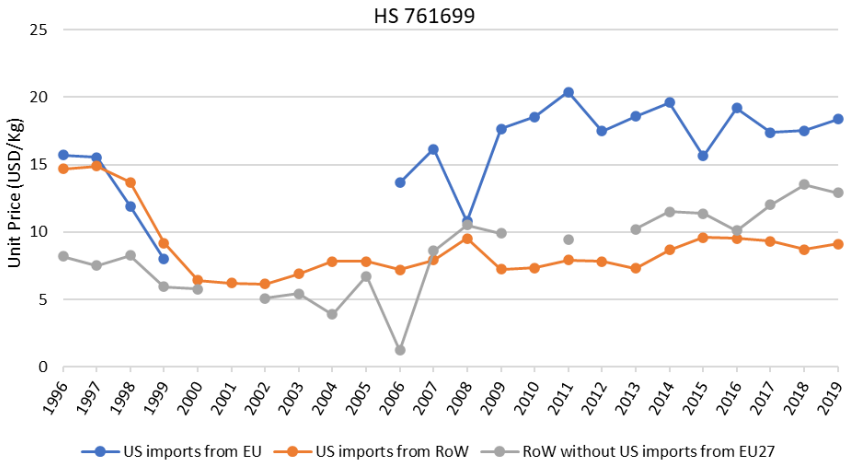
Source: Background data from (UN Comtrade, 2020)

Figure 51. Import Unit Prices (USD/Kg) for global imports of HS 7609 'Aluminium tube and pipe fittings', 1996-2019



Source: Background data from (UN Comtrade, 2020)

Figure 52. Import Unit Prices (USD/Kg) for global imports of HS 761699 'Aluminium: articles n.e.c'., 1996-2019



Source: Background data from (UN Comtrade, 2020)

CIF import unit prices from one region to another can vary as a function of suppliers' production costs variations, insurance costs, transportation costs (to the border of importing country) and other decisions on the supplier side. Importing companies will take decision based on those, on import duties existing in the importing countries and on other local costs (in importing countries). Under normal free market conditions (including free trade conditions), the prices one company chooses to import to satisfy their needs will try to be aligned across different suppliers.

What one can see in the figures above is a systematic regional bias for all eight categories of extra-tariffed products:

- A first observation is that **the unit prices of US imports from the EU suppliers were well above the unit prices of US imports from the rest of the world**, with no category exception.
- A second important conclusion is that **US imports unit price variations were quite important** during the period analysed, particularly for the imports originating in EU member states.
- A third conclusion is that, despite witnessing important unit price variations, **the US imports from the EU show – for most of the eight extra-tariffed products categories – ascending trends** over the latest period following the 2008-2010 global financial crisis.

What can drive such a situation, which normally should be considered unsustainable in the long run, but shows already a stable pattern over the last 20 years? What may explain why the unit prices of US imports from the EU stay at a much higher level than the same prices for imports from the rest of the world, although in volume terms, these imports were showing an increasing trend?

- One reason would be much higher US import tariffs applied to the rest of the world countries than to the EU; this is true concerning several exporters, such as China, but it would explain a small share of the gap;
- EU exporters may be active in a niche of specific products, within the larger categories of products, for which they may be the unique global producer (e.g. based on special technologies of production or a higher quality level);
- There could be cases in which multinational companies are involved in the trade activity on both sides with different branches (the import takes place between branches situated in EU and US of the same multinational and decision is taken at company level).

No matter which is the reason behind the import decision at the given price, one clear consequence stemming out from this unit price analysis, also considering the smaller variability of imports as compared to price variability (as reflected by the existing data over the period under scrutiny) is that *the price elasticities of US imports from the EU are low and a variation of import duties imposed by the US may not have a dramatic impact on the import decisions*.

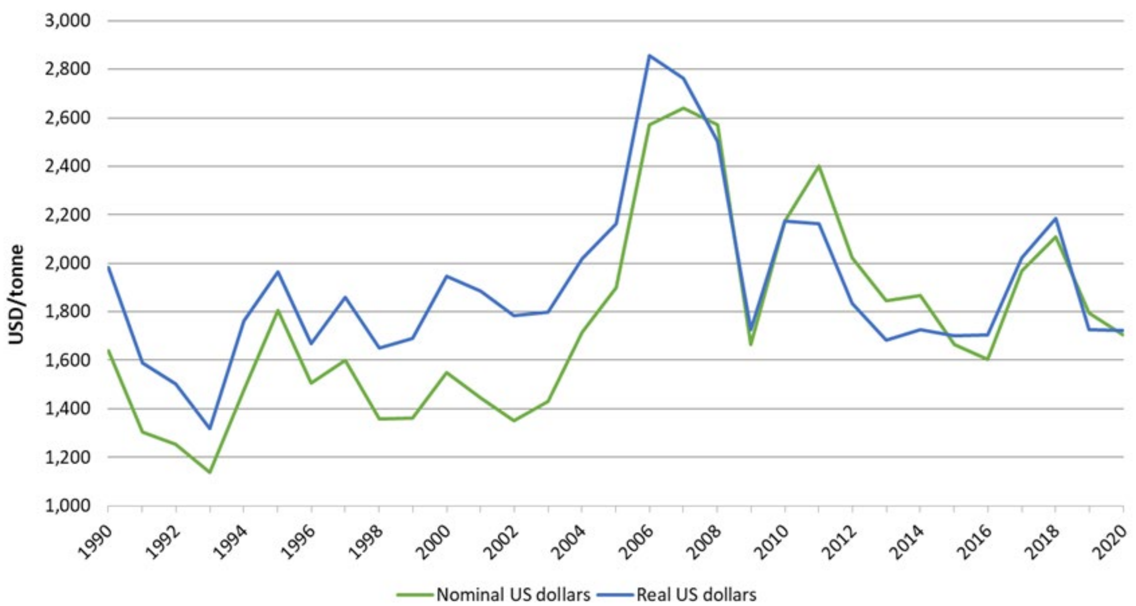
The gaps between unit prices of US imports from the EU compared to those from the rest of the world reach very high values for the following categories of extra-tariffed products: 7608 (more than double on average), 7609 and 761699 (double on average), 7601, 7604 and 7605 (around 75% higher) and show values with 50% higher on average for categories HS 7606 and 7607. Can this general characteristic be explained only by the pre-2018 US tariffs situation? The answer based on the evidence provided in this study is negative; therefore, one could consider options b) and c) among the explanatory factors.

Another observed pattern is related to import unit prices differences between US imports from the EU and the rest of the world (RoW, excluding the US) imports from the EU. The unit prices of RoW imports from the EU are stable in the middle of the gap between US imports from RoW and US imports from the EU, which means that RoW countries, as an aggregate, are importing from the EU at a lower CIF price than the US, the finding being more evident for the categories of products for which EU is one of the main suppliers globally (7604, 7606, 7607, 7608, 761699). The global picture has changed dramatically after 2016-2017, without clear conclusions for a longer-term perspective (due to shocks induced by tariff imposition and covid-related recession).

4.3.2 Global aluminium price

Figure 53 provides an overview of the evolution of nominal and real aluminium prices from 1990 to 2019. In real terms, the average annual LME settlement price declined sharply by 41% from 2006 to 2013 to levels below USD 1,700 per tonne, hitting a 14-year low. The low prices plateaued during the period 2013-2016. In 2017, the average annual LME settlement price recovered by about 19% in comparison to 2016, driven by winter closures and supply reform in China (Thomas, 2018). In 2018, world market prices for primary aluminium increased by a further 8% compared to 2017. However, the average annual aluminium price remained approximately 24% lower than the peak of 2006. In 2019, aluminium traded on average at about USD 1,730 per tonne, and in 2020 at about USD 1,720 per tonne, similar to the low levels seen in 2009 and in the period 2013-2016. With respect to nominal prices, the development is identical to the evolution of real prices, except for the collapse seen in the period 2014 – 2015.

Figure 53. Annual London Metal Exchange (LME) aluminium settlement (84) price, unalloyed primary ingots of a minimum 99.7% purity, in USD/tonne, real (85) and nominal prices



Source: Data sourced from (World Bank, 2021)

(84) Settlement price beginning 2005; previously cash price.
(85) Real prices in 2010 US dollars, adjusted for inflation.

Box 13. Pricing mechanism

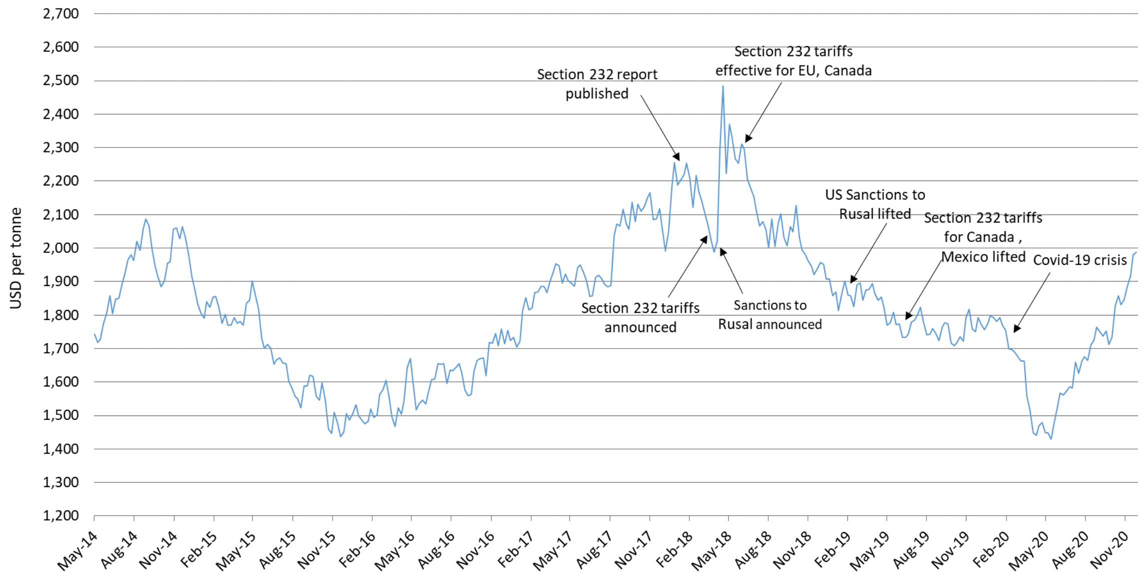
Aluminium is a global exchange-traded commodity, traded mainly in two exchanges: the London Metal Exchange (LME) and the Shanghai Futures Exchange (SHFE).

- London Metals Exchange (LME). Global aluminium prices are settled through the LME and reflect the total supply and demand for the metal, regardless of where it is produced, sold or stored (European Aluminium, 2017). Aluminium contracts are traded on the LME with a base price that is listed daily. As they can be physically settled – using the LME warehouse network – LME prices converge with the physical market. On top of the LME base price, market premiums are negotiated between buyer and seller for physical contracts across the value chain. The market premiums account for the manufacturing of value-added products depending on the shape, alloy etc., delivery location to reflect costs associated with transaction and transportation from storage warehouses to downstream plants, existing tariff status, and other contractual services. The LME base price is not negotiated between the buyer and seller as it is the global reference point. The all-in price that is charged in the physical market by a metal producer includes the LME cost for the relevant volume of aluminium plus the regional premium fee that depends on the region of delivery plus an additional product-specific premium value (European Aluminium, 2017) (USITC, 2017)(London Metals Exchange, 2019);
- Shanghai Futures Exchange (SHFE). The aluminium base price in China is set on the SHFE, where only Chinese companies can trade aluminium. However, there is a continuous and close interaction between the two price mechanisms with periods of arbitrage (European Aluminium 2017), i.e. with a spread between the two prices.

Furthermore, unlike steel, transport costs are a small share of the finished product price as aluminium is a lighter and more expensive raw material, meaning that aluminium travels easily. Both in LME and SHFE, paper transactions represent much higher movements than physical ones. Therefore, speculators' anticipations of potential global movements are reflected in prices (Aluminum Association *et al.*, 2018)

Figure 54 below shows the evolution of the benchmark price for aluminium, set on the London Metal Exchange, before and after Section 232 tariffs. In April 2018, the weekly average aluminium price at the LME rose to almost USD 2,500 per tonne, which marked a 6-year high. US sanctions against Russian producer UC Rusal (see Section 3.8.3), the world's second-largest aluminium producer and a significant exporter to the US, propelled a spike in aluminium prices (DERA, 2018)(Le Gleuher, 2018). Since then, world aluminium prices were following a declining trend, and the weekly LME-cash price slipped to USD 1,750 per tonne at the end of January 2020, lower by 16% since the tariffs announced and by 30% since the April 2018 peak. After the Covid-19 outbreak, the LME aluminium price tumbled to a 55-month low of about USD 1,430 in May 2020, down about 20% compared to USD 1,800 per tonne at the end of 2019 (Figure 54). However, the recovery in global GDP and industrial production in the third quarter of 2020 has driven a rally of aluminium prices that reached almost USD 2,000 per tonne at the end of November 2020, the level that occurred before the imposition of Section 232 tariffs in March 2018. The impact of Covid-19 pandemic on aluminium prices is further discussed in Section 14.

Figure 54. Weekly London Metal Exchange (LME) aluminium price (99.7% cash), in USD/tonne, May 2014 to November 2020



Source: Background price data by Thomson Reuters in (S&P Global, 2020c)

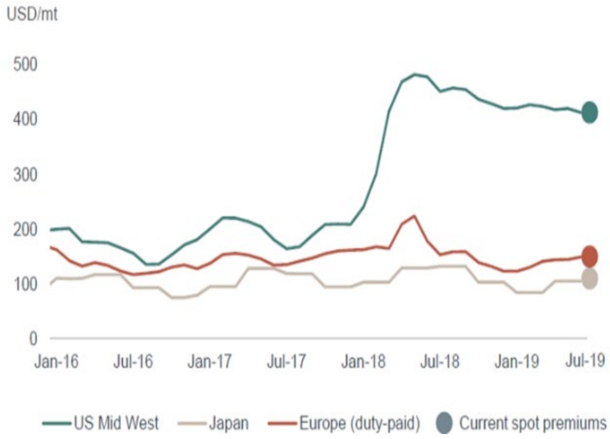
4.3.3 Aluminium prices in the United States

The all-in US price of primary aluminium consists of the global benchmark price traded at the London Metal Exchange plus the physical market's regional premium. The latter reflects the additional value of having aluminium delivered to locations across the US Midwest. In contrast to the LME aluminium price development since the implementation of tariffs (see Section 4.3.2), the monthly average US Midwest premium soared from about USD 230 per tonne in January 2018 to almost USD 500 per tonne in May 2018 following tariffs' implementation (USGS, 2020c). The premium's surge reflects much higher costs of the supply input for manufacturers and US consumers as a side-effect of US tariff policy.

The practical effect of the appreciation in the physical premium is that domestic and foreign producers granted an exemption from the tariff can benefit by charging higher prices for their goods (Wittbecker, 2018)(Fefer *et al.*, 2020). In other words, the price is determined by the most elevated cost supplier, even if the metal has been produced in the US or in a country exempted from tariffs, as the sale price typically includes a single premium. Producers who are not exempt from the tariff are revenue neutral, i.e. they are not earning more or less because of it, if they keep their export prices unchanged. Commodity trading companies, which stockpiled large amounts of imported aluminium in the US before the tariffs went into effect, were benefited from the price boom (Bloomberg Businessweek, 2018)(Hotter, 2018).

Section 232 tariffs forced US aluminium prices above those in other regions. Figure 55 reflects the evolution of the US Midwest premium in comparison with other regional premiums for standard aluminium ingots.

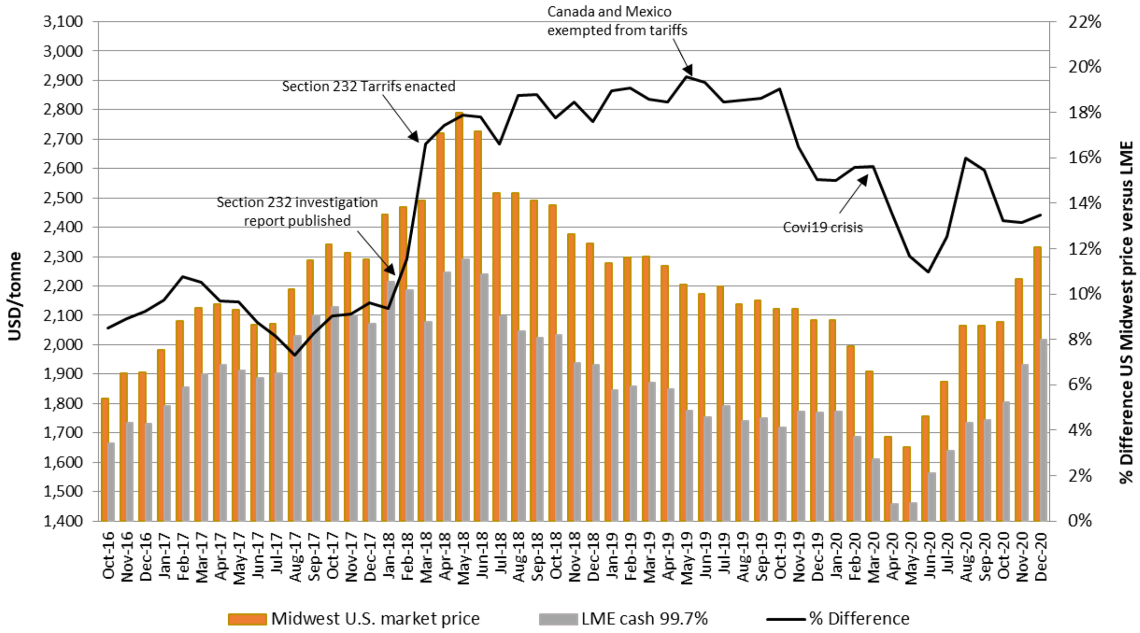
Figure 55. Regional spot LME aluminium premiums



Source: (Hydro, 2019)

Figure 56 shows the price differential of the regional price of aluminium assessed by S&P Platts when supplied to the Midwest United States, relative to the London Metal Exchange benchmark. The difference of the Midwest US aluminium price compared to the LME-cash aluminium price was 9% in January 2018 and climbed to 20% in May 2018 after the imposition of tariffs. The monthly average all-in aluminium price in the US stood at about USD 2,440 per tonne in January 2018 and peaked at the level of USD 2,790 per tonne in May 2018, after tariffs were enacted.

Figure 56. Monthly average spot price of primary aluminium in the United States ([86]) and the London Metal Exchange (left axis), and US-LME aluminium price differential (right axis), October 2016 to September 2020



Source: Background data from Platts Metals Week in (USGS, 2020c)

Tariffs for Canada and Mexico were lifted in May 2019 (see Section 3.6). Therefore, a substantial portion of the previously duty-paying import supply became duty-free. The fact that more aluminium supply would come from duty-exempt suppliers provided consumers of unwrought aluminium with more negotiating power. Theoretically,

([86]) The U.S. Midwest Aluminium Transaction Premium and the all-in Transaction price benchmarks are assessed by S&P Platts and reflect the spot physical value of 99.7% P1020 high-grade aluminium, in ingots, sows or T-bars from all origins, delivered duty-paid to plants in the US Midwest. The MW US Aluminium Market price is an all-inclusive price for primary aluminium determined through a survey of market participants such as producers, traders and aluminium users and reflects the regional price of primary aluminium supplied in the Midwest United States (S&P Global Platts, 2019a)(S&P Global Platts, 2019b).

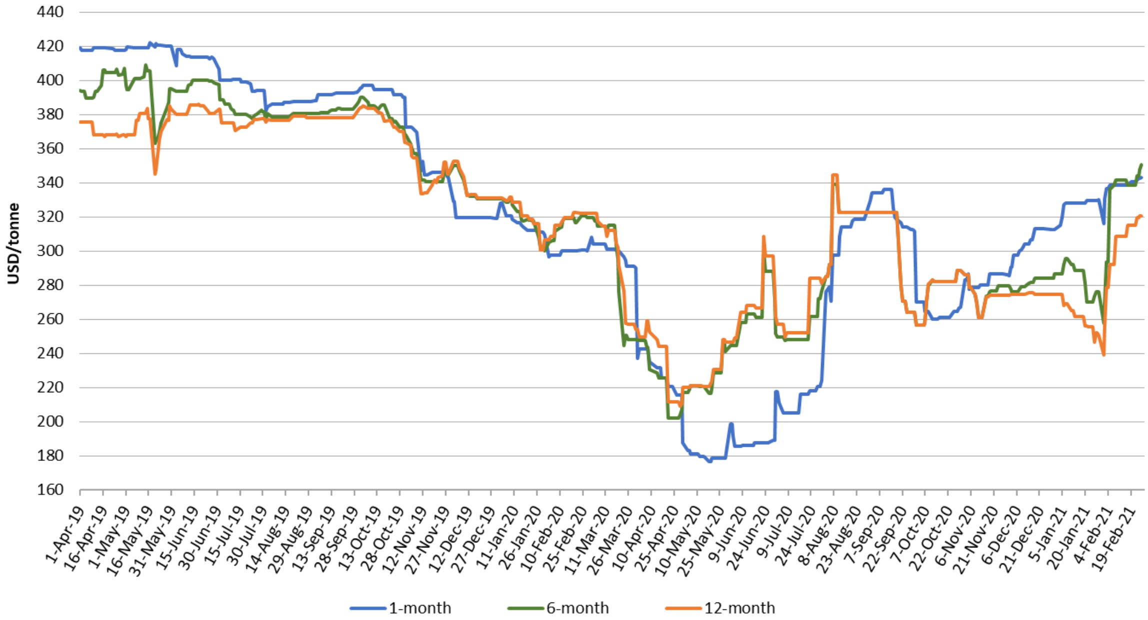
the premium could be pushed down to a level lower than the full integration of the Section 232 import tariff of 10%.

Nevertheless, as it is shown in Figure 56, buyers of primary aluminium in the US continued to pay a persisting high physical market premium of about USD 400 per tonne above the benchmark LME price up to October 2019, despite Canada's exemption from tariffs. Exporters from countries that were exempt from tariffs or having granted a tariff exclusion (see Section 3.5) could benefit from the high premiums without paying duties.

The tariff exemption granted to Canada started to ease the US Midwest premium in November 2019. The monthly average US Midwest premium, as assessed by S&P Platts, slid to USD 350 per tonne in November 2019 and, even more, to about USD 300 per tonne in March 2020 (see Figure 56). In March 2020, the monthly average all-in aluminium price in the US was about USD 1,900 per tonne, down by USD 550 per tonne compared with January 2018, just before the US premium had started to climb owing to tariff's implementation.

The onset of the Covid-19 crisis in April 2020 marked the imploding of prices in the US. The US Midwest premium ([87]) plummeted to about USD 180 per tonne at the end of May 2020, the lowest level recorded since January 2017. The strong recovery in Q3 2020 to USD 330 per tonne in August 2020 reflects the rebound for aluminium demand after lifting the initial Covid-19 lockdowns. Since then and up to the end of 2020, the monthly average US Midwest premium fluctuated between USD 275 and USD 320. The structure of futures' contracts traded at the LME at the end of February 2021 reveals that the market anticipates the US premium to bounce back to the pre-Covid levels seen at the end of 2019 (Figure 57).

Figure 57. Closing prices of the LME aluminium premium in US Midwest, cash-settled contract against S&P Platts' assessment of spot transactions, duty paid, 1/4/2019–28/2/2021

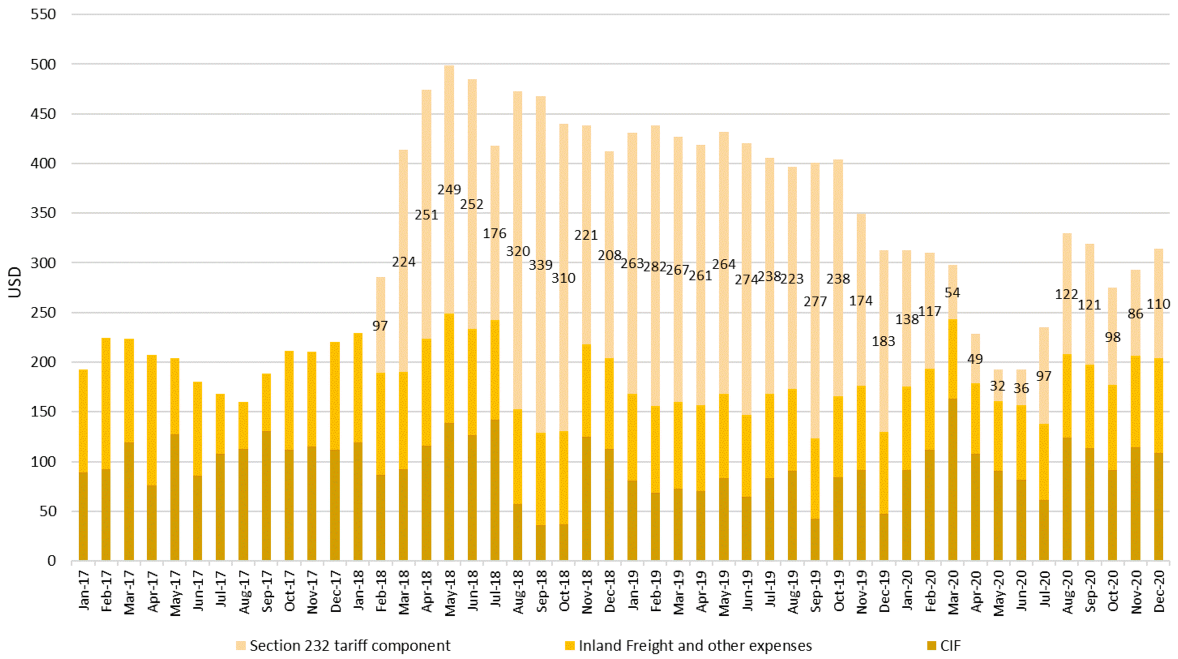


Source: Data from (London Metals Exchange, 2020)

Figure 58 analyses the US Midwest premium components, providing an estimate of the tariff component by deducting the CIF (Charges, Insurance, and Freight) cost to US ports and the inland freight costs plus other expenses. As a result of Section 232 tariffs, the benefit created for US producers of unwrought aluminium is equivalent to the estimated tariff component shown in the figure below.

([87]) Monthly final settlement price of the LME Aluminium Premium Duty Paid US Midwest (S&P Platts) contract

Figure 58. Estimation of the structure of the US aluminium Midwest premium ([88,89])



Source: Background data from (USITC Dataweb, 2020) (USGS, 2020c) (World Bank, 2021)

(88) CIF values are estimated from HS 7601 monthly trade data for seaborn US imports. The inland freight and other expenses component were approximated as a proportion of the LME+CIF price component in the period January 2017-January 2018 i.e. without any impact because of the Section 232 tariffs; then, it was applied throughout the period February 2018-December 2020. Finally, the tariff-driven benefit for the US producers was derived from the monthly US Midwest premium with the deduction of CIF, inland freight, and other expenses. LME prices were sourced from the World Bank, and the monthly average US Midwest premium from the United States Geological Survey.

(89) The Section 232 tariff component of the US Midwest premium is presented from February 2018, as the market began reacting earlier in anticipation of the implementation of tariffs (March 2018).

5 Unwrought aluminium

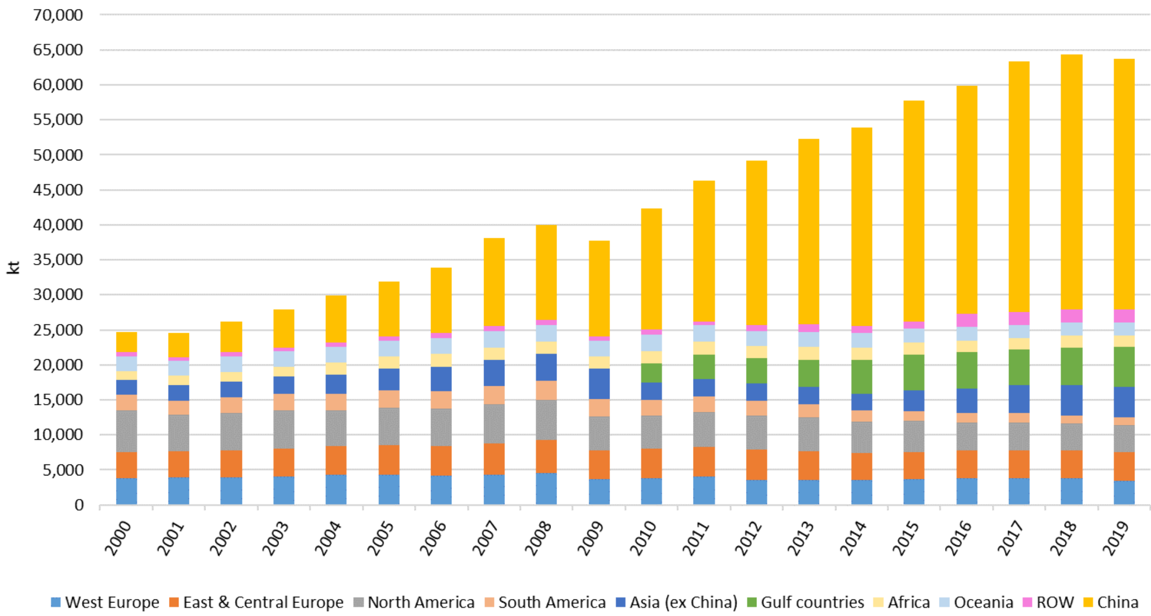
5.1 Overview

5.1.1 World production

Since the early 2000s, primary aluminium production has shifted from long-established producers in North America, Europe, and Japan, to emerging ones, particularly in China; Chinese producers installed most of the rapidly growing global smelting capacity (90% of all new capacity during the last decade) ([90]). The massive expansion in Chinese capacity was driven by a combination of rapidly growing domestic demand and favourable government policies (see Section 3.9). Aluminium smelting requires significant amounts of electrical energy, typically 13.5 to 15.5 MWh (AC), to produce one metric tonne of molten aluminium (IAI, 2020b). Electricity costs usually constitute 30-50% of production costs, depending on the smelting plant's size and vintage (Taube, 2017). In the EU, electricity costs represented 37% on average of total production costs of primary aluminium producers between 2008 and 2017 (CEPS & Ecofys, 2018). Thus, electricity prices are a key determinant of competitiveness for aluminium smelters. With China's exception, investments around the world for new smelters are concentrated in regions with inexpensive energy supply (e.g. Gulf countries, Canada, Russia, Norway, Iceland) (USITC, 2017).

According to the latest statistics published by the International Aluminium Institute, world production of primary aluminium in 2019 was about 63.7 Mt, worth approximately EUR 102 billion ([91]). China accounted for over half of the world's supply of primary aluminium (56%), up from 11% in 2000. Of note is that the global output declined by about 1% in 2019 compared to 2018 after years of a steady increase due to a production decrease in China (Figure 59). In 2018, China accounted for 57% of the world's production of primary aluminium. Russia (6%), Canada (5%), India (4%), the United Arab Emirates (4%), and EU countries (4%) are following on the list of major producing countries in decreasing order of metal produced (Figure 60).

Figure 59. Primary aluminium production by global region, 2000-2019

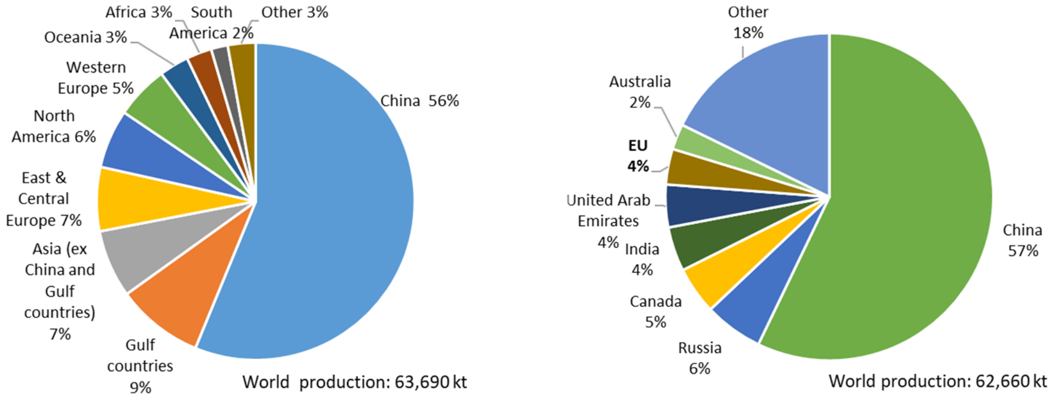


Source: Data from (IAI, 2020d)

([90]) Commission implementing regulation (EU) 2018/640 of 25 April 2018 introducing prior Union surveillance of imports of certain aluminium products originating in certain third countries.

([91]) Estimation based on average LME price of high-grade aluminium in 2019 (EUR 1,600 per tonne) and the global primary Al production in 2019.

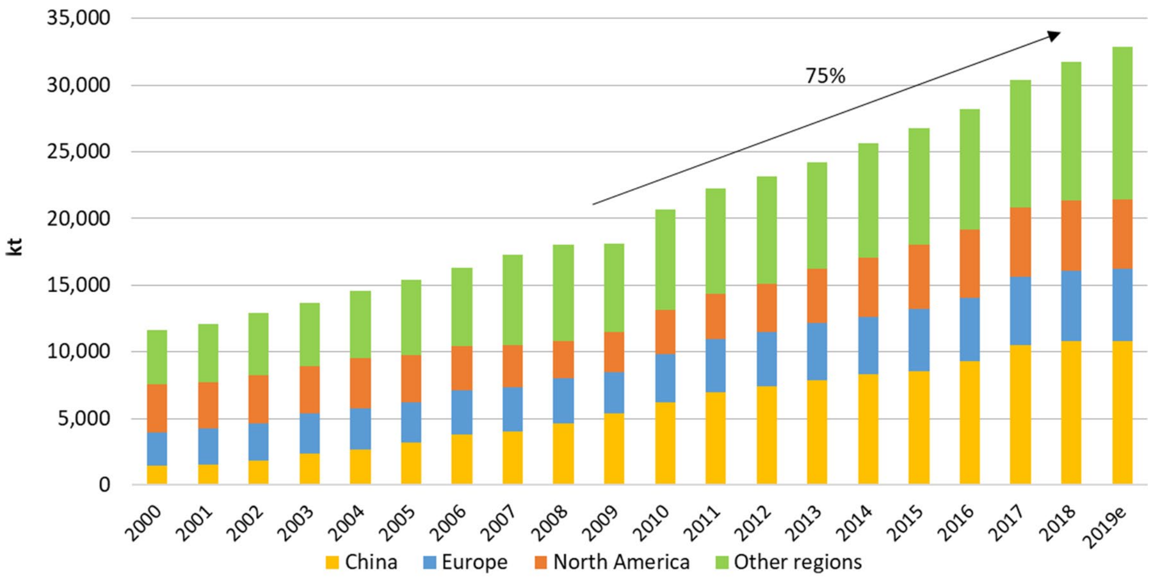
Figure 60. Aluminium primary production by regions in 2019 (left), and by countries in 2018 (right)



Source: Data from (IAI, 2020d) (BGS, 2020)

The global output of recycled aluminium ingots surged by 75% at a CAGR of 6.4% in 2010-2018 following the financial crisis of 2009 (Figure 61). Chinese production doubled in the above period, while the overall growth in the regions of Europe and North America was almost equal at 75%. The global output amounted to 32.9 Mt in 2018, up 4.6% over 2017. The year-over-year growth of Chinese production was 2.2% in 2018 and 3.5% in 2019. In Europe, the output of recycled ingots increased in 2018 by 4.8% and by 0.6% in 2019. The corresponding rates for North America were lower as in 2018, production grew by 1.2% and fell by 2.9% in 2019. In contrast, the output of recycled aluminium in rest-of-world regions was much higher as it increased by 9.1% and 10.8% year-over-year in 2018 and 2019, respectively.

Figure 61. World production of recycled aluminium ingots by regions, 2000-2019 ([92])



Source: Background data in (IAI, 2020a)

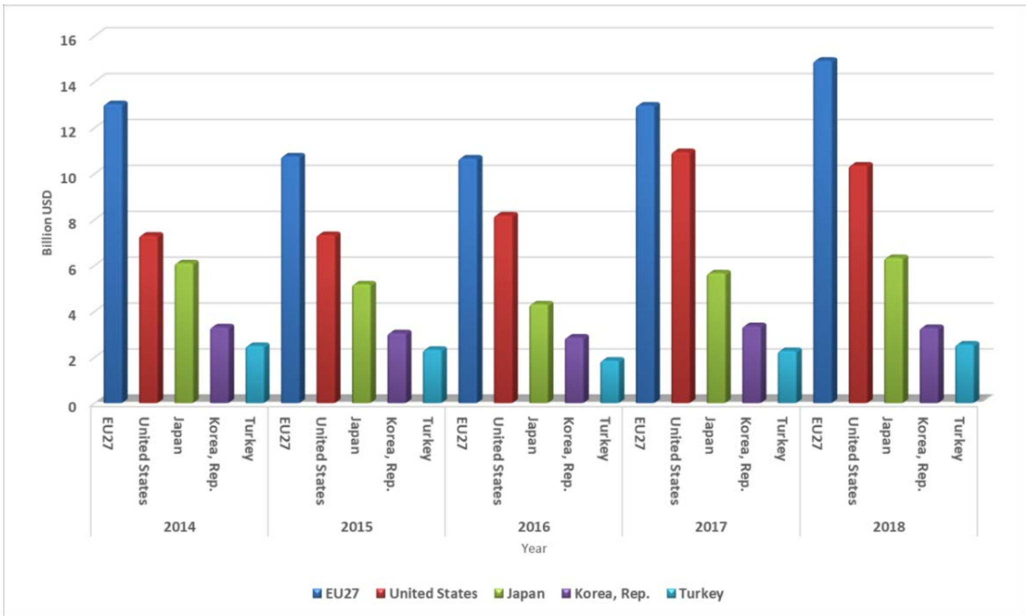
([92]) Data shown for 2019 are projected.

5.1.2 Main suppliers and importers

EU, the United States and Japan are the leading world's importers of unwrought aluminium. Over the period 2014-2018, half of the average annual global imports of primary aluminium went to them.

In 2018, the leading country destinations of the EU imports were Germany (22%), Netherlands (17%) and Italy (14%), accounting for together more than half of the extra-EU imports.

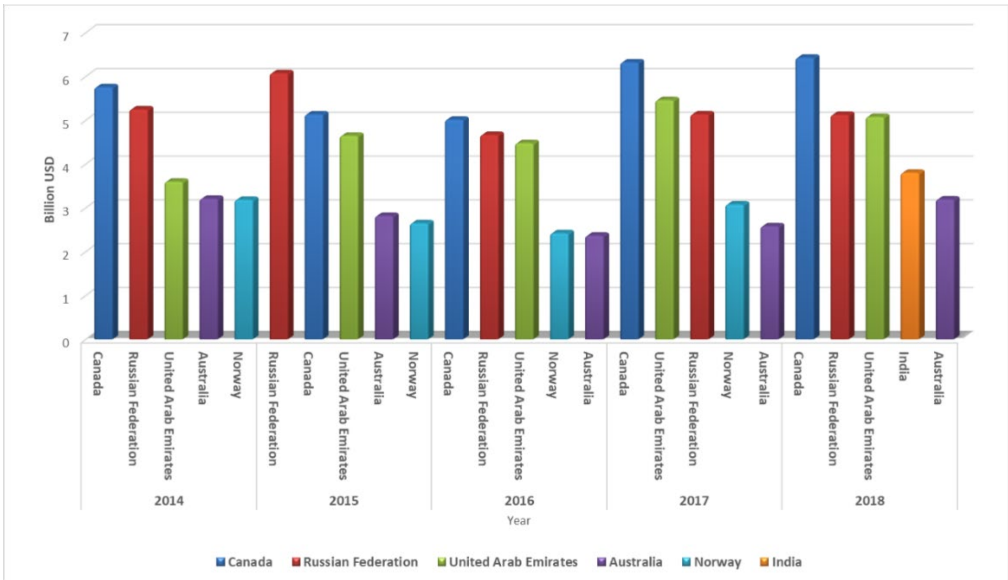
Figure 62. Main five global importers of unwrought aluminium over the period 2014-2018 (HS 7601, total import value; billion USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

Three countries - Canada, Russian Federation, and the United Arab Emirates – were major global exporters of unwrought aluminium, supplying one-third of the world's annual average exports over the period 2014-2018.

Figure 63. Main five global exporters of unwrought aluminium over the period 2014-2018 (HS 7601, total export value; billion USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

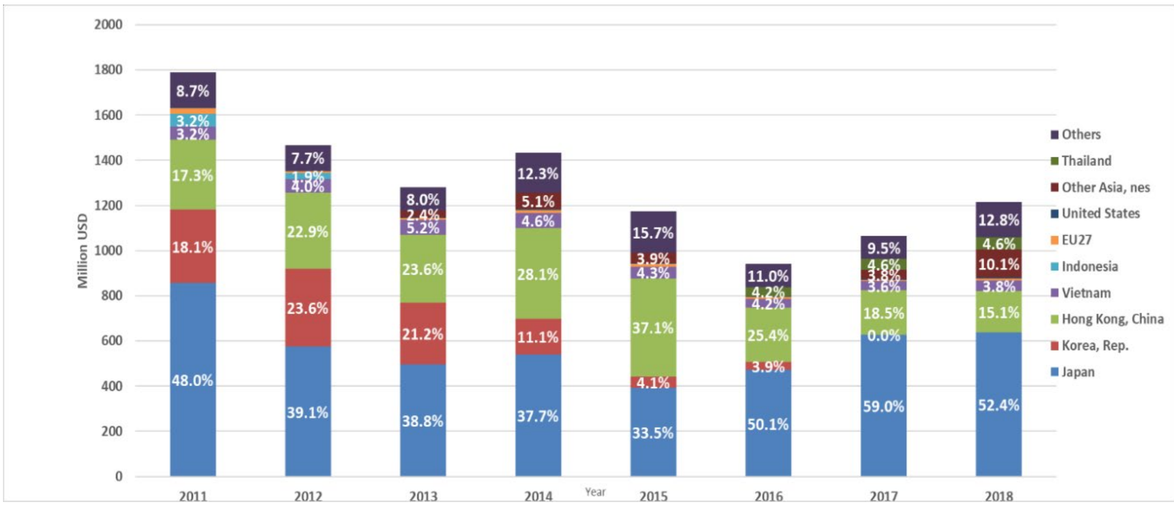
5.1.3 Chinese exports of unwrought aluminium

Despite being the world's biggest producer of primary aluminium, China exports a minimal amount. In 2017, the quantity of primary aluminium exported accounted for less than 2 per cent of its domestic production. Export barriers are the main explanatory factor: in 2017, an export tax of 15% was imposed on the exports of both HS 760110 and HS 760120 (OECD, 2020). Also, unwrought aluminium is massively used by the Chinese downstream aluminium industry.

Even so, Japan is by far the main destination of China's exports of primary aluminium, accounting for an average share of 45 per cent of the annual Chinese exports over the period 2011-2018, and more than half of its total annual exports since 2016. At HS 6-digit level, Japan was the leading destination of China's exports of aluminium alloys (HS 760120) over the entire period and among the top five destinations for unalloyed aluminium (HS 760110).

Other major Asian countries such as the Republic of Korea, Hong Kong, Vietnam, and Indonesia account for significant Chinese exports of primary aluminium. EU and the US are minor destination of Chinese exports of primary aluminium.

Figure 64. China's exports of unwrought aluminium (HS 7601) to its main destinations, EU and US over the period 2011-2018 (HS 7601; EU as a trading bloc; mil. USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

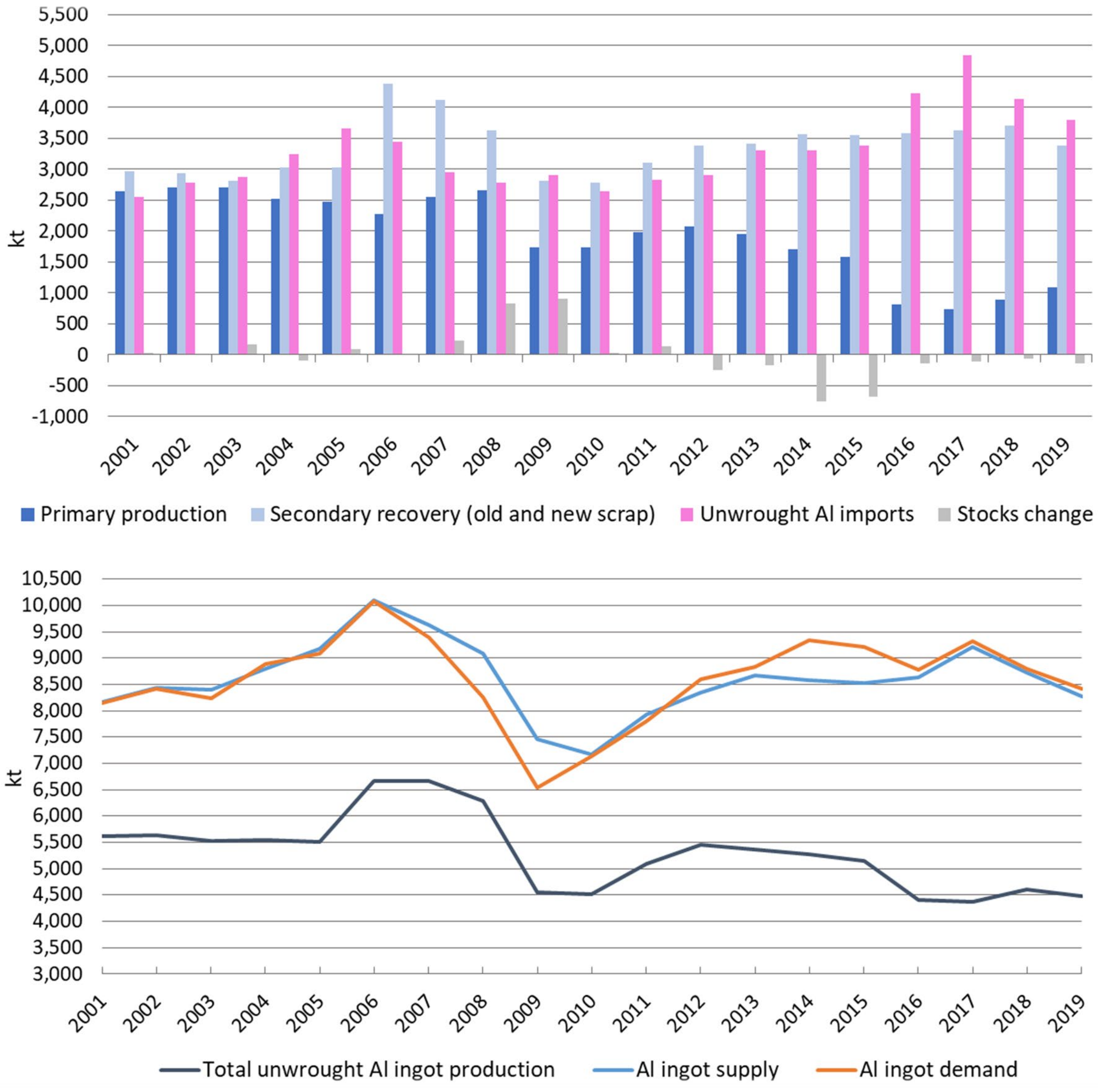
5.2 US

5.2.1 Supply and demand for unwrought aluminium

Total aluminium production (primary plus aluminium recovered from old and purchased new scrap) declined in the US from 6.7 Mt in 2007 to 4.4 Mt in 2017, the year in advance of tariffs' imposition, despite a steadily increasing domestic demand for aluminium from 2009 onwards (see Figure 65). The outstanding decrease was due to the substantially lower domestic primary production. The proportion of primary aluminium in total aluminium ingot production in the US decreased from 47% in 2001 to 38% in 2007, and, further, down to 17% in 2017. Since 2012, rising imports of unwrought metal and drawdowns of LME and industry inventories compensated for the reduced output. The imports of unwrought aluminium in 2017 reached a record high of 4.8 Mt, increased strongly by 43% or about 1.5 Mt in comparison to 2015.

In 2017, US smelters met only 8% of the total ingot demand, while recycled aluminium production amounted to 39%. In 2017, import requirements for unwrought aluminium accounted for more than half (52%) of the total metal available to US downstream producers for processing.

Figure 65. Unwrought aluminium ingot supply ([93]) (top) and supply/demand ([94]) balance (bottom) in the US, 2001-2019



Source: Based on data from (USGS, 2020f) (USGS, 2020g)

As reported by (CRU, 2018b), out of the major forms of unwrought aluminium, the US is mostly dependent on imports for unalloyed ingots (about 80%), whereas for billets the import reliance is approximately 35%, for foundry ingots around 20%, and for slabs close to 10%.

5.2.2 Capacity and production

5.2.2.1 Primary aluminium production

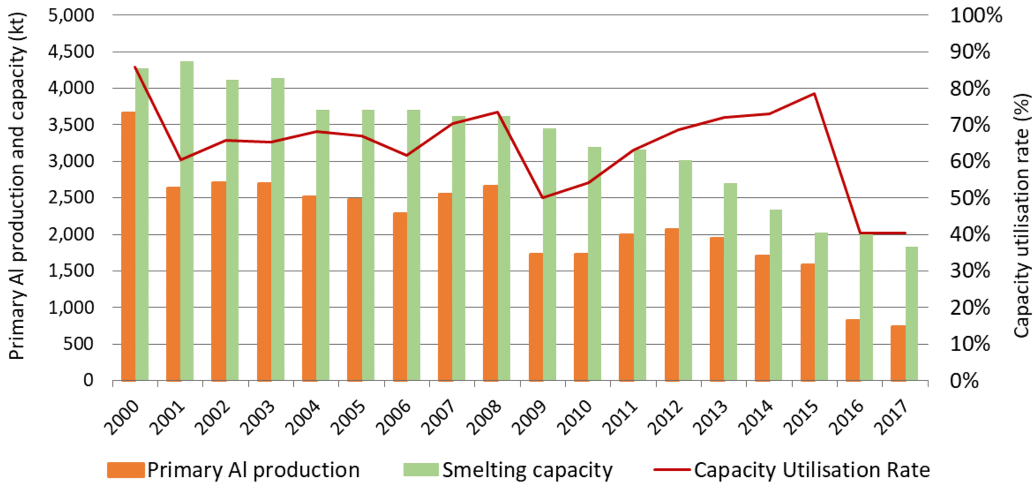
From 2008 to 2017, the US primary aluminium output decreased substantially at an annual compound rate (CAGR) of 13%, although at the same period the global primary Al production grew significantly by a CAGR of 5%. In 2017, the US produced 740 kt of primary Al, contributing only 1.2% of global output.

The US industry's smelting capacity has been in a steady decline for two decades due to smelter closures and capacity cutbacks (Figure 66). The US had 23 active smelters in 1998 ([95]), but their number fell to 8 in 2017,

([93]) Calculated as domestic primary metal production plus secondary recovery plus imports of unwrought Al.
([94]) Calculated as ingot supply plus adjustments for London Metal Exchange (U.S. warehouses). Variation of US industry stocks is not available.
([95]) USGS. 1998 Minerals Yearbook. Aluminium https://www.usgs.gov/centers/nmic/aluminium-statistics-and-information

and of these only three smelting plants were running at capacity and three were fully curtailed (Table 15). The capacity utilisation rate of the remaining domestic smelters slumped in 2016 following a period of constant improvement after the global financial crisis of 2008-2009 (Figure 66). US smelters operated at a very low rate of 41% in 2017, while the world's average is 88%, excluding China ([96]). 57% (1,037 kt) of the remaining US primary smelting capacity (1,826 kt) was idle in 2017 (see Table 15).

Figure 66. US primary aluminium production and capacity (left axis), and capacity utilisation rate (right axis), 1998-2017



Source: Background data from (USGS, 2018a) (USGS, 2018b)(USGS, 2018b)

Table 15. Primary aluminium smelters in the US, at the end of 2017

Location	Company	Capacity (kt/year)	Operational capacity (kt/year)	Idle Capacity (kt/year)
Evansville, IN (Warrick)	Alcoa Corporation	269	0	269 ([1])
Ferndale, WA (Intalco)	Alcoa Corporation	279	230	49
Massena, NY	Alcoa Corporation	130	130	-
Wenatchee, WA	Alcoa Corporation	184	0	184
Hawesville, KY	Century Aluminium Co	252	102	150 ([2])
Mount Holly, SC	Century Aluminium Co	231	109	122 ([3])
Sebree, KY	Century Aluminium Co	218	218	-
New Madrid, MO	Magnitude 7 Metals	263	0	263 ([4])
Total		1,826	789	1,037

([1]) Permanently shut down in 2016, revised to temporary in 2017.
([2]) Shutdown of three potlines, operating at 40% of capacity since 2015.
([3]) Operating at about half capacity.
([4]) Curtailed since 2016.

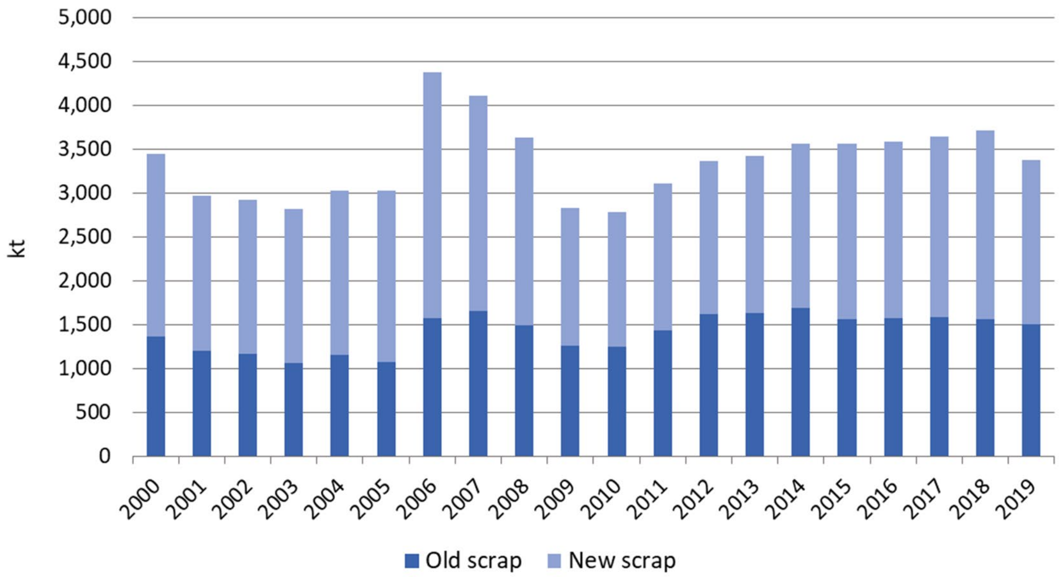
Source: Background data in (USGS, 2020a)(Alcoa, 2020a)(USGS, 2019b)(Wittbecker, 2018)(Century Aluminum, 2018)(Hotter, 2018)

([96]) International Aluminium Institute. Historical capacity. Year 2016, available at http://www.world-aluminium.org/publications/#853

5.2.2.2 Recycled aluminium production

Unlike primary aluminium production, the recycled aluminium output from old and new scrap grew steadily with a CAGR of 3.8% from the last low level in 2010 to the previous year (2017) before tariffs' enforcement (Figure 67). Production of aluminium from secondary sources accounted for 83% of the total US aluminium production, and 39% of the aggregate unwrought aluminium demand in the US in 2017. Old scrap accounted for 44% of the aluminium recovery in 2017. Figure 67 below shows the US Geological Survey's estimates for the metal produced from recycled aluminium (purchased, toll-treated and imported new and old scrap) by all segments of the aluminium industry.

Figure 67. Aluminium production from secondary sources in the US, 2000-2019



Source: Background data in (USGS, 2020f) (USGS, 2020g)

5.2.2.3 Production capacity for unwrought aluminium

Table 16 shows the production capacity and the capacity utilisation rate for unwrought aluminium in the US, as well as the theoretical potential for an increase in output. This may serve as an assessment of the US industry's ability to substitute aluminium imports by domestic production in the short and medium-term after the imposition of Section 232 tariffs.

Table 16. Overview of production capacity for unwrought aluminium in the US

Product group	Reference year	Production (kt)	Capacity (kt)	Capacity utilisation rate (%)	Appraisal for the potential to increase production (kt)(1)
Primary Al smelters (2)	2017	741	1,826	41%	720
Secondary Al - Captive producers (3)	2015	4,967	5,549	90%	0
Secondary Al - Merchant producers (4)	2015	3,620	4,445	81%	160
Secondary Al - Total	2015	8,587	9,993	86%	160

Unwrought Al - Total		9,328	11,833		980

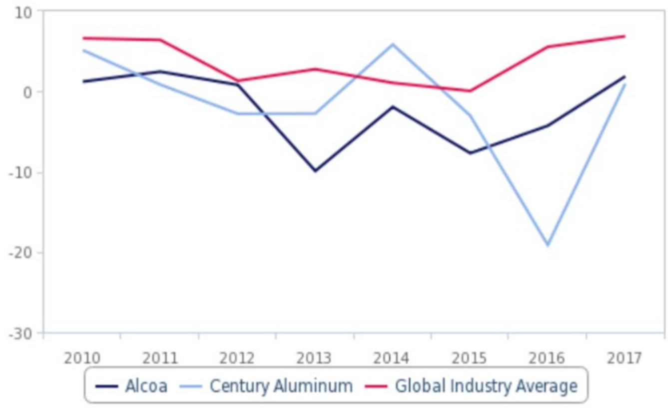
(1) Rounded values. For primary Al smelters, a rate of 80% for capacity utilisation is considered, as recommended by (US Department of Commerce, 2018). For secondary production, the minimum rate of operation for production capacity is assumed to be 85%.
(2) See Table 15.
(3) Captive producers are those producing both secondary unwrought aluminium and wrought aluminium products in integrated mills.
(4) Merchant producers recover aluminium and aluminium alloys from purchased scrap and/or dross (i.e. secondary smelting) to produce billets, ingots etc.

Source: Background data in (USITC, 2017)

The low utilisation rates for US aluminium smelters at the end of 2017 suggest an extensive margin for production to rise. In case domestic smelters resumed their idled capacity to achieve a utilisation rate of at least 80% as recommended by the US Department of Commerce's investigation report (US Department of Commerce, 2018), the 2017 production level of primary aluminium would be roughly doubled. However, even in this case, the US would still need to import most of its required primary aluminium. As an extreme paradigm, the US requires a six-fold upsurge of its 2017 production of primary aluminium in order to become self-sufficient.

The US primary aluminium sector was disadvantaged in terms of competitiveness in the last years by comparatively high electricity and labour costs, limited investments in smelting technologies - several remaining US smelters were built more than 50 years ago - declining prices and strong dollar (USITC, 2017)(Fitch Solutions, 2018). Because of their age, US primary smelters tend to use older, less energy-efficient technologies than newer plants in the Middle East and Asia (Fefer *et al.*, 2020). US smelters were consistently less competitive in 2011-2015 than smelters in Canada, Russia, Norway, and Gulf countries (USITC, 2017).

Figure 68. Profit margin of US Aluminium smelters



Source: (Fitch Solutions, 2018)

Alcoa and Century Aluminium, the two companies operating smelters in the US nowadays, have located their newer smelting operations near low-cost electricity sources outside the United States. Furthermore, primary smelting involves significant capital investments as the cost of a new smelter is estimated at around USD 4.5 billion (Fefer *et al.*, 2020). Therefore, it is reasonable to assess as highly unlikely any capacity expansions in existing facilities in short to medium-term, especially at the persisting low aluminium prices (see Section 4.3.2), let alone the construction of greenfield smelters.

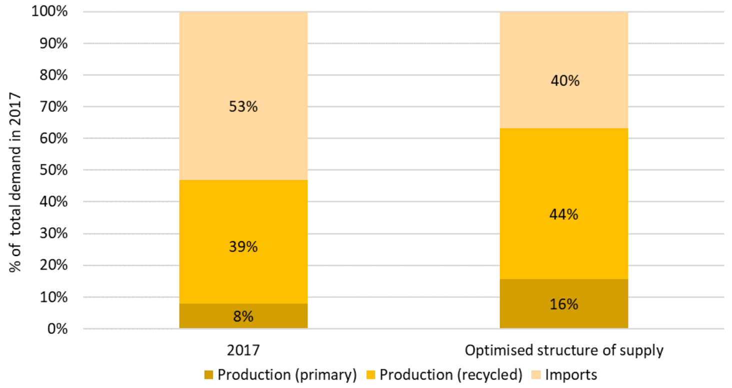
In contrast to the primary aluminium segment, the recycling industry remained very competitive in the period 2011–2015 as it benefited from abundant, low-cost scrap. The United States is the world's largest secondary aluminium producer, owing to its robust and mature end-use sales destinations and its scrap collection infrastructure. These strengths were reflected in capacity expansions between 2011 and 2015 (USITC, 2017). Data shown in Table 16 suggest that existing US secondary producers could still expand the installed capacity utilisation in 2015. Moreover, commissioned expansions ([97]) in recycling capacity amounted to approximately 370 kt in the period 2016-2017 (USGS, 2020a). New investments ([98]) to upgrade and expand recycling capacity

([97]) Constellium (Muscle Shoals), Matalco (Lordstown), Logan (Russellville), and restart of Real Alloy (Morgantown).
([98]) Matalco (various projects), Alliance Metals (La Paz), Ellwood Group (Hubbard), and Novelis (Greensboro).

by 380 kt are expected to enter into production in 2020-2021 (Matalco, 2018)(Recycling Today, 2019)(Aluminum Association, 2020a).

In a best-case scenario ([99]) for the overall potential of the US unwrought aluminium production to increase, higher domestic production will displace imported supply and reduce import dependency for unwrought aluminium. Still, the US will remain highly import reliant (Figure 69). In such an optimal scenario, it is estimated that US producers would be capable of meeting up to 60% of ingot demand in comparison to 47% in 2017, assuming a flat total ingot demand (9.3 Mt in 2017).

Figure 69. Structure of supply for unwrought aluminium in 2017, and maximum potential for production to increase

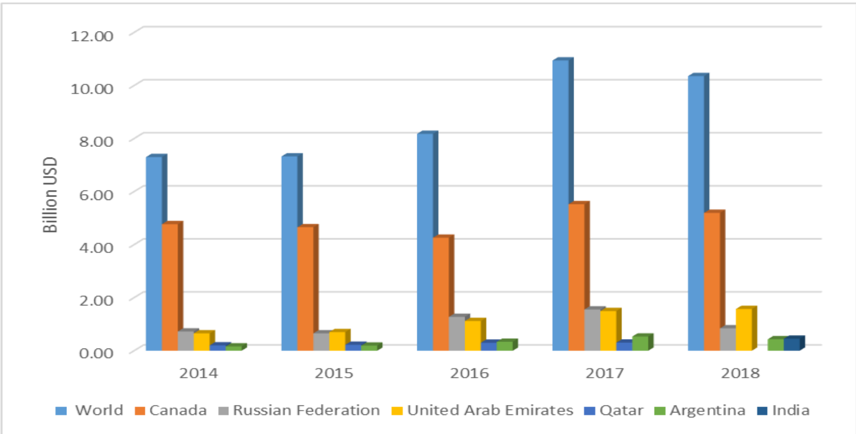


Source: Elaboration based on various sources and industry announcements

5.2.3 US imports of unwrought aluminium

Canada is by far the main source of US imports of primary aluminium, providing more than half of its total annual imports. The United Arab Emirates became an increasingly important supplier over the period 2014-2018.

Figure 70. US imports of unwrought aluminium (HS 7601): top five supplier countries over the period 2014-2018 (import value; billion USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

([99]) Every domestic and secondary smelter is operational, their capacity utilisation rate is optimised (80% and 85% respectively), the announced expansions of secondary smelters are fully operational, and there is no bottleneck of scrap availability. It is also presumed that primary aluminium import requirements in value-added forms (billets, slabs, etc.) are entirely substitutable by recycled aluminium.

5.3 Impact of the tariffs in the US

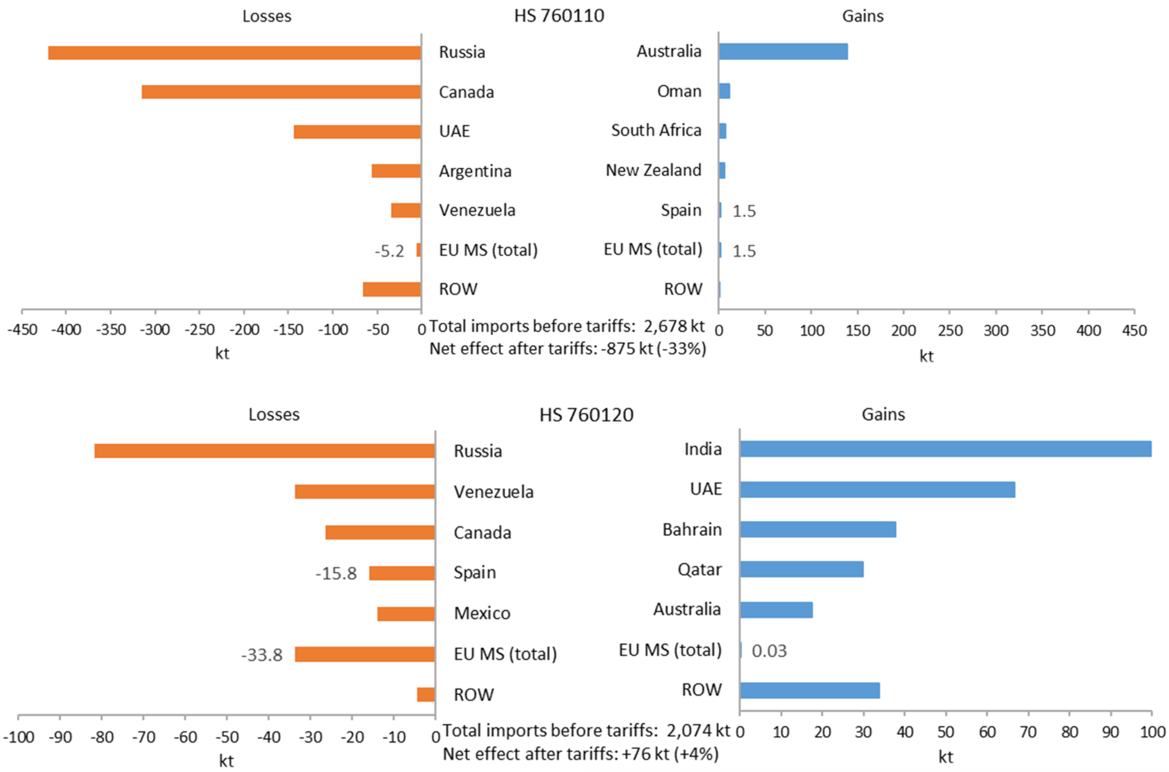
5.3.1 US imports of unwrought aluminium

Following the imposition of tariffs, trade statistics reveal that the annualised imports of unwrought aluminium and unwrought aluminium alloys dropped by about 800 kt (17%) in the period April 2018 – November 2019. Russia, the largest supplier of primary aluminium to the US after Canada in 2017, has lost a considerable share in the US.

Imports of not alloyed unwrought aluminium (HS 760110) have driven the decline as they fell considerably by one third. Imports of HS 760110 from Russia, Canada and the United Arab Emirates declined the most, as well as from Argentina, which opted for a duty-free import quota in place of tariffs. The reopening of closed primary capacity has contributed to the substitution of unwrought aluminium imports with domestic production (see 5.3.2). Sanctions to the Russian producer Rusal (see 3.8.3) have contributed to the sharp decline in imports from Russia. On the contrary, Australia, which enjoys a full exemption from Section 232 tariffs with no quota restrictions, benefited in its exports of not alloyed unwrought aluminium to the US.

On the other hand, annualised imports of unwrought aluminium alloys (HS 760120) rose by 4% in total in the same period despite the tariffs and restarting of idle capacity. India and Gulf countries increased considerably their exports to the US for alloyed unwrought aluminium filling the gap created due to imports drop mainly from Russia, Venezuela, Canada, and the EU (see Figure 71).

Figure 71. Effect of tariffs on annualised imports ([100]) of unwrought aluminium (HS 7601) by top-5 affected countries and HS 6-digit product group

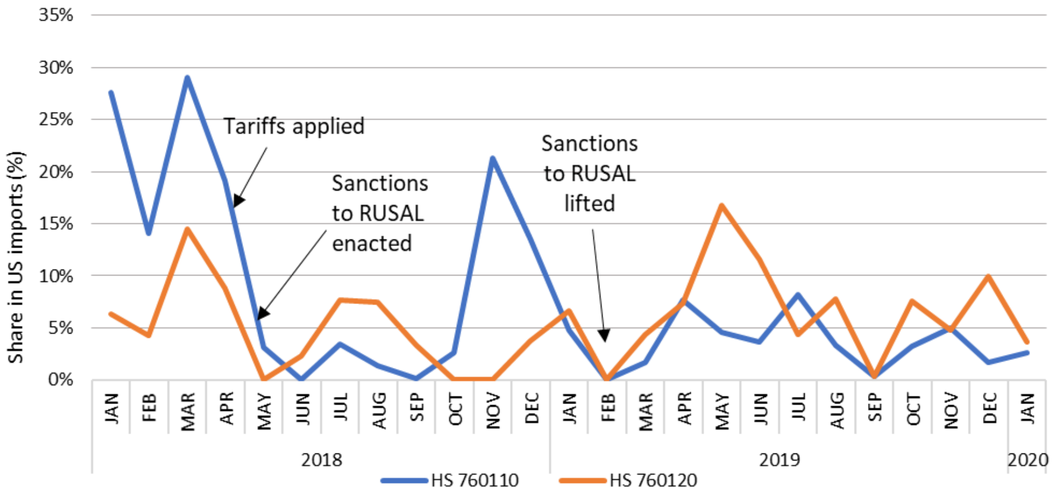


Source: Background data in (USITC Dataweb, 2020)

Despite the lifting of sanctions to Rusal in January 2019, Russian exports to the US have not recovered to the levels seen prior tariffs' enforcement, especially for not alloyed aluminium (HS 760110) (see Figure 72).

([100]) Data are analysed for a period of 20 months (April 2018 – November 2019) following tariffs' enforcement in comparison to a period of 20 months before the tariffs took effect (August 2016 – March 2018).

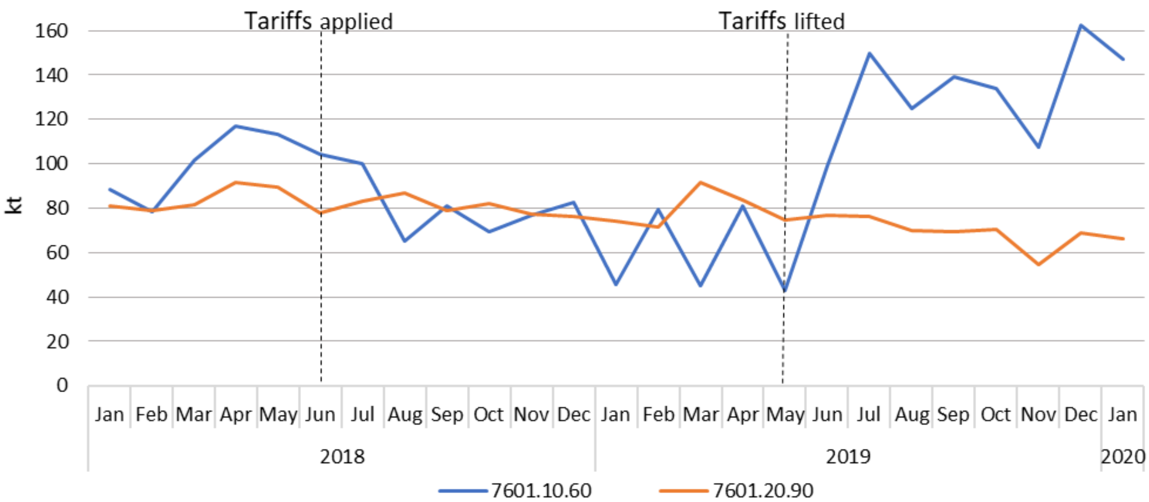
Figure 72. Evolution of shares of US imports of unwrought aluminium from Russia by HS headings



Source: Background data in (USITC Dataweb, 2020)

The US lifted aluminium tariffs on Canada on May 2019. Since then (June 2019 – January 2020), Canadian exports of not alloyed unwrought aluminium (HS 760110) recorded a considerable upsurge of 45% in comparison to the period when tariffs were enacted (June 2018 – May 2019); the share of Canada in US imports of unalloyed unwrought aluminium (HS 760110) increased from 58% to 70%. Exports of alloyed unwrought aluminium (HS 760120) from Canada export also registered an increase in their share in the US after the lifting of tariffs, i.e. from 43% in the period June 2018 – May 2019 to 47% in the period June 2019 – January 2020, despite an absolute decrease of 16% in term of volume. Figure 73 shows the trend of exports from Canada for both not alloyed aluminium and aluminium alloys.

Figure 73. Monthly US imports of unwrought aluminium from Canada



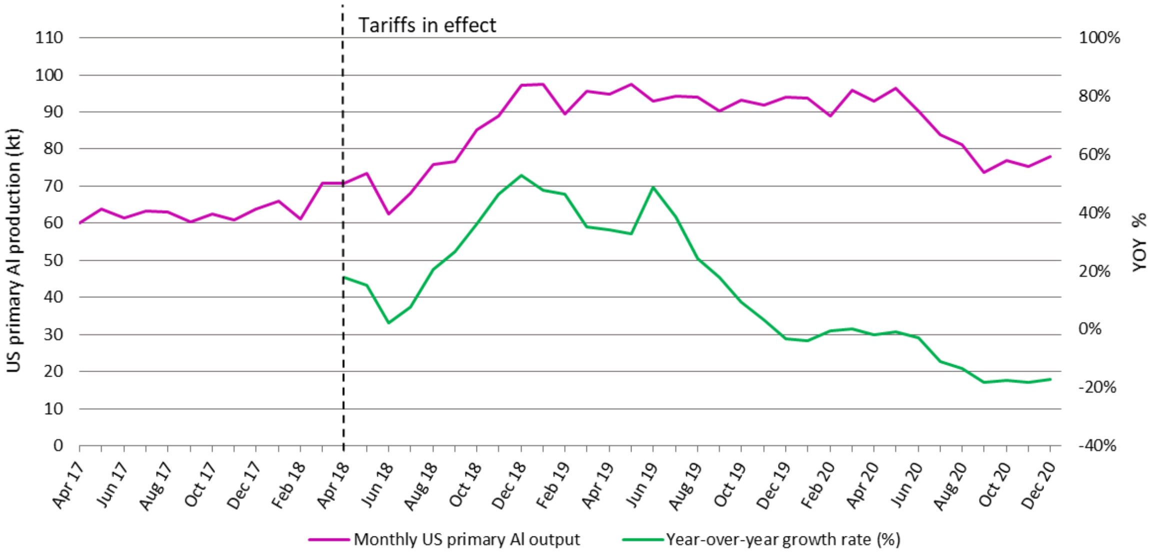
Source: Background data in (USITC Dataweb, 2020)

5.3.2 Production and employment

5.3.2.1 Primary production

According to data published by the Aluminium Association, the US primary aluminium output registered a rapid monthly year-over-year growth after the extra-tariffs were enacted in March 2018 (see Figure 74). The annualised output of primary aluminium surged to 981 kt in total in the twelve months since Section 232 aluminium tariffs came in effect (from April 2018 to March 2019), i.e. 224 kt higher (30%) in comparison to the 12 months period prior to the implementation of tariffs. Nevertheless, the remarkable growth of the US primary production slowed down after June 2019 on a year-to-year basis. After reaching a peak of about 98 kt in May 2019, the US monthly output of primary aluminium was essentially unchanged in the range of 89-96 kt up to June 2020. In July 2020, the US primary aluminium output started to decline and levelled off by the end of the year lower than 80 kt per month (Figure 74).

Figure 74. Monthly primary Al output in the US (left axis) and monthly year-over-year growth rate (right axis) after the enforcement of Section 232 Tariff



Source: Background data in (Aluminum Association, 2021)

The annual production in 2019 amounted to 1,126 kt, and in 2020 to 1,026 kt increased by 48% and 35% respectively in comparison to the 12 months before tariffs' enactment (757 kt). Based on 2019 production figures, the US smelters operated at 63% of their nameplate capacity of about 1,790 kt per year (see Table 17). The Section 232 report on the impact of aluminium imports delivered by the US Commerce Department recommended the sufficient restriction of aluminium imports to allow domestic producers to utilise an average of 80% of their capacity, a level that would provide the industry with long-term viability (US Department of Commerce, 2018).

Three primary aluminium smelters restarted latent capacity in 2018, which added up to more than 400 kt; in 2019 and 2020, no announcement was made for a revival of curtailed potlines in US smelters. The recent developments in US smelters are summarised below (USGS, 2019a) (USGS, 2020a) (USGS, 2020e)(Light Metals Age, 2018) (Hotter, 2018):

— Starting in December 2017, Alcoa's smelter in Warrick brought back to production three idled potlines of 161 kt within 2018 with the aim to supply the onsite rolling mill. Two potlines remained curtailed with 108 kt of capacity. The decision to resume operations in the specific smelter was made on plant-specific grounds and the plans were announced in July 2017 (Alcoa, 2017), long before the submission of the Department of Commerce report ([101]) and the implementation of Section 232 tariffs. In May 2018, Alcoa shut down one of the recently restarted potlines, with a capacity of 54 kt per year, after a power outage at the site; the potline was restarted by yearend.

— In June 2018, 38 kt per year of capacity at Alcoa's smelter in Wenatchee that had not produced since 2001, was permanently shut down. Other three potlines, which had been shuttered since the end of 2015, are being evaluated for a possible restart;

— In June 2018, the 263 kt-per-year smelter in New Madrid restarted 100 kt of its capacity. The plans announced by Magnitude 7 Metals were to reopen two of the three potlines over the course of two years beginning in 2018. The decision to restart idle capacity also predated Section 232 tariffs. An agreement was

([101]) U.S. Department of Commerce, The Effect of Imports of Aluminium on the National Security, An Investigation Conducted under Section 232 of the Trade Expansion Act of 1962, as amended, January 17, 2018.

reached in May 2017 for a more competitive energy rate to allow the smelter to restart, after the company had filed a draft operating permit to restart capacity;

— In June 2018, the Hawesville smelter reactivated three idle potlines of 150 kt of capacity. Glencore-owned Century Aluminium cites Section 232 tariffs and its impact on premiums as the key reason for the restart. One potline with 50 kt of capacity was shut down in June 2019 for scheduled maintenance work. Another potline of 50 kt per year was shut down for maintenance work in October 2019. The restart of both potlines was planned in 2020;

— In May 2018, power failures forced the shutdown of a potline of 73 kt per year at the Century Aluminium's smelter in Sebree; the potline was restarted by the end of 2018.

Table 17. Primary aluminium smelters in the US at the end of 2019

Location	**Company**	**Capacity (kt/year)**	**Operational capacity (kt/year)**	**Idle Capacity (kt/year)**
Evansville (Warrick)	Alcoa Corporation	269	161	108
Ferndale (Intalco)	Alcoa Corporation	279	230 (1)	49
Massena	Alcoa Corporation	130	130	0
Wenatchee	Alcoa Corporation	146	0	146
Hawesville	Century Aluminium Co	252	152	100
Mount Holly	Century Aluminium Co	231	109	122
Sebree	Century Aluminium Co	218	218	0
New Madrid	Magnitude 7 Metals	263	170	93
Total		1,788	1,170	618

(1) In April 2020, Alcoa Corporation announced the full curtailment by August 2020 of the remaining 230 kt of capacity (Alcoa, 2020b)

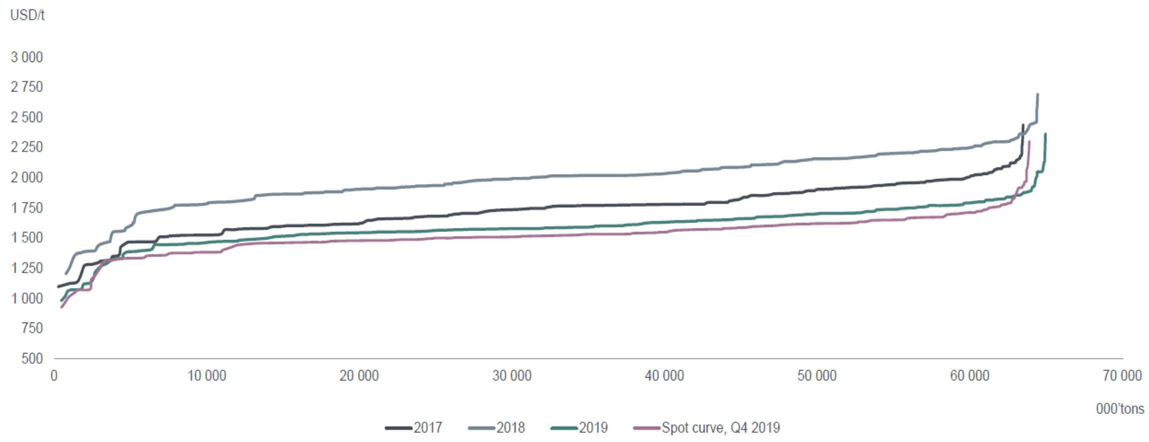
Source: Background data in (USGS, 2019a) (USGS, 2020e)(Alcoa, 2019) (Alcoa, 2020a)(Pawlek, 2020) (Hotter, 2018)

5.3.2.2 Impact of price evolution on the competitiveness of US smelters

The latest developments of the all-in aluminium sale price in the US (LME cash price plus the domestic premium) as described in Section 4.3.3 suggest that one of the objectives of tariffs, i.e. to enable US aluminium producers to reopen idled capacity by operating profitably under the prevailing market prices, is undermined. The relative gains for primary producers in the US Midwest premium have been outweighed by the decline in the LME cash price, with the result that the all-in aluminium price became lower in 2019 than it was prior to the introduction of tariffs. Nonetheless, the global cost curve for aluminium smelters in 2019 was significantly lower than in 2018 as input costs fell significantly, e.g. alumina, and petroleum coke for carbon anodes (Hydro, 2020b).

The following figure shows how smelting costs for the primary aluminium industry increased significantly from 2017 to 2018 driven by rising raw materials costs (Hydro, 2019) but declined sharply in 2019. Along with CRU group data, the alumina price index rose from its average level of 17% to over 27% as a percentage of the LME in 2018 making nearly half of the aluminium smelters globally cash negative in September 2018 (Thomas, 2018). As reported in (Hydro, 2020b), in 2019 the LME 3-month price was roughly equal with the operating costs of smelters in the 90th percentile of the cost curve, meaning that 10% of world production in 2019 was unprofitable without premiums.

Figure 75. Business operating costs by smelter globally, 2017-2019 ([102])



Source: (Hydro, 2020b) based on CRU data

The US smelters are positioned in the upper end of the cost curve, while at the lower end of the cost curve are smelters located in Russia and Canada, followed by those based in the Middle East and the newer smelters in China (Djukanovic, 2018). The average business cost to smelt primary aluminium in the US is reported by (Fitch Solutions, 2018) to be USD 375 per tonne higher compared with the global average in July 2018. According to CRU group data in (USITC, 2017), in 2015 the difference with the worldwide average was USD 115/tonne, and with the global average excluding China USD 246/tonne.

Therefore, as the global aluminium price deteriorates, the enforced tariffs can provide only limited relief for the competitiveness of US smelters, as aluminium smelting is an industry with high fixed costs, i.e. energy and labour costs. The global aluminium price plummeted since the outbreak of Covid-19, which has worsened the situation for aluminium smelters worldwide (see Figure 54). Moreover, Canada's exemption to Section 232 tariffs in May 2019, the most important primary aluminium supplier to the US, increased tariff-free metal availability. This could stabilise the US Midwest premium for primary aluminium at the lower levels seen during November 2019 – February 2020 before the Covid-19 crisis, making tariff 'dividend' for US smelters much lower (see Figure 58). As a result, the prevailing market conditions could bring them on the brink of closure.

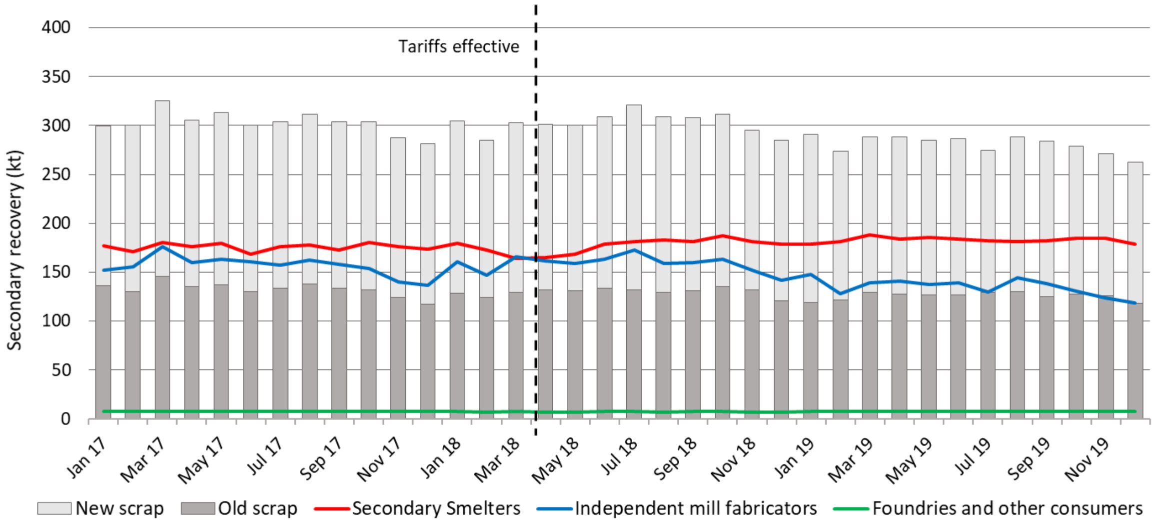
The first hit for the US primary aluminium industry came in April 2020 in the midst of the Covid-19 crisis, when Alcoa Corporation announced its plans to shut down the operating 230 kt of capacity at its Intalco smelter (Alcoa, 2020b). The smelter's full curtailment, which had previously idled 49 kt of its capacity, was scheduled by end-July 2020. As the reasons for the smelter's curtailment, the company cited the market conditions that exacerbated the challenges faced by the already uncompetitive smelter.

5.3.2.3 Secondary production

Data compiled by the US Geological Survey (USGS) show that the volumes recovered by US secondary smelters, independent mill fabricators and foundries to produce unwrought aluminium ingots had a marginal increase of 1% year-on-year from April 2018 to December 2018. However, aluminium recovery from scrap in 2019 was 8% less compared to 2018, and 1% lower than the figures for 2017 (Figure 76). If we compare the overall aluminium recovery in the pre-tariff period (January 2017-March 2018) with the post-tariff period (April 2018-December 2019), it turns out that after tariffs' implementation the US aluminium supply from secondary sources was 3.6% lower (split in 4.2% less new scrap recovered and 2.8% less old scrap recovered). The drop in the aluminium recovery from secondary sources after the enforcement of tariffs is attributed entirely to the reduced production by 7.2% from mill fabricators ([103]), while aluminium recovery in secondary smelters ([104]) was stable (Figure 76).

([102]) Annual average LME settlement price in 2017 USD 1,968/t, in 2018 USD 2,108/t, and in 2019 USD 1,794/t (World Bank, 2021).
([103]) 'Captive producers' producing secondary unwrought aluminium from purchased and internal new scrap, and wrought aluminium products in integrated mills.
([104]) 'Merchant producers' producing unwrought aluminium ingots from tolled and purchased old and new scrap.

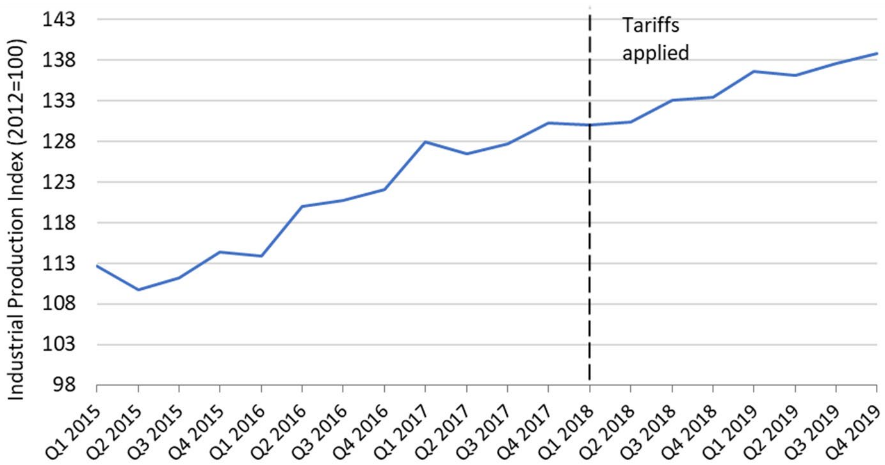
Figure 76. Estimated aluminium secondary recovery ([105]) in the US per month by scrap type and producer, 2017-2019



Source: Background data from USGS Monthly Mineral Industry Surveys (USGS, 2020c)

Nevertheless, in economic terms, the output of the industry NAICS 331314 'Secondary smelting and alloying of aluminium' rose by nearly 7% in the period after the imposition of tariffs (see Figure 77). Despite the decline in the aluminium recovery from secondary sources in the post-tariff period, the substantial gains of the industry can be attributed to the enormous decline in prices of old scrap (see Figure 78) that supported a much lower production cost for secondary ingots. The higher aluminium premium in the US in view of the tariffs (see Section 4.3.3) and the higher upcharge premium for value-added products in the US, i.e. billets (CRU, 2018a), is also of significance. It is noteworthy that the US has not imposed an import duty on aluminium scrap.

Figure 77. Industrial Production Index ([106]), quarterly, NAICS 331314 'Secondary smelting and alloying of aluminium'

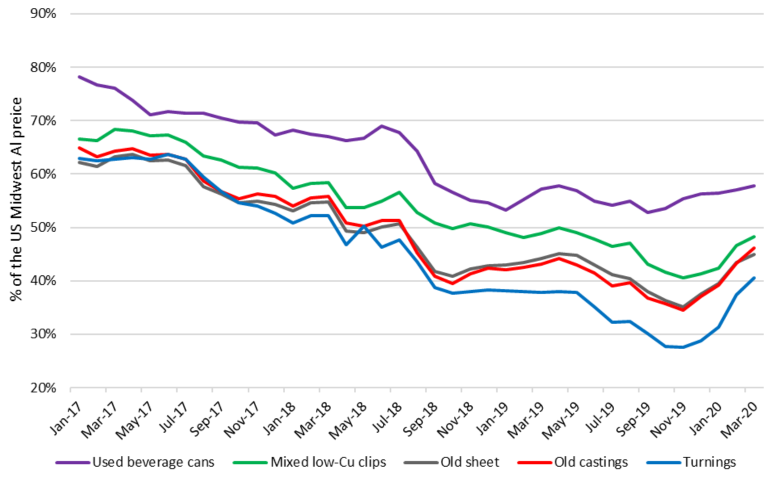


Source: Data from (Board of Governors of the Federal Reserve System, 2020)

Figure 78. Average buying prices for aluminium scrap in the US as a percentage of the US Midwest P1020 aluminium price

([105]) Metallic recovery from purchased, tolled, or imported scrap (new and old) from secondary smelters, independent mill fabricators and foundries.

([106]) The Industrial Production Index (IPI) is an economic indicator published by the Federal Reserve Board of the United States that estimates the real production output (value added) by industry based on measures of physical output, or total production-worker hours where output data are not available.

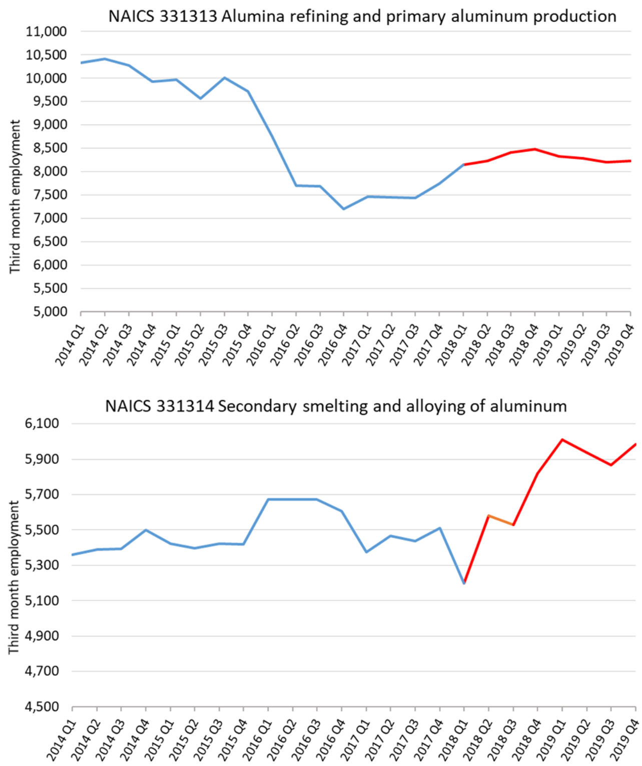


Source: Background data from (USGS, 2020c)

5.3.2.4 Employment

In the period following the imposition of tariffs, the gains for US alumina refining/primary aluminium smelting, the industry intended to be preserved by tariffs, were insignificant. On the other hand, the industrial segment with the highest percentage of increase among all aluminium industry segments was the secondary production (NAICS 3313314 'Secondary smelting and alloying of aluminium'), in which employment grew by 15% from Q1 2018 to Q4 2019.

Figure 79. Direct employment in the segments of US industry producing unwrought aluminium, in number of employees, Q1 2014 – Q4 2019



NB: In red the period after the implementation of tariffs

Source: Data from (US Department of Labor, 2020)

5.4 EU

5.4.1 Primary and secondary aluminium segment of the EU industry

5.4.1.1 Primary aluminium

Of the 23 active smelters in 2002 across the 27 EU Member States, the number of operating smelters fell to 15 in 2013, some of which were fully or partially curtailed in January 2020 (see Table 18). Annex 7 provides an overview of the closed aluminium smelters in the period 2003-2012. A further decline in the EU operating capacity occurred in 2019, as the result of the curtailment of 124 kt of capacity in two Spanish smelters. Table 18 lists the nameplate and the latent capacity of EU smelters. Section 5.4.1 presents production data of primary aluminium in the EU.

Table 18. Primary aluminium smelters in the EU by capacity as of December 2020

Plant	**Country**	**Operator**	**Ownership**	**Nameplate capacity (kt per year)**	**Shutdown Capacity (kt per year)**
Dunkerque Smelter	France	Liberty Aluminium Dunkerque	GFG Alliance	285	-
Slatina Smelter	Romania	SC Alro SA	Vimetco N.V.	282	-
San Ciprián Smelter	Spain	Alumínio Español, SA (Alcoa Spain)	Alcoa Corporation	250	22
Neuss (Rheinwerk) Smelter	Germany	Hydro Aluminium Rolled Products GmbH	Norsk Hydro ASA	235	80
Agios Nikolaos Smelter	Greece	Aluminium of Greece	Mytilineos Holdings SA	190	-
Žiar nad Hronom Smelter	Slovakia	Slovak Aluminium Co (Slovalco) AS	Norsk Hydro ASA (55.3%), Penta Investments (44.7%)	175	35 (1)
Essen Smelter	Germany	TRIMET Aluminium SE	TRIMET Aluminium SE	170	-
Delfzijl Smelter	Netherlands	Aluminium Delfzijl BV (Aldel)	Damco Aluminium Delfzijl Coöperatie U.A.	111	-
St-Jean de Maurienne Smelter	France	TRIMET France SAS	TRIMET Aluminium SE	145	-
Hamburg Smelter	Germany	TRIMET Aluminium SE	TRIMET Aluminium SE	135	-
Sundsvall Smelter	Sweden	Kubikenborg Aluminium AB (Kubal)	United Co. RUSAL Plc	132	-
Voerde Smelter	Germany	TRIMET Aluminium SE	TRIMET Aluminium SE	96	-

Avilés Smelter	Spain	ex. Alcoa Inespal SA	Parter Capital Group AG	93	93
La Coruña Smelter	Spain	ex. Alcoa Inespal SA	Parter Capital Group AG	87	87
Kidricevo Smelter	Slovenia	Talum d.d.	ELES	85	-
Total				**2,471**	**317**

([1]) A 20% curtailment rate is applied.

Source: Data from (Pawlek, 2020) (S&P Global, 2020a) (Alcoa, 2019) (CEPS, 2013) and companies' websites

Box 14. Recent developments in primary EU production

— Ceased production in two Alcoa's smelters in Spain

In early 2019, Alcoa Corporation curtailed the remaining smelting capacity at the Avilés (61 kt) and La Coruña (63 kt) facilities in Spain. As stated by the company, ceasing output at both plants was due to inherent structural factors (small production capacity, less efficient technology, and high fixed costs) combined with external factors, including Chinese overcapacity, as well as high raw materials and energy costs. The casthouses at each plant and the paste plant at La Coruña remained in operation. On 31 July 2019, Alcoa Corporation announced that it reached a conditional agreement with Parter Capital Group AG to acquire the Avilés and La Coruña aluminium plants, including the curtailed smelters and the casthouses at both plants, and the paste plant at La Coruña. Under the acquisition agreement, Parter Capital Group would keep the facilities' entire workforce of about 630 employees for a minimum of two years. Reindustrialisation projects for both sites are likely to start. Parter Capital Group also indicated a possible restart of the plants' smelting operations. Just nine months after, Spanish media reported on April 2020 that Parter Capital Group AG sold its majority stake of La Coruña and Avilés Plants to Grupo Industrial Riesgo.

https://investors.alcoa.com/~/media/Files/A/Alcoa-IR/documents/annual-reports-and-proxy-information/annual-report-2018.pdf

https://news.alcoa.com/press-release/corporate/alcoa-launches-formal-consultation-process-aviles-and-la-coruna-works

https://news.alcoa.com/press-release/parter-capital-group-ag-acquires-aviles-and-la-coruna-spain-Aluminium-plants-alcoa

https://www.elplural.com/economia/grupo-industrial-riesgo-adquiere-mayoria-alu-iberica_237862102

https://www.abc.es/espana/galicia/abci-grupo-industrial-riesgo-compra-antiguas-plantas-alcoa-coruna-y-aviles-202004151834_noticia.html?ref=https%3A%2F%2Fwww.google.com%2F

— Curtailment of production in the Slovakian smelter

Norsk Hydro announced on December 2, 2019, that it plans to curtail 20 per cent of the primary aluminium production at its majority-owned Slovalco primary aluminium plant in Slovakia; the curtailment is expected to commence in January 2020. The weakening market is mentioned as the reason for the production cut in the company's announcement.

https://www.hydro.com/en/media/news/2019/slovalco-to-partially-curtail-production/

— Imminent curtailment of Alcoa's last smelter in SpainAfter a consultation process that began in June 2020 and ended in late September 2020 without an agreement with workers' representatives, Alcoa Corporation announced its decision on 2 October 2020 to curtail its San Ciprián smelter in Spain, and initiate a collective dismissal that will affect approximately 530 employees. The smelter's curtailment was expected to complete in the first quarter of 2021. The San Ciprián aluminium smelter in Spain will retain a portion of the casthouse in operation. In contrast, production at the San Ciprián alumina plant is not affected and will continue to operate. According to the company's announcement, the smelter operation is not viable as it incurred continued financial losses between 2018 and the first nine months of 2020 due to structural factors such as an uncompetitive energy framework, global overcapacity in aluminium production and depressed prices. However, a court decision in 17 December 2020 has halted plans for curtailment and the collective dismissal process.

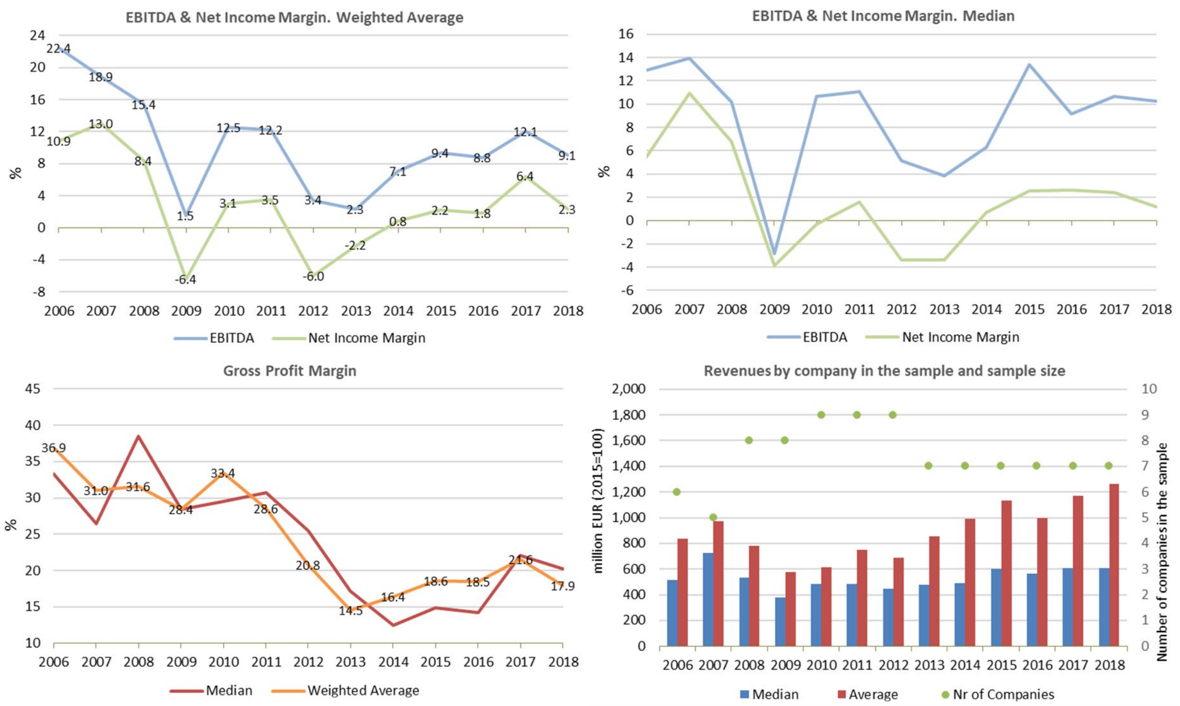
https://news.alcoa.com/press-release/alcoa-begin-formal-consultation-process-spanish-works-council-regarding-san-ciprian

https://news.alcoa.com/press-releases/press-release-details/2020/Alcoa-Announces-Curtailment-and-Collective-Dismissal-at-San-Ciprin-Aluminum-Smelter-in-Spain/default.aspx

https://aluminiuminsider.com/spanish-court-halts-curtailment-of-san-ciprian-aluminium-smelter/

Figure 80 below shows the evolution of profitability indicators for companies that operated primary aluminium smelters in the EU from 2006 to 2018 (see Annex 13). The companies contributing to the joint profitability indicators, accounted for 70% of the primary aluminium capacity in 2018 across the EU, and had total revenues of EUR 6.4 billion as an annual revenue in 2006-2018.

Figure 80. Profitability indicators of EU companies producing primary aluminium, 2006-2018



Source: Background data from (S&P Global, 2020d) and company financial reports

Before the onset of the global financial crisis in 2008, primary aluminium smelters were the most profitable segment of the EU aluminium industry. EBITDA and net income margins plunged during the crisis in 2009. Both indicators improved in 2010-2011 when aluminium prices rebounded from the low level of 2009 (see Figure 53). In the period 2012-2013, the EU primary aluminium industry suffered a second severe crisis as net profitability deteriorated steeply amid depressed prices. Electricity costs (simple average) climbed from EUR 497 per tonne in 2010 to 610 EUR per tonne in 2012, the peak value in the period 2008-2017 (CEPS & Ecofys, 2018). Gross profit margins were decimated in 2012-2013, as the weighted average halved in comparison to the period of 2006-2008. In total, seven EU smelters closed from 2006 to 2012 (see Annex 7); none has opened or is planned to open until nowadays. Plants procuring electricity in the spot market after their long-term power contracts expired were highly uncompetitive in that period, in contrast to plants powered via old long-term contracts or through self-generation (CEPS, 2013).

From 2014 to 2016, EBITDA and net profit margin demonstrated a slight improvement. The profitability performance was robust for EU smelters in 2017, when the net profit margin reached its highest level since 2009. Again, 2017 was a year of improved aluminium prices (see Figure 53), and at the same time electricity costs (simple average) for primary aluminium plants in the EU improved from EUR 588/tonne in 2015 to EUR 542/tonne in 2017 (CEPS & Ecofys, 2018). In 2018, despite a further surge of aluminium prices in comparison to 2017, profitability margins (weighted average) of EU smelters narrowed as volatile alumina prices increased production costs. Production cuts in Hydro's Alunorte refinery in Brazil, the world's largest refinery outside China, and sanctions against UC Rusal prompted the rise of global alumina prices to multi-year highs (Le Gleuher, 2019)(Thomas, 2018).

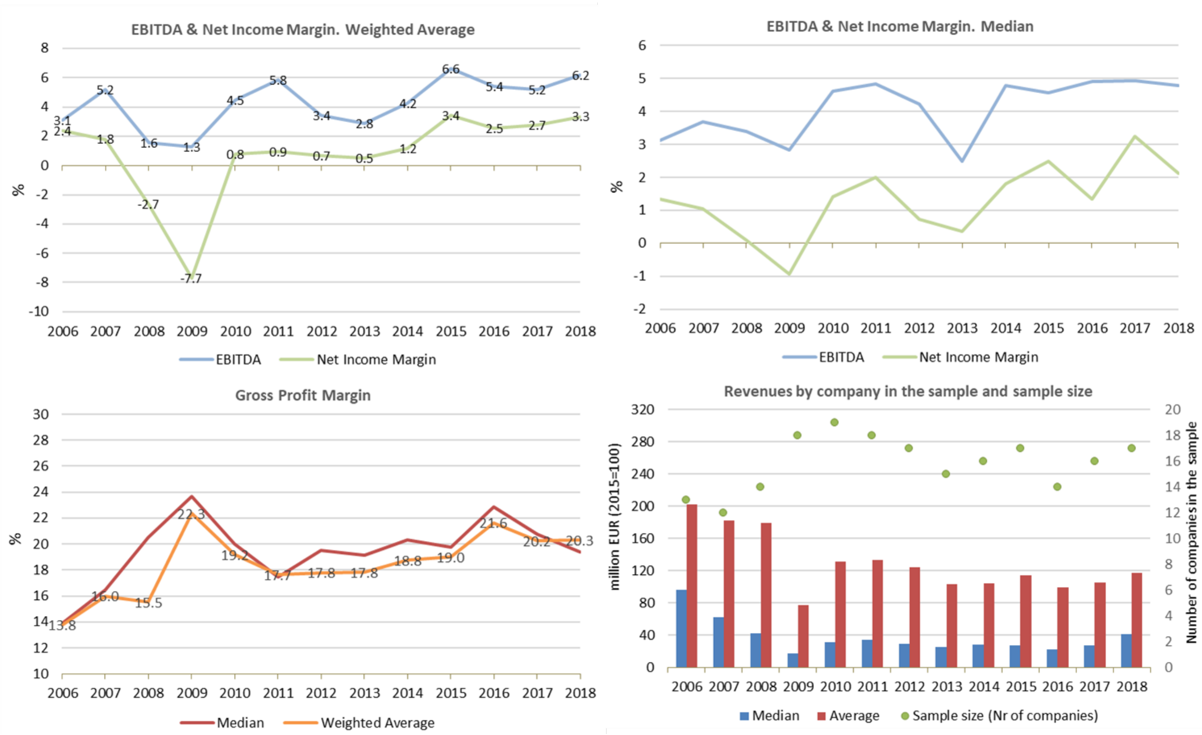
As revealed by the movements in profitability indicators shown in Figure 80, the primary aluminium segment has had the most volatile returns among aluminium's industrial segments. Notwithstanding the general upward trend for company profits since 2014, all profitability indicators ranged at lower levels compared to the period before the 2008-2009 financial crisis, when aluminium prices were at historically high levels (see Figure 53). It is also striking that the average production costs for primary aluminium plants decreased by a factor of 11-12% between 2008 and 2017 (CEPS & Ecofys, 2018). In general, larger plants appear to face both lower electricity costs and lower production costs in €/tonne, most likely due to three main factors: i) economies of scale; ii) direct access to wholesale markets and better supply conditions of larger consumers; iii) load consumption profile of smelters (CEPS & Ecofys, 2018).

5.4.1.2 Secondary aluminium

In line with data published by the European Aluminium Association, the EU aluminium recycling (remelters and refiners) industry is composed from around 175 recycling plants (European Aluminium, 2020b), some of which are operated by small and medium-sized enterprises (SMEs) (European Aluminium, 2016). At the same time, there are large recycling plants that are integrated into the installations of semi-finished production.

A sample consisting of 25 companies (remelters and refiners) was used for mapping the profitability trends in the secondary aluminium segment shown in Figure 81. Companies in the sample had an annual average turnover of EUR 1.9 billion in the period 2006-2018 (see Annex 13).

Figure 81. Profitability indicators of EU companies producing aluminium from secondary sources, 2006-2018



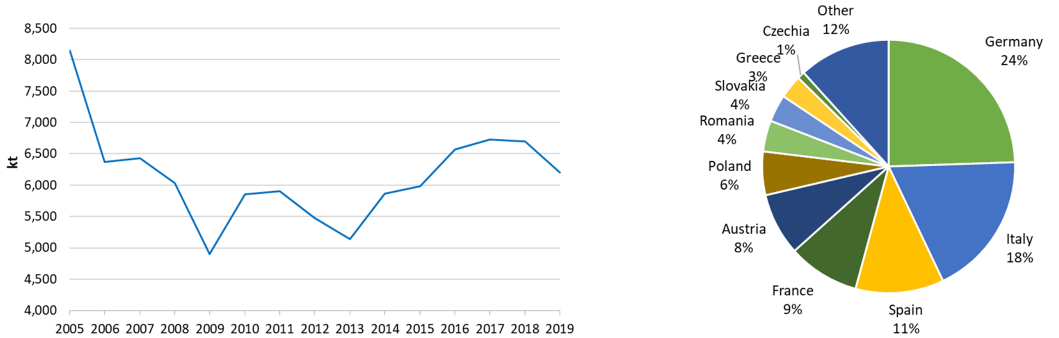
Source: Background data from (S&P Global, 2020d) and company financial reports

Notably, the global financial crisis in 2008-2009 had a profound impact in the profitability indicators of the secondary aluminium segment (Figure 81). During the following years (2010-2014), secondary aluminium producers operated at weak net income margins. A substantial improvement in their profitability performance is observed from 2015 to 2018, reflecting a healthy status in the secondary aluminium industry in the EU.

5.4.2 Supply and demand for unwrought aluminium in the EU

The total unwrought aluminium ingot production ([107]) in the EU contracted significantly over the period 2005-2013 by an overall rate of 37%, due to the decline of primary aluminium output. In 2014-2017 the annual aluminium ingot output recovered, reaching 6.7 Mt in 2017, 24% higher than 2013. According to the latest available Eurostat data, aluminium ingot production was relatively flat in 2018 on a year-on-year basis, whereas in 2019 data show a sharp decrease of 7% compared to 2018 (see Figure 82). Germany, Italy, and Spain account for more than half of the total EU aluminium ingot production.

Figure 82. Evolution of EU production (volume sold) ([108]) of unwrought aluminium (left axis) from 2005 to 2019, and breakdown per EU countries ([109]) in 2019 (right axis)



Source: Background data in (Eurostat Prodcom, 2020)

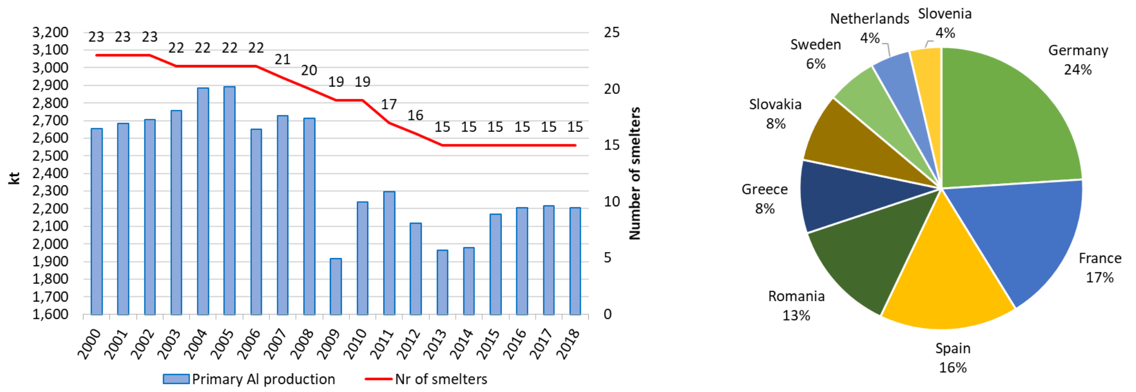
The production of primary aluminium in the EU fell considerably by one-third (32%) from 2005 to 2013 due to smelter closures. The all-time high of the EU's primary aluminium production was 2.9 Mt in 2005 (see Figure 83). The output was lower by 1 Mt in 2009 during the global financial crisis and by about 0.9 Mt in 2013. The drop of primary aluminium production was particularly severe in the Netherlands and Italy, which together accounted for 57% of the total decline in EU output between 2005 and 2013. Since 2016, the production of the remaining smelters is flat at around 2.2 Mt. Currently, aluminium smelters are operating in nine EU countries; Germany, France, and Spain hold the largest share of production.

([107]) Volume sold. Aluminium ingots produced in casthouses of integrated mills may not be not included.

([108]) PRC codes: 24421130 'Unwrought non-alloy aluminium (excluding powders and flakes)'; 24421153 'Unwrought aluminium alloys in primary form (excluding aluminium powders and flakes)' and 24421155 'Unwrought aluminium alloys in secondary form (excluding aluminium powders and flakes)' from 2005 to 2012; 24421154 'Unwrought aluminium alloys (excluding aluminium powders and flakes)' from 2013 to 2018. Data for 2005 refer to total volume of production.

([109]) The production shares in 2018 do not show data for certain EU countries and product categories due to confidentiality. For PRC code 24421130 production figures for Bulgaria, Czechia, Germany, Greece, Spain, Netherlands, Poland, and Portugal are withheld. For PRC code 24421154 the shares do not include the production from Bulgaria, Ireland, Latvia, Hungary, Netherlands, Latvia, and Sweden. Production from these EU countries is included in the category "Other".

Figure 83. Evolution of primary aluminium production and number of operational smelters in the EU from 2000 to 2018 (left), and EU producing countries of primary aluminium in 2018 (right)

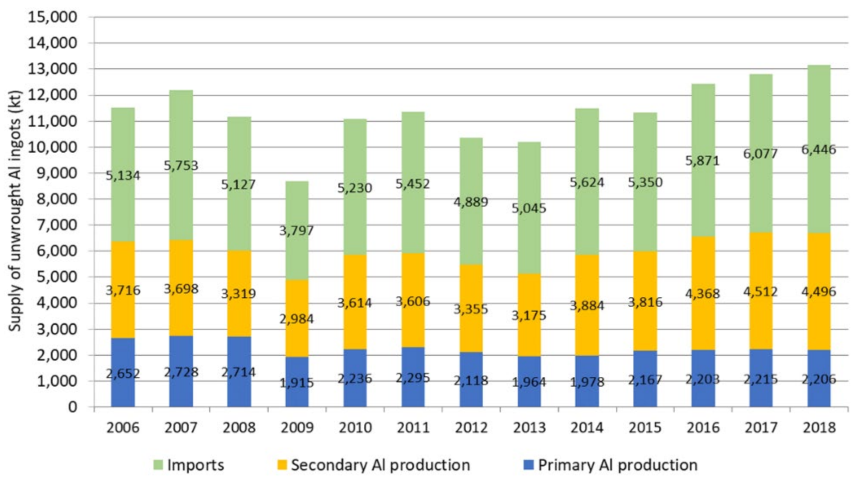


Source: Data from (BGS, 2020), Annex 7 and Table 18

Concerning supply from secondary sources, it is estimated that shipped EU secondary producers shipped 4.5 Mt of ingots ([110]) in 2018 that is almost equal to the record level of 2017. In line with data provided by the European Aluminium Association (European Aluminium, 2019a), aluminium produced from scrap in the EU and UK amounted to 4.8 Mt in 2018, 4% lower than in 2017. According to data published by the International Aluminium Institute, recycling ingot production in Europe ([111]) in 2018 is calculated at 5.3 Mt (from old and new scrap) making up 56% of the total metal production (IAI, 2020a)(Bertram *et al.*, 2017).

The estimated output of ingots by EU secondary producers grew significantly at a CAGR of 6.6% from the latest low point in 2009 of 2.5 Mt to 4.5 Mt in 2018. In 2018, the unwrought aluminium produced from secondary sources accounted for two-thirds (67%) of the total aluminium production in the EU. Secondary production covered about one-third (34%), primary production accounted for less than one-fifth (17%), and imports for almost half (49%) of the total EU consumption in aluminium ingots in 2018. The contribution of secondary aluminium production in the total supply of unwrought aluminium in the EU is shown in Figure 84.

Figure 84: Structure of supply of unwrought aluminium ingots in the EU, 2006-2018



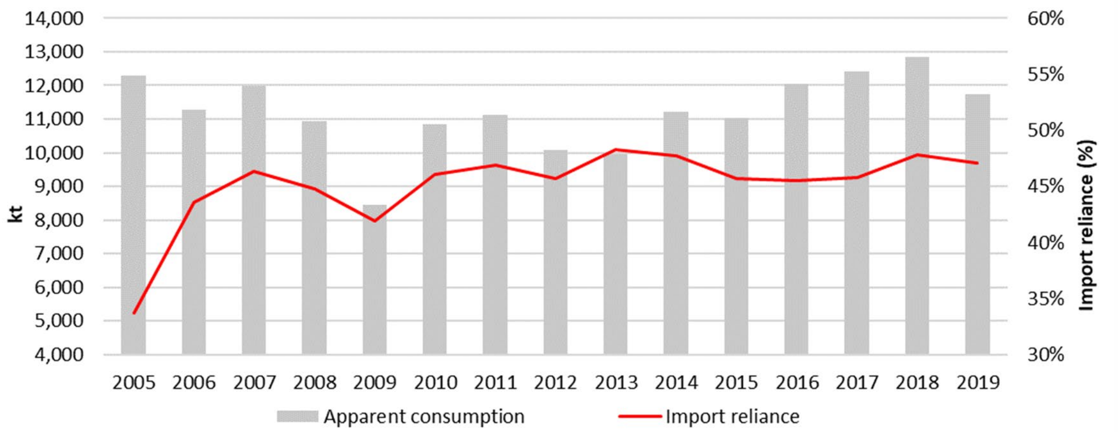
Source: Background data from (Eurostat Prodcom, 2020)(Eurostat Comext, 2020) (BGS, 2020)

([110]) Data of volume sold (shipments) for the PRC code 24421155 'Unwrought aluminium alloys in secondary form' was used for the years 2005-2012. In the period 2013-2018, the production of secondary aluminium ingots was estimated by subtracting the primary aluminium production from the total unwrought aluminium ingot shipments. A similar estimation is not possible for 2019 as the primary aluminium output is not published yet by open sources. The secondary ingot production does not reflect the aluminium recovery from old scrap as it may include new scrap (toll-treated) and primary aluminium used as additional feedstock. In addition, the unwrought aluminium ingot shipments used to estimate secondary ingot output may not include production by integrated casthouses at semis plants, where old scrap may be recycled and ingots are consumed internally.

([111]) EU, UK, Iceland, Moldova, North Macedonia, Norway, Serbia, Montenegro, Switzerland, Turkey, Ukraine.

The apparent consumption of unwrought aluminium rose by a CAGR of 3.4% between the latest low point of the financial crisis in 2009 and 2019. In 2018, the apparent consumption of unwrought aluminium climbed to a record of 12.8 Mt, whereas in 2019 declined sharply by 9% to 11.7 Mt (see Figure 85). Import reliance is high and relatively stable as the share of net imports in total apparent consumption ranged between 45% and 48% in the last years. If the significant contribution of recycling to the aluminium ingot supply is excluded, the EU's import dependency for primary aluminium reached its highest ever rate of 74% in 2018.

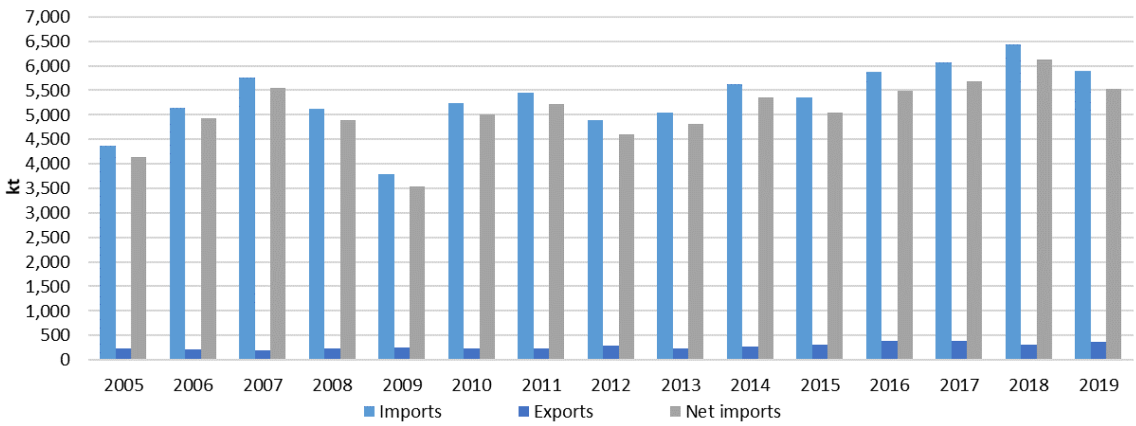
Figure 85. EU apparent consumption ([112]) of unwrought aluminium ingots and import reliance, 2005-2019



Source: Background data in (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

The EU has a persisting deficit for unwrought aluminium. In the 2010-2015 period, imports returned to average levels seen prior to the 2009 global recession. Since 2016, imports of unwrought aluminium increased substantially while exports have remained low and relatively flat in comparison, and the trade deficit has widened accordingly. In 2018, imports of unwrought aluminium amounted to a record level of almost 6.5 Mt, whereas net imports also hit a multiyear high of 6.1 Mt (Figure 86). In 2019, imports fell by 8% over the previous year at 5.9 Mt, and net imports by 10% at 5.5 Mt. The EU's import needs covered by the EFTA countries ([113]) is about one-third of the total.

Figure 86. EU trade flows for unwrought aluminium, 2005-2019



Source: Background data from (Eurostat Comext, 2020)

([112]) The apparent consumption of unwrought aluminium is calculated from official Eurostat data for shipments (volume sold) and net imports. Inventories' variation is not accounted. The contribution of aluminium ingot production by integrated casthouses may not be accounted also by Eurostat data. In the PRC codes used for production (volume sold) of unwrought Al: 24421153 and 24421155 from 2010 to 2012; 24421130 and 24421154 from 2013 to 2018. CN codes for trade flows of unwrought Al: CN 76011000, CN 76012000, and CN 76011080.

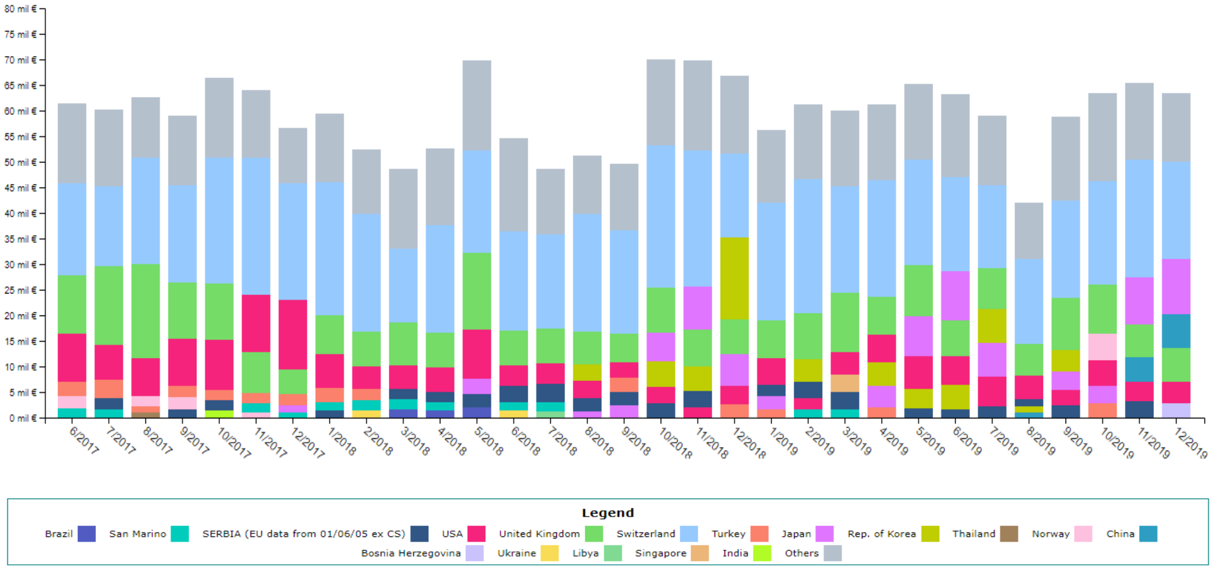
([113]) Norway, Iceland, Switzerland

5.4.3 EU exports of unwrought aluminium

EU is a minor global exporter of unwrought aluminium. EU exports of unwrought aluminium to three destinations – Switzerland, the United Kingdom, and the United States – accounted for more than 60 per cent of the total extra-EU exports in the last years. Even if they are small, the EU exports to the US fell by 39% in 2018 and 41% in 2019 compared with 2017.

The same significant decrease took place for the EU monthly exports of unwrought aluminium to the US before and after tariff imposition. As compared with the period July-December 2017, the EU average monthly exports of the aluminium products to the US fell by 67% in the second half of 2018 and by 54% in the same period of 2019.

Figure 87. Evolution of the EU monthly exports of unwrought aluminium (HS 7601) by the main destination over the period June 2017-December 2019



Source: Data from (Eurostat Comext, 2020)

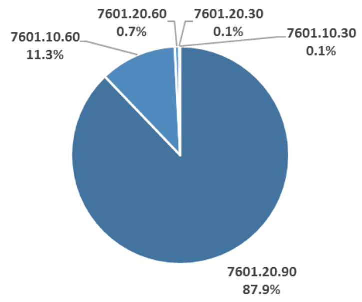
5.5 Impact of the tariffs in the EU

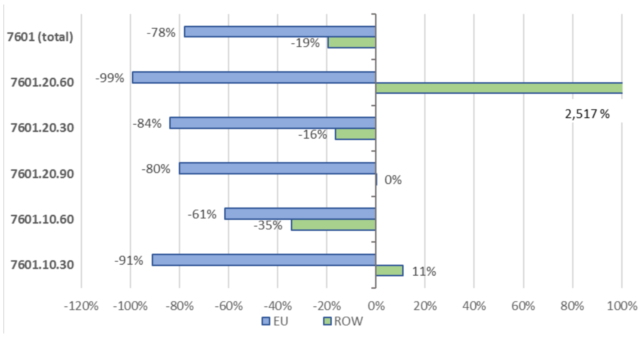
5.5.1 EU exports of unwrought aluminium to the US

EU exports to the US of unwrought aluminium are limited in volume representing only 1% of the total US imports before the placement of Section 232 tariffs; thus, any direct effect of tariffs on the EU aluminium industry would have a small impact for EU exporters.

The tariffs had a negative impact, as EU exports of all unwrought aluminium products (HS 7601) dropped considerably (see Figure 88). The total EU exports declined by 78%, a rate which is higher than the decline in US imports from the rest of the world countries (-19%). Exports of the product HTS 7601.20.60 '*Aluminium alloys, w/25% or more by weight of silicon, unwrought nesoi*', a particular alloy product used as an input to the production of aluminium castings, had the most significant losses in terms of volume share in the US. Spain registered the greatest losses for exports of unwrought aluminium alloys (HS 760120) (see Figure 71).

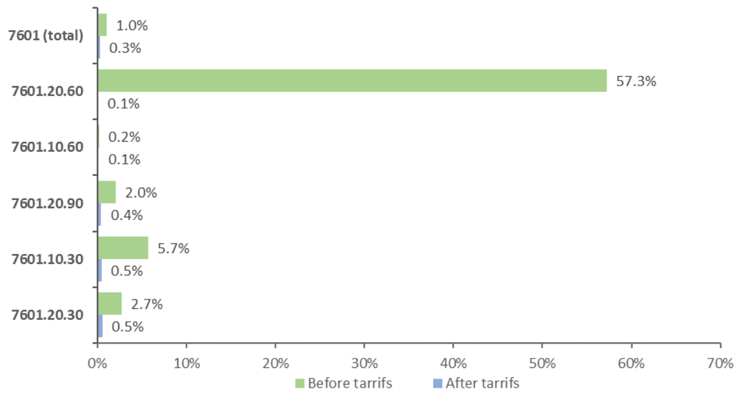
Figure 88. Breakdown of EU exports to the US per product prior to tariffs' imposition (left), and relative change (%) in EU exports to the US after the tariffs (right), by HTS 8-digit codes of unwrought aluminium products (HS 7601) ([114])





Source: Background data in (USITC, 2019b)

Figure 89. EU share in the US imports before and after the tariffs by HTS 8-digit codes of unwrought aluminium products (HS 7601)



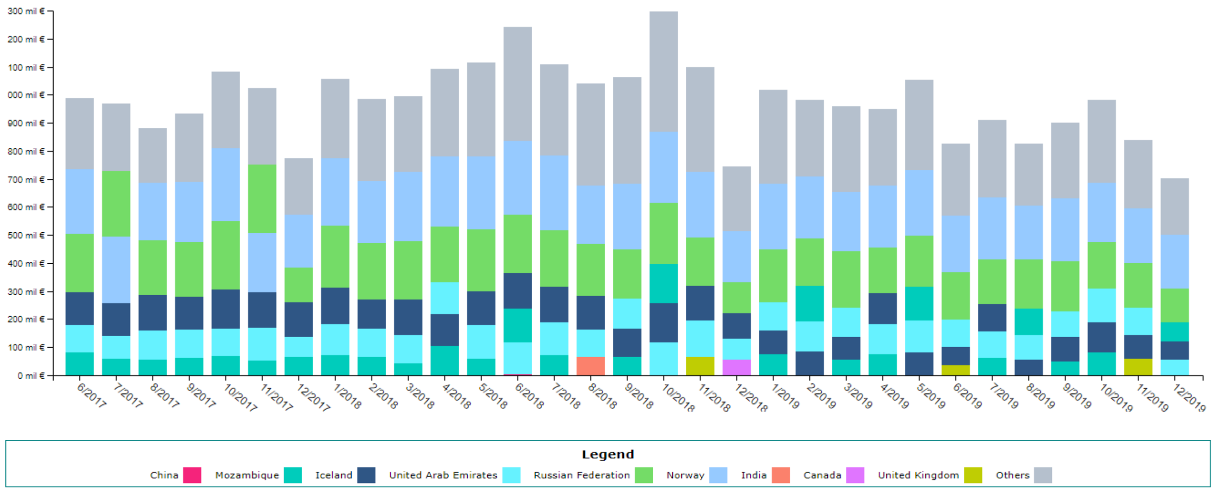
Source: Background data in (USITC, 2019b)

5.5.2 EU-directed trade reorientation for unwrought aluminium

In the last three years, Norway (annual average of 23%) and Russian Federation (annual average of 12%) were the EU main suppliers of unwrought aluminium, contributing more than 45 per cent to the annual EU imports. China was an insignificant supplier, with a monthly import share of less 0.1%.

([114]) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) before tariffs were enacted for the EU.

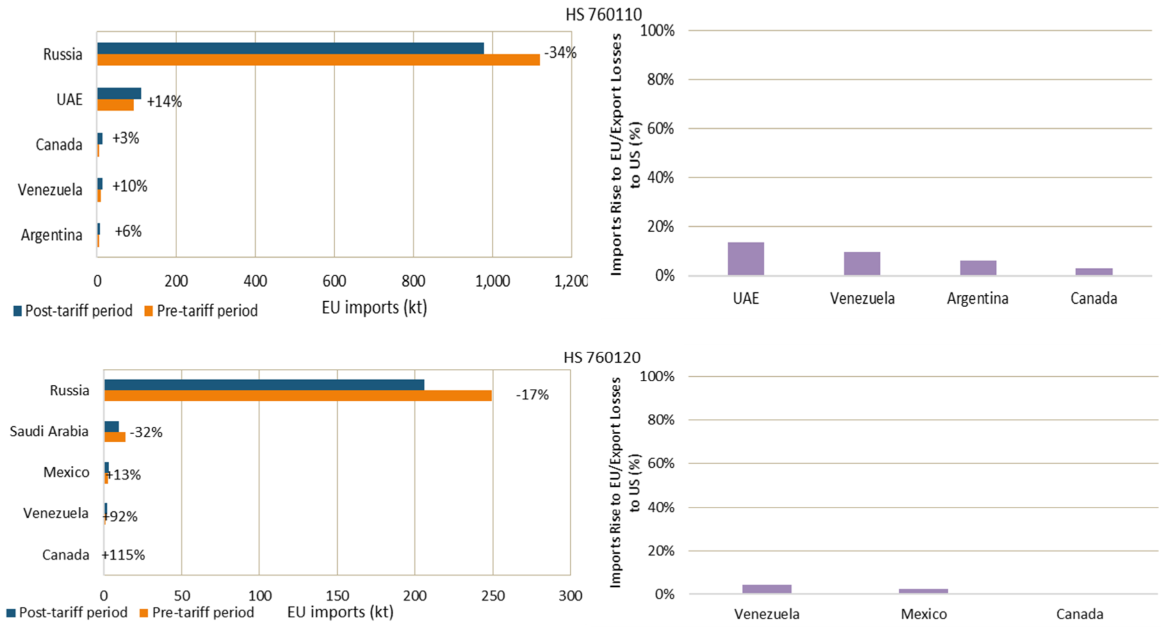
Figure 90. Evolution of the EU monthly imports of unwrought aluminium (HS 7601) by main country supplier plus China over the period June 2017-December 2019



Source: Data from (Eurostat Comext, 2020)

Concerning trade diversion from the US after the imposition of tariffs, the most important effect identified in terms of volume is the increase of EU imports of not alloyed unwrought aluminium (HS 760110) from the United Arab Emirates (Figure 91).

Figure 91. EU annualised imports ([115]) of unwrought aluminium (HS 7601) by HS6 group (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

([115]) Source countries that had the highest losses in the US after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length i.e. 20 months, before the tariffs took effect (August 2016 – March 2018).

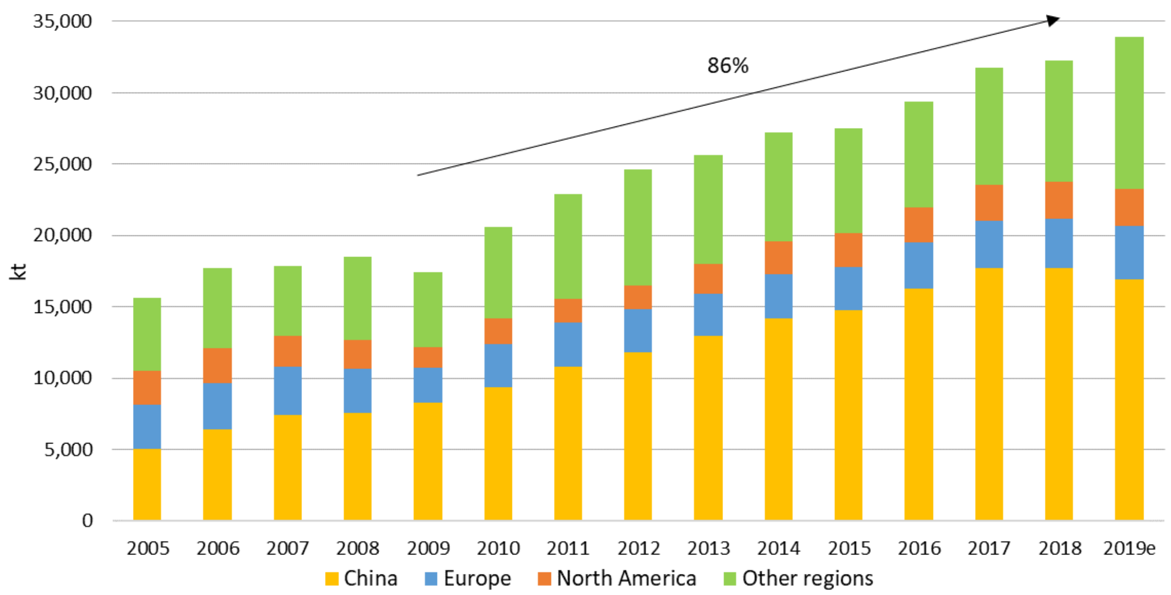
6 Aluminium bars, rods, and profiles

6.1 Overview

6.1.1 World production

Data from IAI's dynamic MFA modelling tool 'Alucycle' suggests that aluminium extrusions' world production increased by 86% between 2009 and 2018, at a CAGR of 6.8%. The most robust growth in this period is recorded in China (116%), while it was weaker in Europe (40%) compared to North America (80%) and rest-of-world regions (63%). Global production for extrusion products in 2018 reached 32.2 Mt, 1.6% more than in 2017. Chinese production in 2018 was flat compared with 2017. On the other hand, production in Europe in 2018 was 2.9% higher than the previous year, and North American output rose by 5.2%.

Figure 92. World production of aluminium extrusions by regions, 2005-2019 ([116])



Source: Background data in (IAI, 2020a)

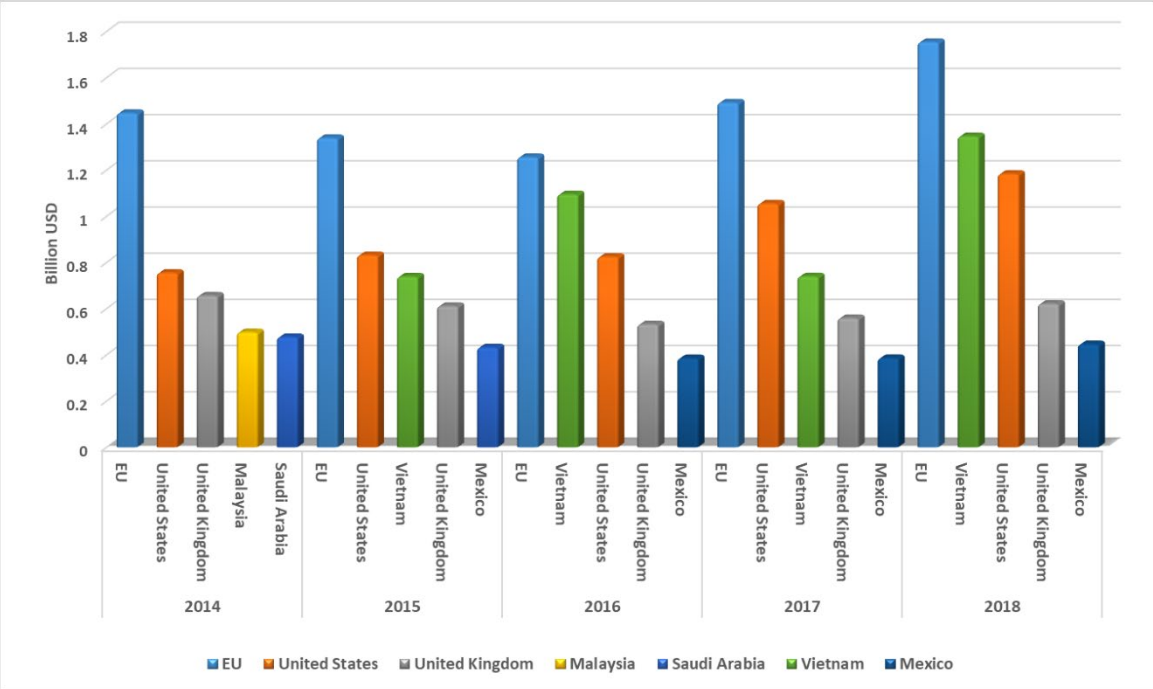
6.1.2 Main suppliers and importers

Over the period 2014-2018, the EU was the main world importer of aluminium bars, rods, and profiles (HS 7604) with a global import share of 11 per cent in 2018. In 2018, the main EU importing countries of this product group were Germany (34% of total extra-EU imports), France (9%) and Italy (7%).

At HS 6-digit level, EU was the world's leading importer of two product groups - Bars, rods & profiles, of aluminium, not alloyed (HS 760410) and Bars, rods, and profiles of aluminium alloys (HS 760429) - and the third world importer (after Vietnam and the US) of Hollow profiles of aluminium (HS 760421) in 2018.

([116]) Data shown for 2019 are projected.

Figure 93. Main five global importers of aluminium bars, rods, and profiles over the period 2014-2018 (HS 7604; total import value; billion USD; EU as a trading bloc)



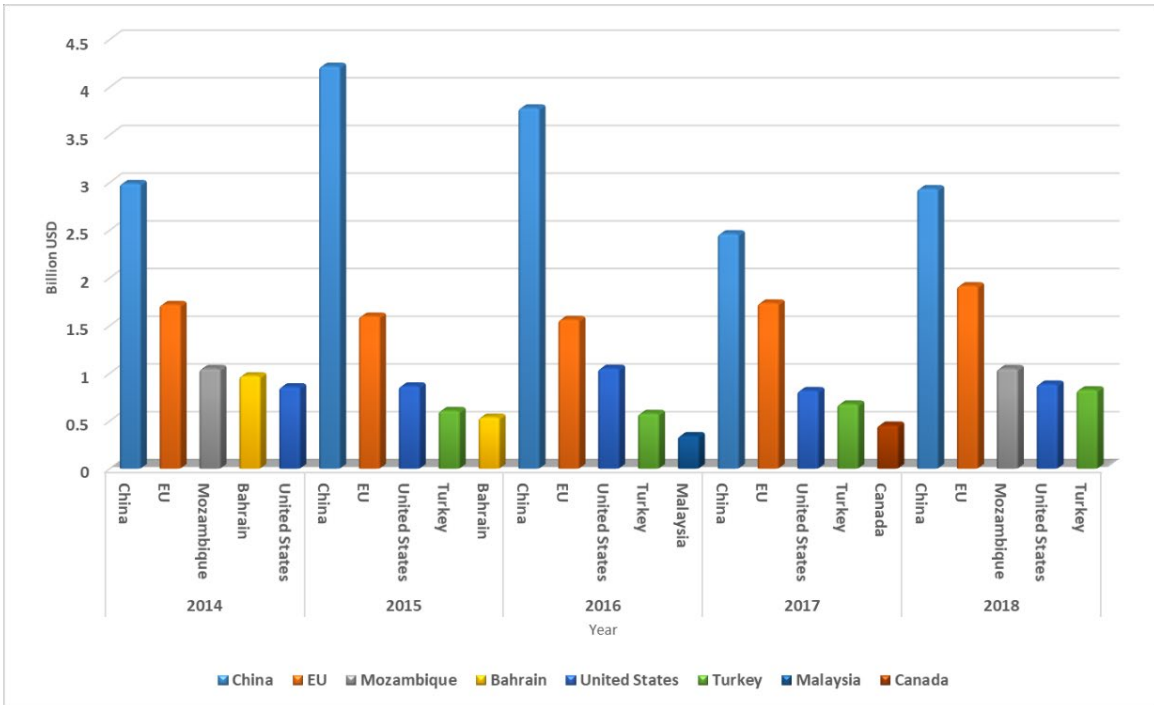
Source: UN Comtrade data, accessed via (WITS, 2020)

China and EU are the leading exporters of aluminium bars, rods, and profiles (HS 7604) over the period 2014-2018, together supplying a quarter of the total world's exports in 2018. Germany (32%), Spain (11%) and Italy (10%) contributed more than half of the extra-EU exports in 2018.

EU is the second world exporter for each of the three compounding HS 6-digit commodities of HS 7604 product group.

In 2018, Greece, Italy and Spain contributed each with 20 per cent to the EU exports of *Bars, rods & profiles, of aluminium, not alloyed* (HS 760410). In the same year, Germany has a significant share (43%) of EU exports of *Hollow profiles of aluminium* (HS 760421).
Germany (31%), Spain (11%) and Italy (10%) are the main EU exporters of *Bars, rods, and profiles of aluminium alloys* (HS 760429).

Figure 94. Main five global exporters of aluminium bars, rods, and profiles over the period 2014-2018 (HS 7604; total export value; billion USD; EU as a trading bloc)



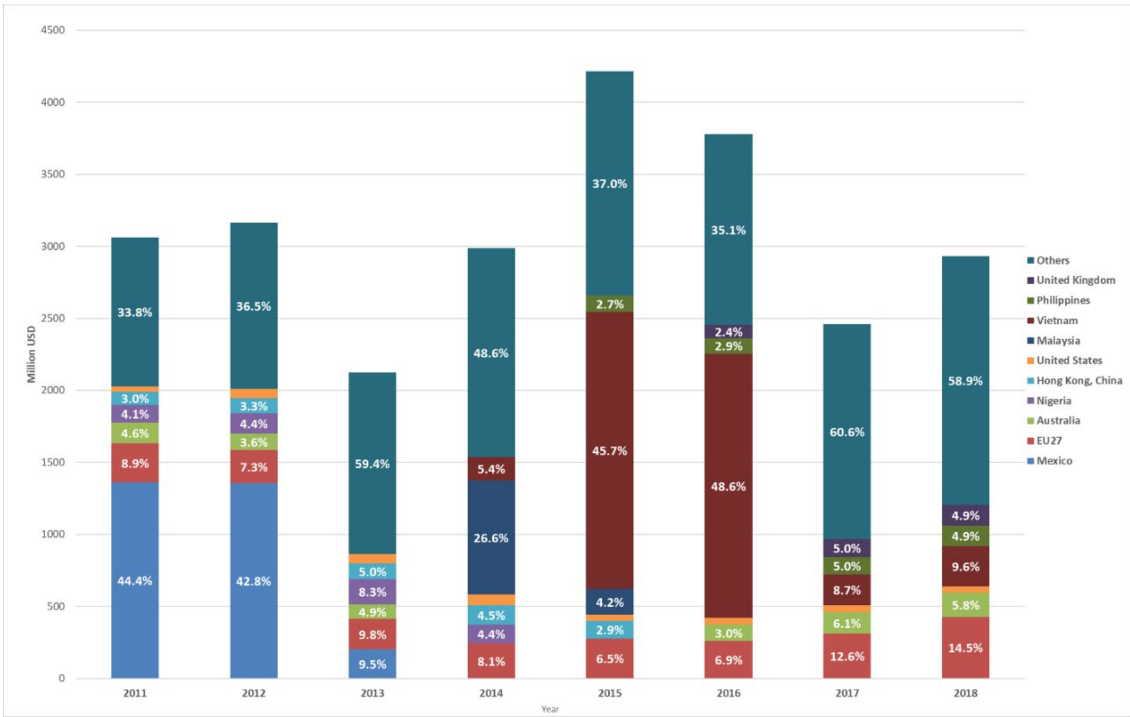
Source: UN Comtrade data, accessed via (WITS, 2020)

6.1.3 Chinese exports of aluminium bars, rods and profiles

EU was a major destination of China's exports of aluminium bars, rods, and profiles over the period 2011-2018, and the leading one in 2017 and 2018. Vietnam, Australia, the Philippines, and the United Kingdom became significant destinations in 2017.

The EU share in China's exports increased in the last years, from 7 per cent in 2016 to 13 per cent in 2017 and 15 per cent in 2018.

Figure 95. China's exports of aluminium bars, rods, and profiles (HS 7604) to its main destinations, EU and the US over the period 2011-2018 (HS 7604; EU as a trading bloc; mil. USD)



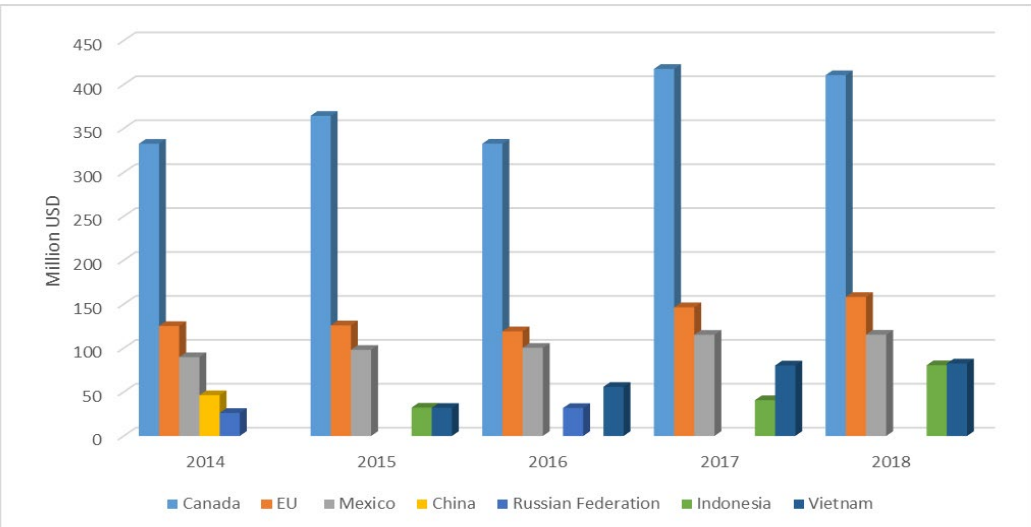
Source: UN Comtrade data, accessed via (WITS, 2020)

6.2 US

6.2.1 Imports

Over the period 2014-2018, Canada (annual average share of 40%) and EU (annual average share of 15%) were the leading two US' suppliers of the aluminium bars, rods, and profiles (HS 7604). Mexico was also an important supplier, especially of respective alloys (sub-category HS 760429).

Figure 96. US imports of aluminium bars, rods, and profiles (HS 7604): the leading five supplier countries over the period 2014-2018 (import value; billion USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

In 2018, Germany (25% of US imports from EU), Italy (23%) and Spain (10%) were the primary sources of the total US imports from the EU.
At the HS 6-digit level, the main EU sources of US imports were:
- Italy (28% of US imports from EU), Germany (23%) and Greece (16%) for *Bars, rods & profiles, of aluminium, not alloyed* (HS 760410);
- Germany (38% of US imports from EU), Italy (18%) and Spain (11%) for *Hollow profiles of aluminium* (HS 760421);
- Italy (25% of US imports from EU), Germany (18%) and Slovenia (11%) for *Bars, rods, and profiles of aluminium alloys* (HS 760429).

6.2.2 Capacity

The United States International Trade Commission conducted an industry-wide survey and published information on capacity, production, and capacity utilisation across various aluminium industry segments. An overview of the extrusion segment is presented in the following table, in which an assessment is carried out for the potential to increase production based on 2015 nameplate capacity at 85% capacity utilisation rate.

Table 19. Overview of production and capacity of the US aluminium extrusion industry

Product group	**Production (kt)**	**Capacity (kt)**	**Capacity utilisation rate (%)**	**Appraisal for the potential to increase production (kt) (1)**
Bars, Rods and Profiles	1,835	2,566	72%	350
Tubes and Pipes	434	1,049	41%	460
Extruded products – Total	2,269	3,615	63%	810

(1) Rounded values. The minimum rate of operation of production capacity is assumed to be 85%.

Source: Data from (USITC, 2017)

Table 19 reveals that for the industry's extrusion segment of the industry (bars, rods, profiles, tubes, and pipes), a significant increase in production could be achieved with the capacity already installed in 2015, primarily for tubes and pipes. Furthermore, since 2015 the industry has announced substantial investments for plant expansions, which total about USD 250 million, creating 610 new job positions ([117]); 60% of these investments were announced before tariffs' proclamation. The majority (57%) of announced/commissioned investments of new extrusion facilities aim at products directed to the automotive sector.

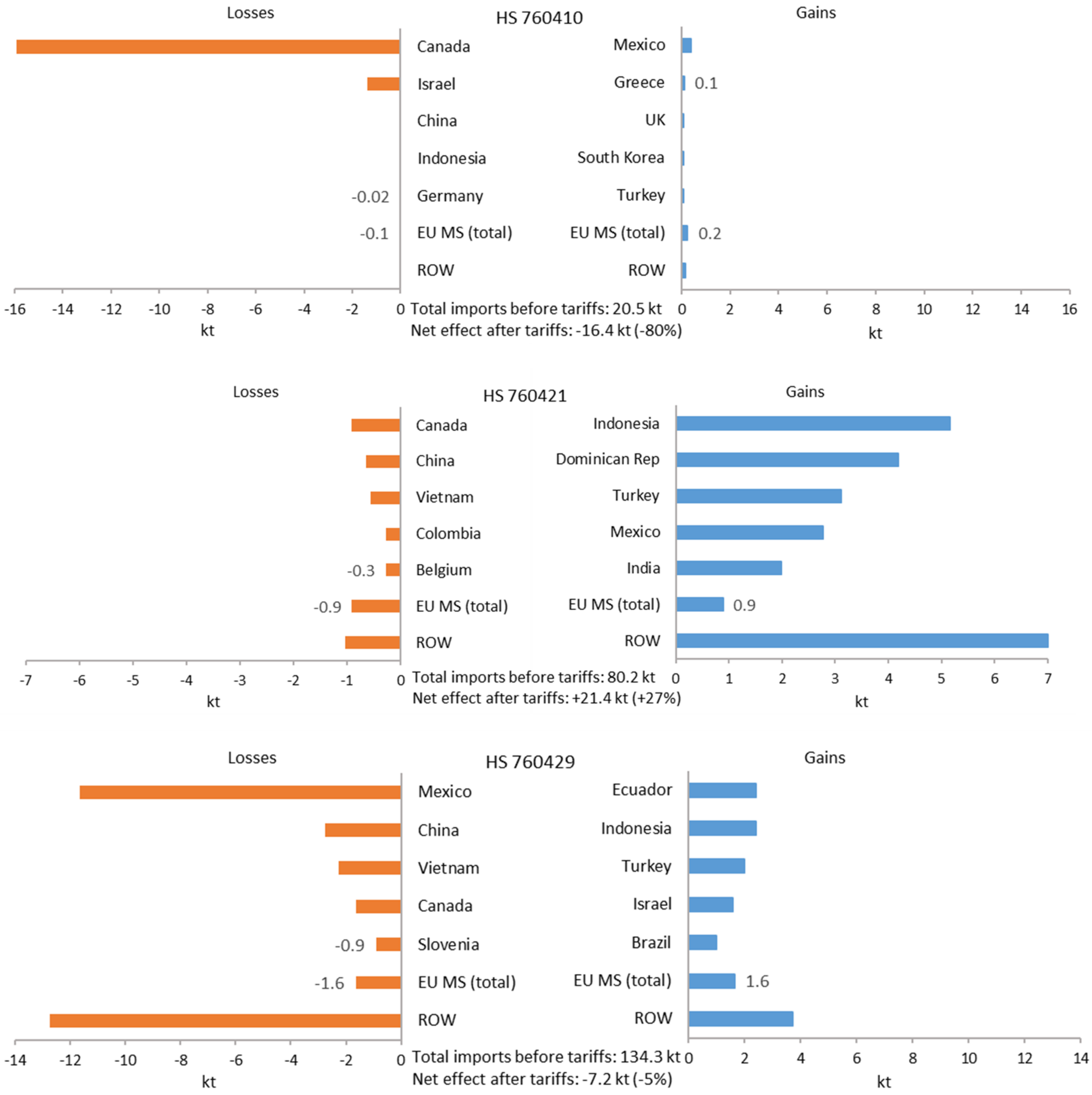
6.3 Impact of the tariffs in the US

6.3.1 US imports of aluminium bars, rods, and profiles

Tariffs had an overall marginal impact on US imports of extruded products of bars, rods, and profiles (HS 7604), as they dropped by 1%. Imports of non-alloy products (HS 760410) fell significantly by 80%, and almost all losses are associated with Canadian exports. Conversely, imports of alloy hollow profiles (HS 760421) increased by 27%, and this increase originated from various source countries (see Figure 97). Imports of bars, rods, and solid profiles of alloyed aluminium (HS 760429), representing the highest volume of US imports, registered a drop of 5%. Mexico had the greatest amount of losses in its exports to the US for HS 760429.

([117]) Hydro (Cressona), Kobelco (Bowling Green), Dajcor Aluminium (Coalfields Industrial Park), Service Center Metals (Prince George), Magnode (Trenton), Bonnell Aluminum (Niles), Superior Extrusion (Marquette), Mid-states Aluminum (Fond du Lac).

Figure 97. Effect of tariffs on annualised imports ([118]) of aluminium bars, rods, and profiles (HS 7604) by top-5 affected countries



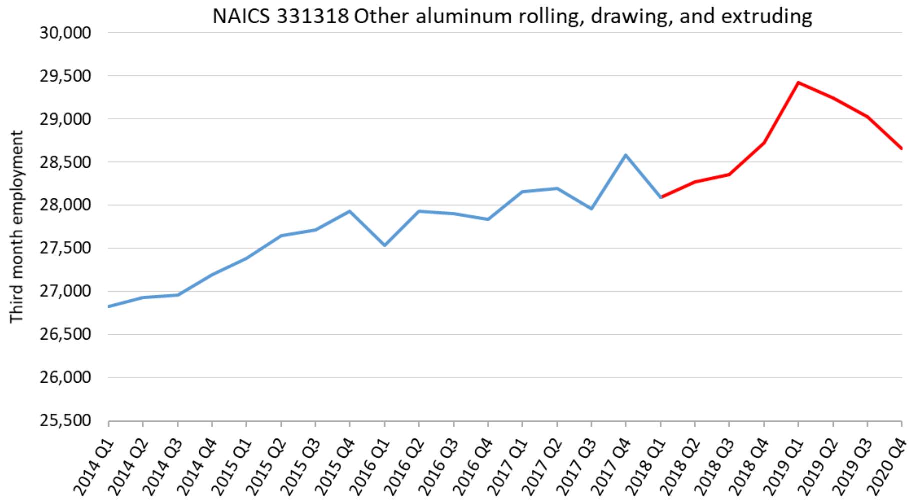
Source: Background data in (USITC Dataweb, 2020)

6.3.2 Production and employment

Data shown in Table 10 on industrial production reveal that the extrusion segment of the US industry increased its output by 3.1% in the post-tariff period (April 2018-December 2019) compared with the pre-tariff period (July 2016-March 2018). In the period 2017-2019, aluminium demand for extrusion products in North America rose by 2.6% (data in Figure 18). Data for the volume of US output are not published by open sources.

([118]) Data compare imports between April 2018 and November 2019 after tariffs' implementation, with imports between August 2016 and March 2018 before the imposition of tariffs. The period in both cases is 20 months.

Figure 98. Direct employment in the US aluminium industry producing bars, rods, profiles, aluminium wire, tubes, pipes, and tube & pipe fittings, in number of employees, Q1 2014 – Q4 2019



NB: In red the period after the implementation of tariffs

Source: Data from (US Department of Labor, 2020)

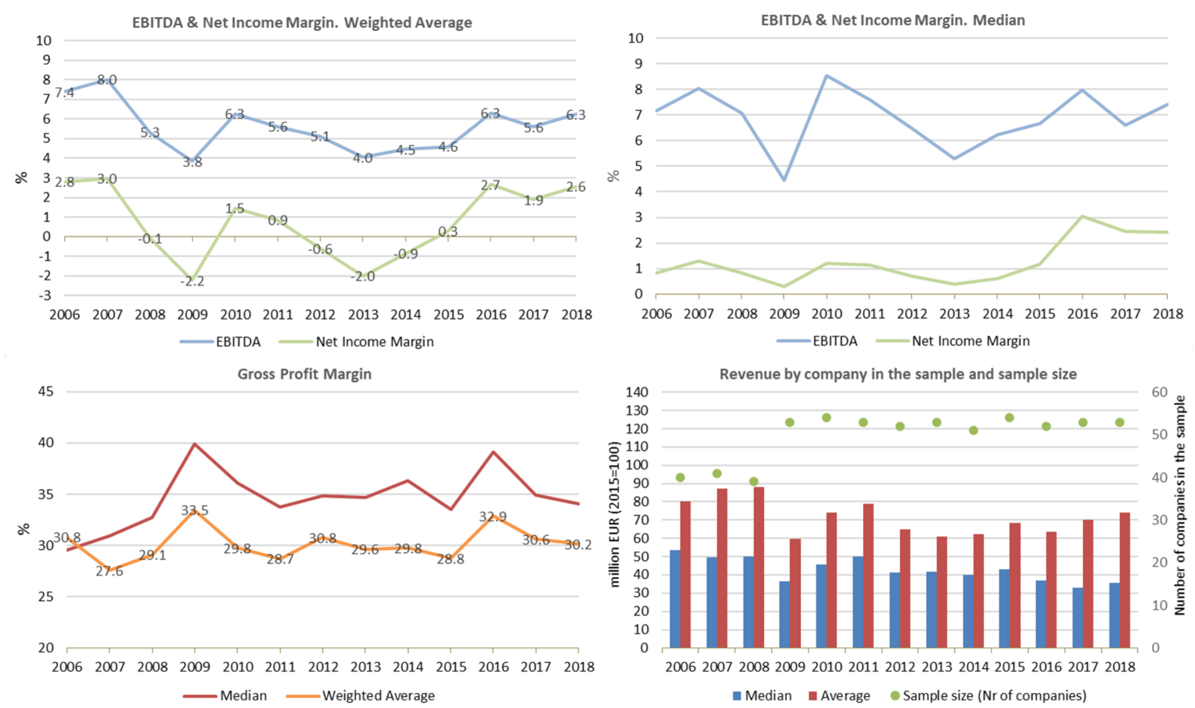
6.4 EU

6.4.1 The extrusion segment of the EU aluminium industry

About 270 extrusion plants are operating across the 27 EU Member States, according to data published by (European Aluminium, 2020b). Many of them are small or medium-size plants with an installed capacity between 10 and 20 kt (European Aluminium, 2018b). Some could meet the definition of small and medium-sized enterprises (SMEs) (European Commission, 2020b).

A sample consisting of 71 extrusion companies was used for mapping the profitability performance of the extrusion segment of the EU aluminium industry between 2006 and 2018 (see Annex 13 for the list of companies). The average annual turnover of the sample in the period of consideration amounts to EUR 3.4 billion. The yearly turnover (EUR 4 billion) of the companies in the sample represents about 31% of the total turnover for extrusion products in the EU in 2018 (see Table 2). Figure 99 below shows the trend of profitability indicators in the period 2006-2018.

Figure 99. Profitability indicators for EU companies producing extrusion products ([119]), 2006-2018



Source: Background data from (S&P Global, 2020d)

The most striking trend is that following the global financial crisis in 2008-2009 and a temporary improvement in 2010, the EBITDA and net income margin of EU extrusion firms remained weak in 2011-2015, with after-tax losses in the period 2012-2014. Some degree of recovery for profitability margins achieved by extrusion companies is observed in 2016. In 2017-2018 the results were largely stable despite lower gross margins than in 2016. The recovery in terms of net profit in 2016 to 2018 did not exceed 3% in any of these years. In general, the EBITDA and net profit margin remain lower than the levels seen before 2008. A recent Commission's investigation revealed that the profitability of four extrusion producers, being part of large groups of companies, fell in 2019 compared to 2016-2018 as their costs increased more than their prices. The Union industry was unable to raise prices at the same extent as costs because of the downward pressure caused by imports from China (both in terms of volumes and low prices)(European Commission, 2020b). The investigation also concluded a substantial fall in return on investment over 2016-2019, despite an increasing trend on investments, because of not sufficiently high profit levels.

Construction is the principal sales outlet for aluminium extrusions. The onset of the global recession of 2008 had a drastic impact on the construction sector. The volume index of production for construction monitored by Eurostat reveals that the construction activity in the EU declined for six consecutive years, from the peak in 2007 to the post-crisis trough of 2013 (Eurostat SBS, 2019). The overall decline in the volume index of construction was 24%. An index's slow recovery is demonstrated from 2013 to 2015, followed by a growth in period 2016-2018. Apart from the improvement in the construction sector, a shift towards high-value-added products by major extrusion companies such as extrusions for the automotive industry and general engineering applications (CRU, 2019a) may have contributed to the wider margins achieved by extrusion companies since 2016. However, the margins are too low and appear to be holding back investment in the industry's future (European Commission, 2020b).

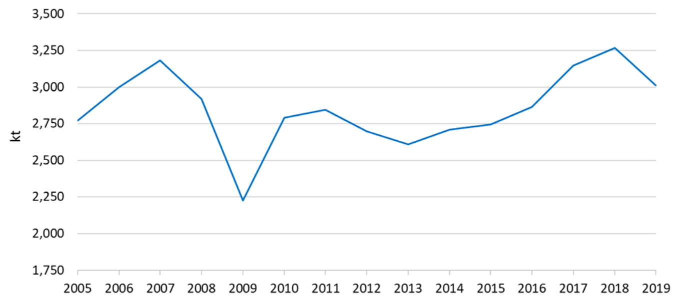
6.4.2 Supply and demand for aluminium bars, rods, and profiles in the EU

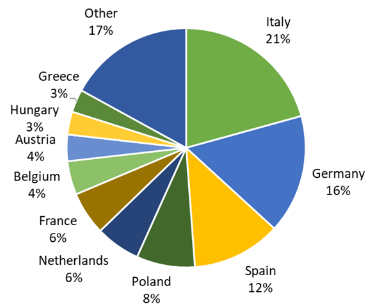
Domestic production (volume sold) of extruded products of bars, rods, and profiles grew strongly by a CAGR of 3.1% from 2009 to 2019. The growth was particularly robust after the most recent low point in 2013. In 2018, the output was almost 3,270 kt surpassing the highest level seen before the 2009 global recession (see Figure 100). Italy, Germany, and Spain are the top-3 producing EU countries in terms of EU production's geographical

([119]) As data were not available for all years in the period under consideration, only the revenues by company in the sample is presented.

distribution. Producers of bars, rods and profiles in the EU shipped 10% of their products to outside the EU in 2019, a share which is relatively stable in the last years.

Figure 100. Evolution of EU production ([120]) (volume sold) of bars, rods, and profiles from 2005 to 2019 (left), and top-10 EU producing countries ([121]) in 2018 (right)



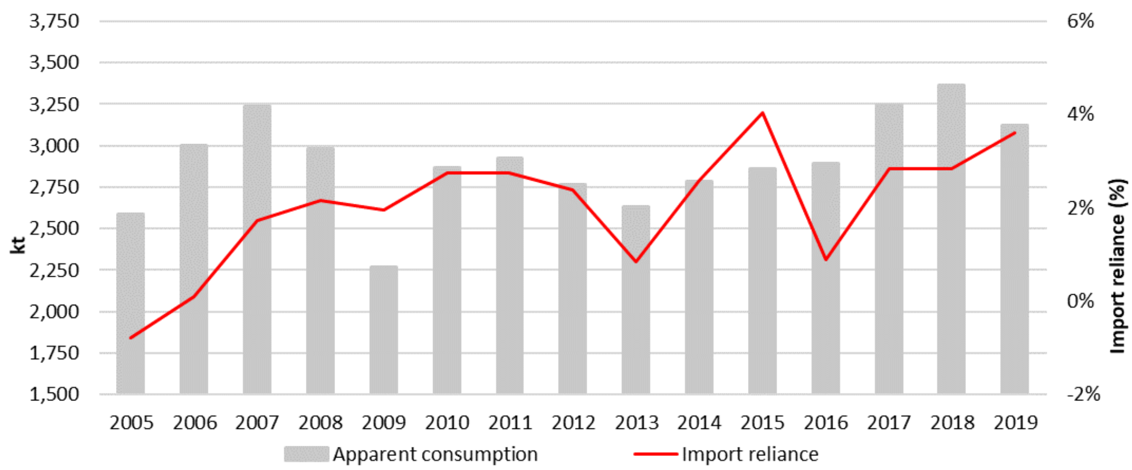


Source: Background data in (Eurostat Prodcom, 2020)

The apparent consumption of extruded products of bars, rods and profiles has increased significantly in 2017-2018. In 2018, it surged to a record level of 3,360 kt, 3.6% more than in 2017 and 16% more compared with that of 2016. In 2019, the apparent consumption of bars, rods and profiles in the EU decreased marginally by 0.7%. The data compiled by the European Aluminium Association show that demand in Europe for extruded products decreased by 2.1% in 2019 (European Aluminium, 2020a).

The EU is a net importer for extruded products of bars, rods, and profiles since 2007; nevertheless, with imports from 1% to 4% of apparent consumption (see Figure 101). Low import prices can affect EU industry significantly (European Commission, 2020b).

Figure 101. EU apparent consumption (left axis) and import reliance (right axis) for bars, rods, and profiles, 2005-2019



Source: Background data in (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

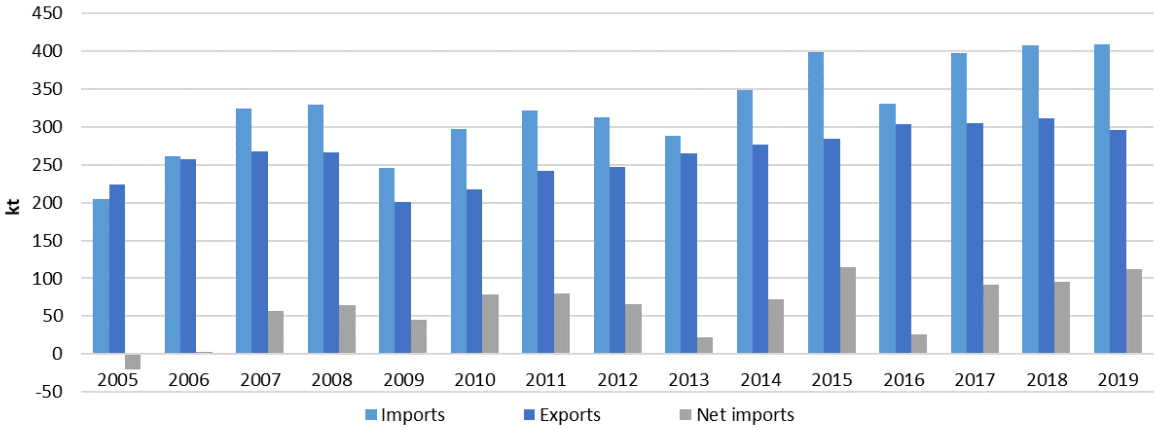
Imports of extruded products have increased at a profound CAGR of 5.2% in the last decade (2010-2019). In particular, in 2017-2018 imports had been on the rise regardless of bigger production volumes and reached a record level for three consecutive years (2017-2019) to about 400 kt. Exports also increased continuously from 2009 at a CAGR of 4.0%, posting a record high of more than 300 kt in 2018. Nevertheless, in 2019 EU exports

([120]) PRC codes 24422230 'Aluminium bars, rods and profiles (excluding rods and profiles prepared for use in structures)', and 24422250 'Aluminium alloy bars, rods, profiles and hollow profiles (excluding rods and profiles prepared for use in structures)'.

([121]) The production shares in 2018 do not show data for certain EU countries and product categories due to confidentiality. For PRC code 2442230 production figures for Bulgaria, Czechia, Ireland, Hungary, Netherlands, and Slovenia are withheld. For PRC code 24422250 the shares do not include the production from Czechia, Ireland, Slovenia, and Sweden. Production from these EU countries is included in the category "Other".

of extruded products demonstrated a weaker performance in relation to the period 2016-2018. Net imports of extruded products in 2019 were as high as in their latest higher point in 2015.

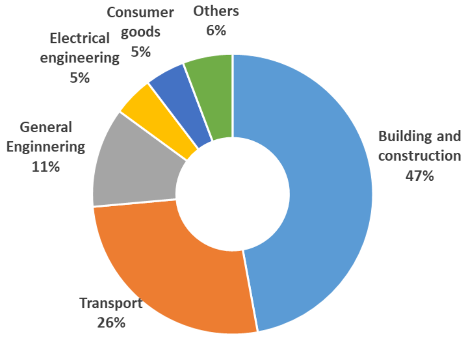
Figure 102. EU trade flows for bars, rods and profiles, 2005-2019



Source: Background data from (Eurostat Comext, 2020)

The building & construction and the transport sectors accounted for the majority (73%) of aluminium extrusions end-uses in 2019 (Figure 103). The structure of demand for the main sales outlets for aluminium extrusions in Europe is considerably different from the rest of the world, where the construction sector has a 60% share and the transport sector a share of 14% (data from (Hydro, 2020b)). For extrusions, the rise of demand in 2018 was principally driven by strong growth for transport (particularly automotive) and industrial applications, and a recovery in the building and construction sector in several European countries (European Aluminium, 2019a). The reduced demand in 2019 was mainly due to lower demand by the automotive industry and trade uncertainties affecting other sales outlets (e.g. industrial sector). In contrast, demand in the building & construction sector was stable in 2019 (European Aluminium, 2020a).

Figure 103. End-use sectors ([122]) for extruded products in Europe in 2019



Source: Background data from (European Aluminium, 2020a)

6.4.3 EU exports of aluminium bars, rods, and profiles

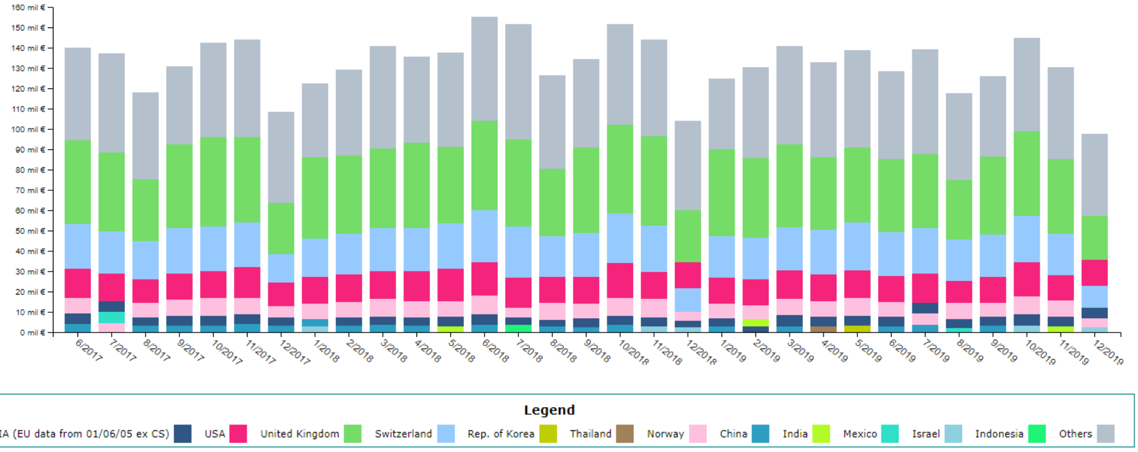
United Kingdom, Switzerland and the United States were the main destinations of more than half of the annual EU exports of aluminium bars, rods, and profiles in the last five years. The annual export shares of the three destinations remained constant over the period 2015-2019 - United Kingdom – 30 per cent, Switzerland – 15 per cent and the United States – 10 per cent.

As to the EU exports to the US, after a 7 per cent increase in 2018, they fell back to the 2017 level in 2019.

([122]) Stocklists reported by the source were distributed among the end-use sectors.

As compared with the same period of the previous year, the average EU average monthly exports to the US in the after-tariff period July 2019-December 2019 fell slightly, from EUR14 million to EUR 13.3 million.

Figure 104. Evolution of the EU monthly exports of aluminium bars, rods, and profiles (HS 7604) by main country supplier over the period June 2017-December 2019



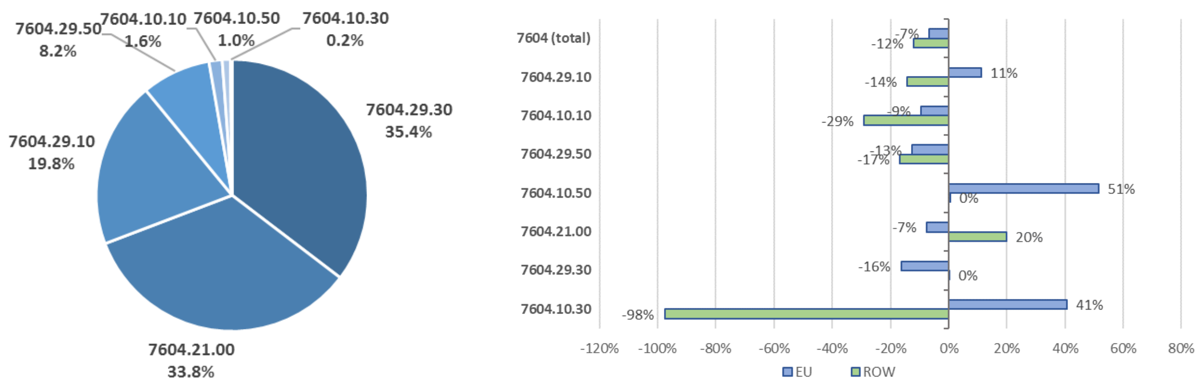
Source: Data from (Eurostat Comext, 2020)

6.5 Impact of the tariffs on the EU trade flows

6.5.1 EU exports of aluminium bars, rods, and profiles to the US

The overall EU exports to the US of bars, rods and profiles fell by 7% after the imposition of tariffs (Figure 105). Though the rate is lower than for exports from rest-of-the-world countries, and this results in a slightly higher share of the EU in the overall US imports of these products (Figure 106). Concerning the main product categories exported to the US before the imposition of tariffs, EU exports have risen for HTS 7604.29.10 '*Aluminium alloy, other than hollow profiles'* and declined for HTS 7604.29.30 *'Aluminium alloy, bars and rods, having a round cross section',* and HTS 7604.21.00 '*Aluminium alloy, hollow profiles'.*

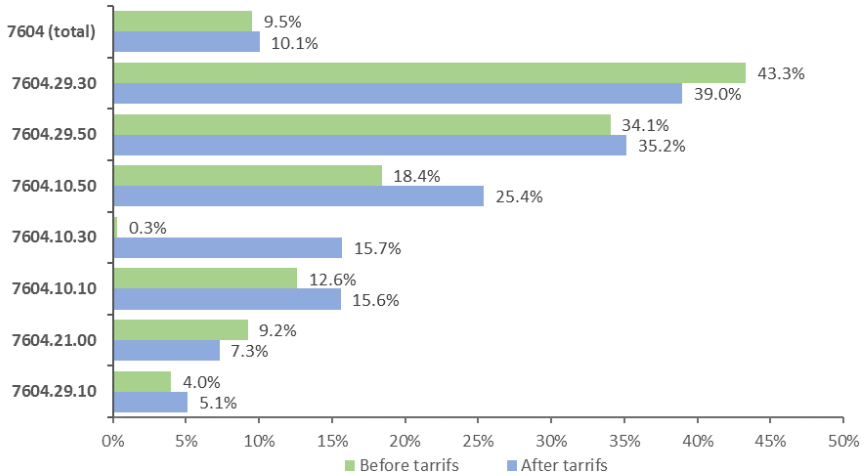
Figure 105. Breakdown of EU exports to the US per product before tariffs' enforcement (left), and relative change (%) in EU exports to the US after the tariffs (right), by HTS 8-digit codes of products of aluminium bars, rods, and profiles (HS 7604) ([123])



Source: Background data in (USITC, 2019b)

([123]) Data are analysed for the period June 2018 – December 2019 (19 months) after tariffs' enactment for EU imports and compared with the period November 2016 – May 2018 (19 months) preceding tariffs' implementation for the EU.

Figure 106. EU share in the US imports before and after the tariffs, by HTS 8-digit codes of products of aluminium bars, rods, and profiles (HS 7604)



Source: Background data in (USITC, 2019b)

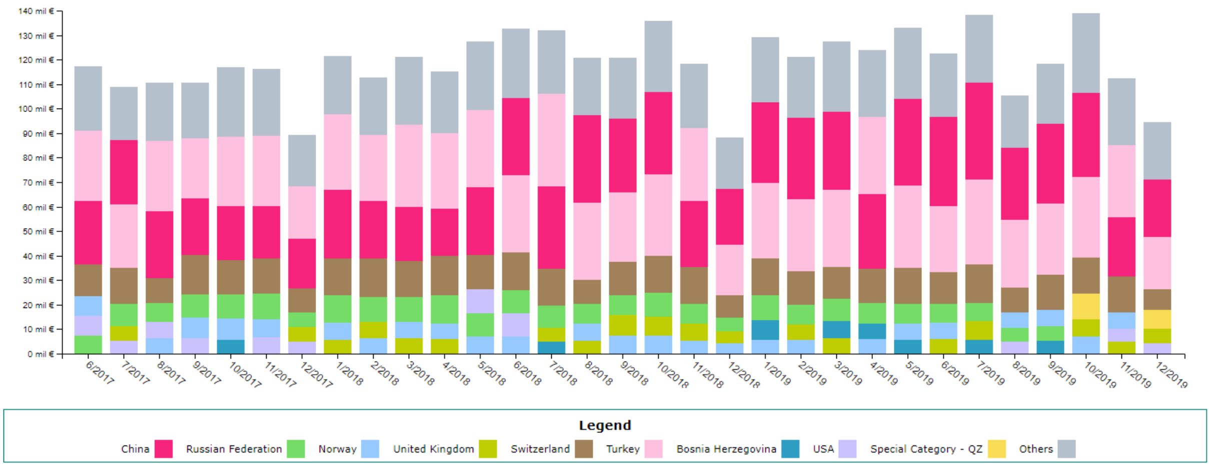
6.5.2 EU-directed trade reorientation for bars, rods and profiles

Turkey, China, and Switzerland were the main EU suppliers of the EU since 2017. While the share in the EU total imports of the other two countries remained almost the same, China's increase from 20% in 2017 to 26% in 2019 (year in which China became the leading EU supplier).

As compared their level in 2017, the EU imports from China rose by 21 per cent in 2018 and 39 per cent in 2019.

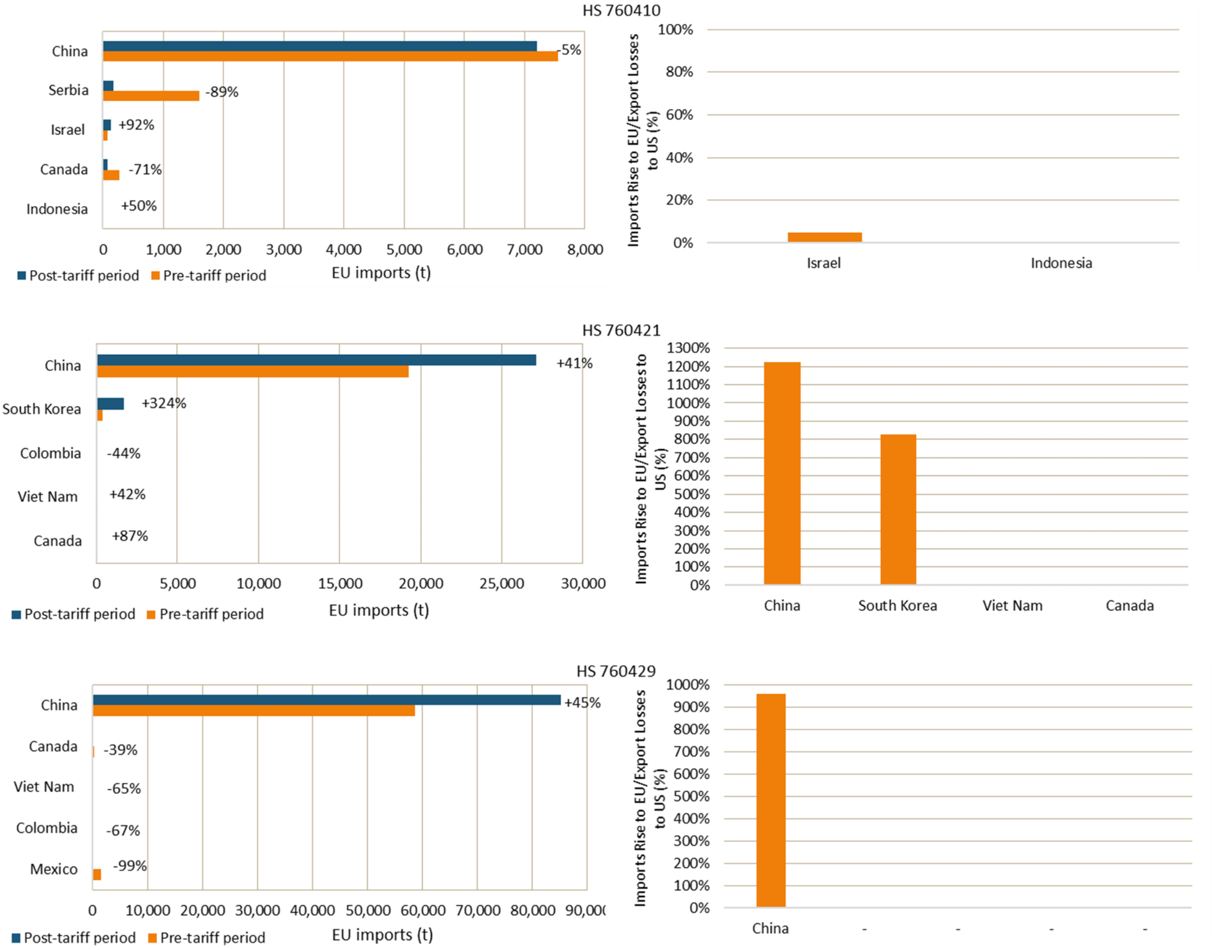
Figure 108 displays the change in EU imports from source countries with top losses in the US.

Figure 107. Evolution of the EU monthly imports of aluminium bars, rods, and profiles (HS 7604) by main country supplier plus China over the period June 2017-December 2019



Source: Data from (Eurostat Comext, 2020)

Figure 108. EU annualised imports ([124]) of bars, rods, and profiles aluminium (HS 7604) by HS6 product group (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

Imports from China have surged in the post-tariff period for aluminium alloy hollow profiles (HS 760421) and aluminium alloy bars, rods and solid profiles (HS 760429) by 41% and 45% respectively as compared to the pre-tariff period. The flood of EU imports from China for aluminium alloy extruded products surpassed the losses of Chinese exports to the US by 12 and 9 times for HS 760421 and 760429 respectively. An increased penetration in the EU is also observed for aluminium alloy hollow profiles (HS 760421) originating from South Korea.

([124]) Source countries that had the highest losses in the US market after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length, i.e. 20 months, before the tariffs took effect (August 2016 – March 2018).

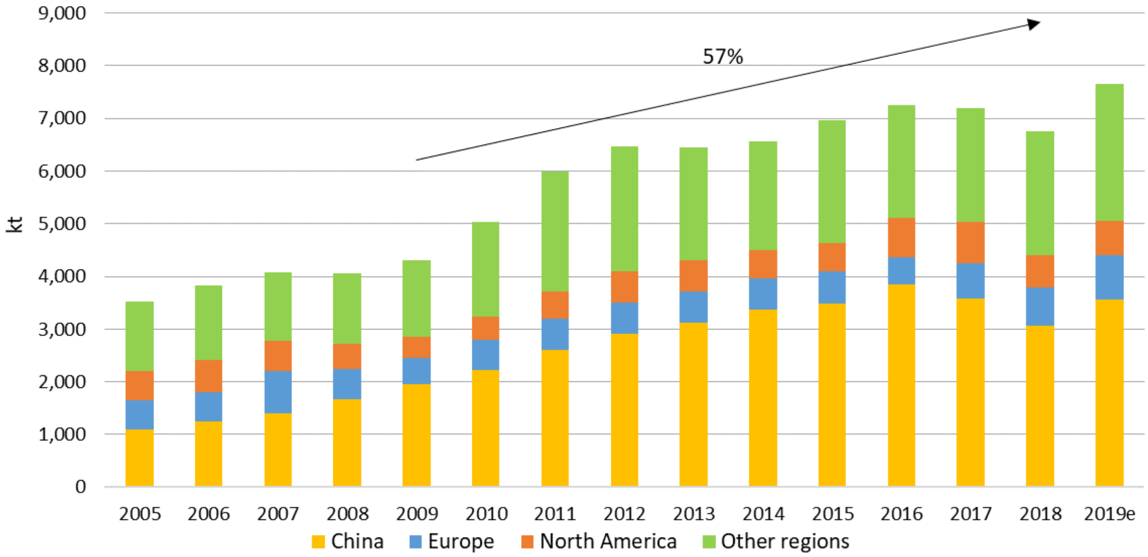
7 Aluminium wire

7.1 Overview

7.1.1 World production

The following figure shows the trend of global production for aluminium wire and other products ([125]) based on data derived by IAI's MFA tool 'Alucycle'. In the decade 2009-2018, the global production of aluminium wire and other products increased by 57% at a CAGR of 5.1%. Production growth in the above period among the various regions ranged from 44% (North America) to 64% (rest-of-the-world regions). In 2018, the world output declined by 6.6% to 6.8 Mt; China's and North America's output fell by 16.8% an 31.2% respectively, whereas the European production increased by 8.5%.

Figure 109. World production of aluminium wire and other by regions, 2005-2019 ([126])



Source: Background data in (IAI, 2020a)

7.1.2 Main suppliers and importers

The United States and EU were by far the main global importers of aluminium wire over the period 2014-2018, both accounting for more than 35 per cent of the annual global imports.

At HS 6-digit level:

— EU and the US were the leading importers of Wire of aluminium, not alloyed; maximum cross-sectional dimension exceeds 7mm (HS 760511);

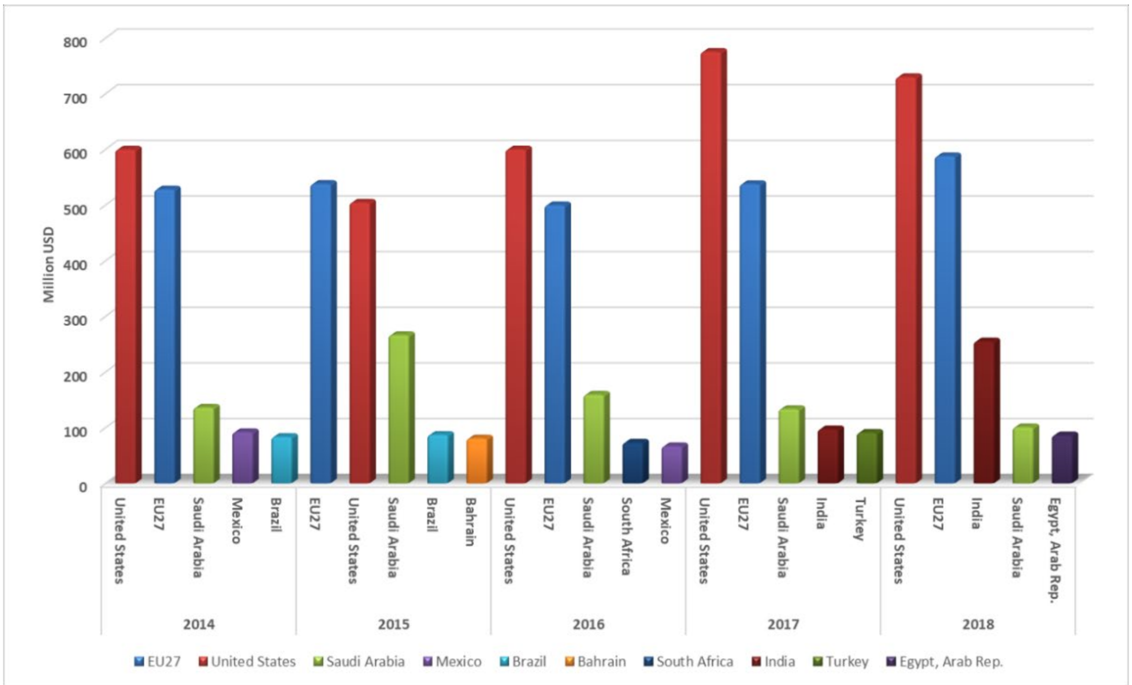
— China, Kuwait, and the US were among the main global importers of Wire of aluminium, not alloyed (excl. of 760511) (HS 760519) since 2016;

— The US was the leading global importer of Wire of aluminium alloys; maximum cross-sectional dimension exceeds 7mm (HS 760521) over the entire period (receiving almost a quarter of global share of imports in 2018);

— China and the US were the main global importer of Wire of aluminium alloys (excl. of 7605.21) (HS 760529) over the entire period; US became the leading global importer, overtaking China in 2018, its imports increasing by 22 per cent, as compared to the previous year.

([125]) Other products exclude rolled, extrusions, wire, and castings.
([126]) Data shown for 2019 are projected.

Figure 110. Main global importers of aluminium wire over the period 2014-2018 (HS 7605; total import value; million USD; EU as a trading bloc)

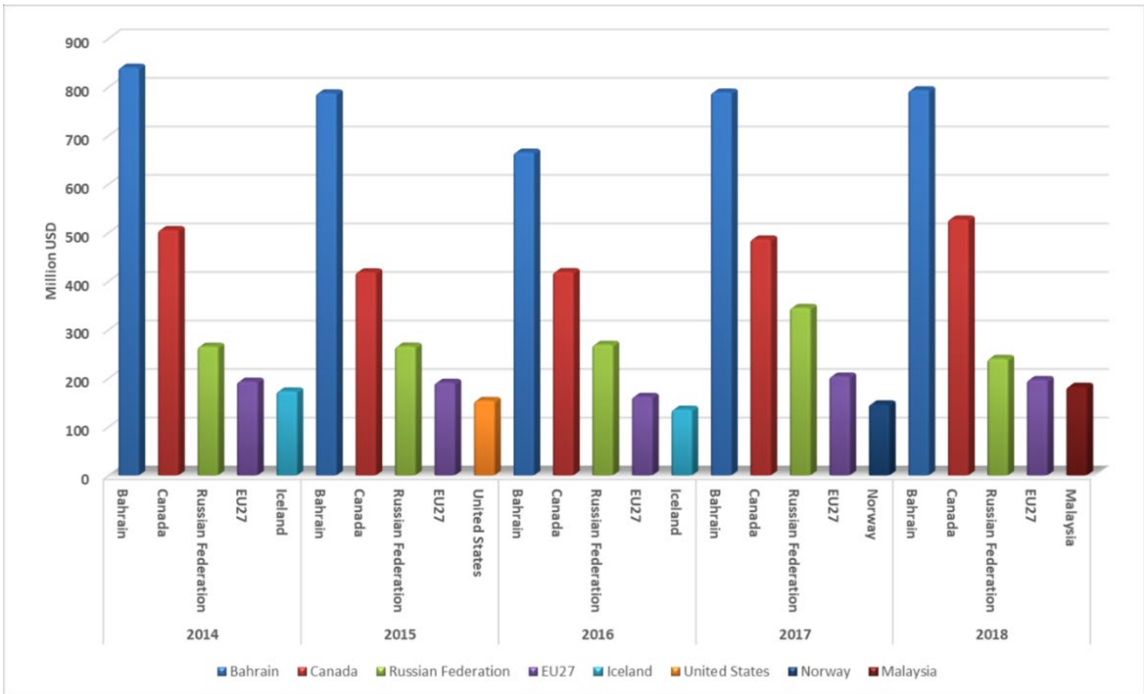


Source: UN Comtrade data, accessed via (WITS, 2020)

As the leading two global exporters, Bahrein and Canada supplied together more the 30 per cent of the annual global exports.

EU was also a significant exporter over the period 2014-2018, with an annual average of 5 per cent of the world's total exports.

Figure 111. Main five global exporters of aluminium wire over the period 2014-2018 (HS 7605; total import value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

As far as the compounding HS 6-digit-level products are concerned:

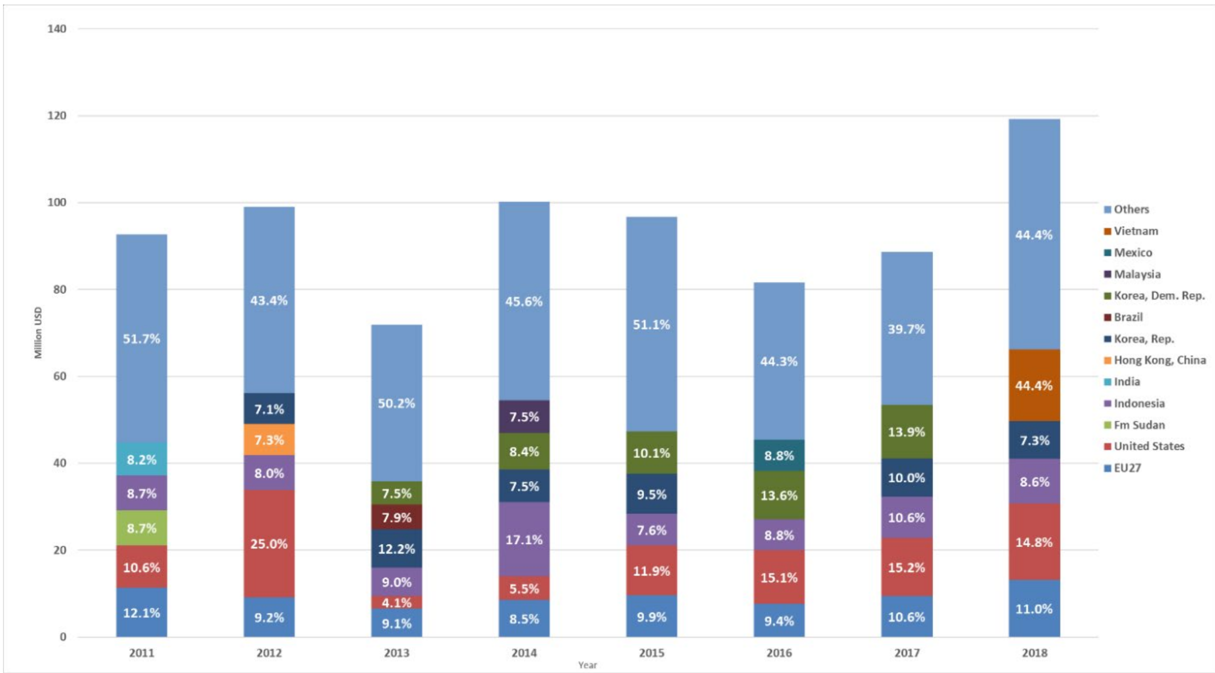
- Bahrein, Canada, and Russian Federation were the main exporters of *Wire of aluminium, not alloyed; maximum cross-sectional dimension exceeds 7mm* (HS 760511) over the whole period; they account for together 46 per cent of total world exports in 2018;
- Since 2015, China, EU and Saudi Arabia were the leading world exporters of *Wire of aluminium, not alloyed (excl. of 760511)* (HS 760519), supplying together more than a quarter of annual world exports;
- Canada and EU were leading exporters of *Wire of aluminium alloys; maximum cross-sectional dimension exceeds 7mm* (HS 760521) over the entire period; they accounted together for more than a quarter of world's exports in 2018;
- China, the US, and EU were the main exporters of *Wire of aluminium alloys (excl. of 7605.21)* (HS 760529) over the entire period; they accounted together for 45 per cent of world's exports in 2018.

7.1.3 Chinese exports of aluminium wire

United States, EU, Indonesia, and South Korea were among the main destinations of China's exports of aluminium wire over the period 2011-2018. In 2018, these four countries accounted for 42 per cent of China's total exports of this product group.

As compared with 2014, China's exports to the US more than tripled in 2018, and those to the EU rose significantly by more than half.

Figure 112. China's exports of aluminium wire (HS 7605) to its main destinations, EU and US over the period 2011-2018 (HS 7605; EU as a trading bloc; million USD)



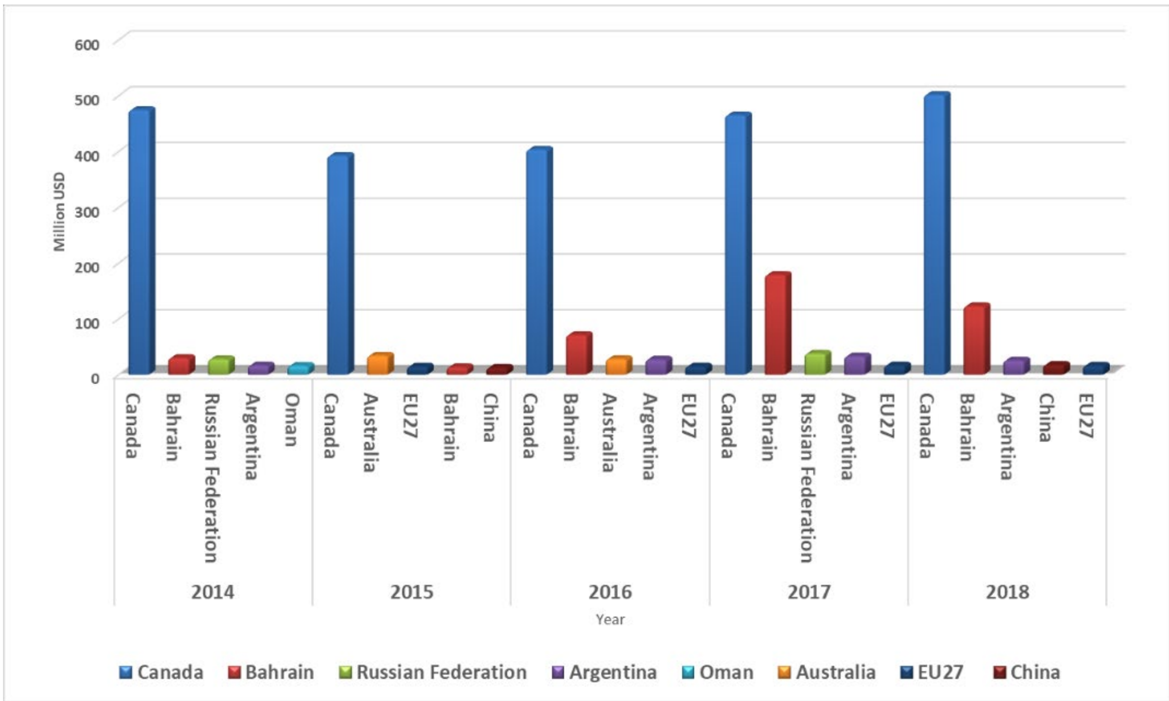
Source: UN Comtrade data, accessed via (WITS, 2020)

7.2 US

7.2.1 Imports

Canada was by far the leading supplier of aluminium wire to the US in the period 2014-2018, with an annual average share of 70 per cent of US total imports. EU has become one of the US' top five suppliers since 2015, but with a small annual share of 2-3 per cent.

Figure 113. US imports of aluminium wire (HS 7605): the leading five supplier countries over the period 2014-2018 (import value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

At HS 6-digit level:

- Canada was also the US' leading supplier of i) Wire of non-alloy aluminium, with a maximum cross-sectional dimension of > 7 mm (HS 760511), ii) Wire of non-alloy aluminium, with a maximum cross-sectional dimension of <= 7 mm (HS 760519) and iii) Wire of aluminium alloys, with a maximum cross-sectional dimension of > 7 mm (HS 760521). In 2018, it provided 68% of total US imports of the first product group, more than half of the second, and 83% of the third product group;
- Canada and China were the main sources US imports of Wire, of aluminium alloys, having a maximum cross-sectional dimension of <= 7 mm (HS 760529), providing together 85 per cent in 2018.

7.2.2 Capacity

The table below presents capacity, and production data for the US industry's wire segment collected by an industry-wide survey. Also, it shows an assessment of the potential to increase production based on the nameplate capacity in 2015, at 85% capacity utilisation rate.

Table 20. Overview of production and capacity of the US aluminium extrusion industry

Product group	Production (kt)	Capacity (kt)	Capacity utilisation rate (%)	Appraisal for the potential to increase production (kt) (1)
Wire	445	718	62%	160

(1) Rounded values. The minimum rate of operation of production capacity is assumed to be 85%.

Source: (USITC, 2017)

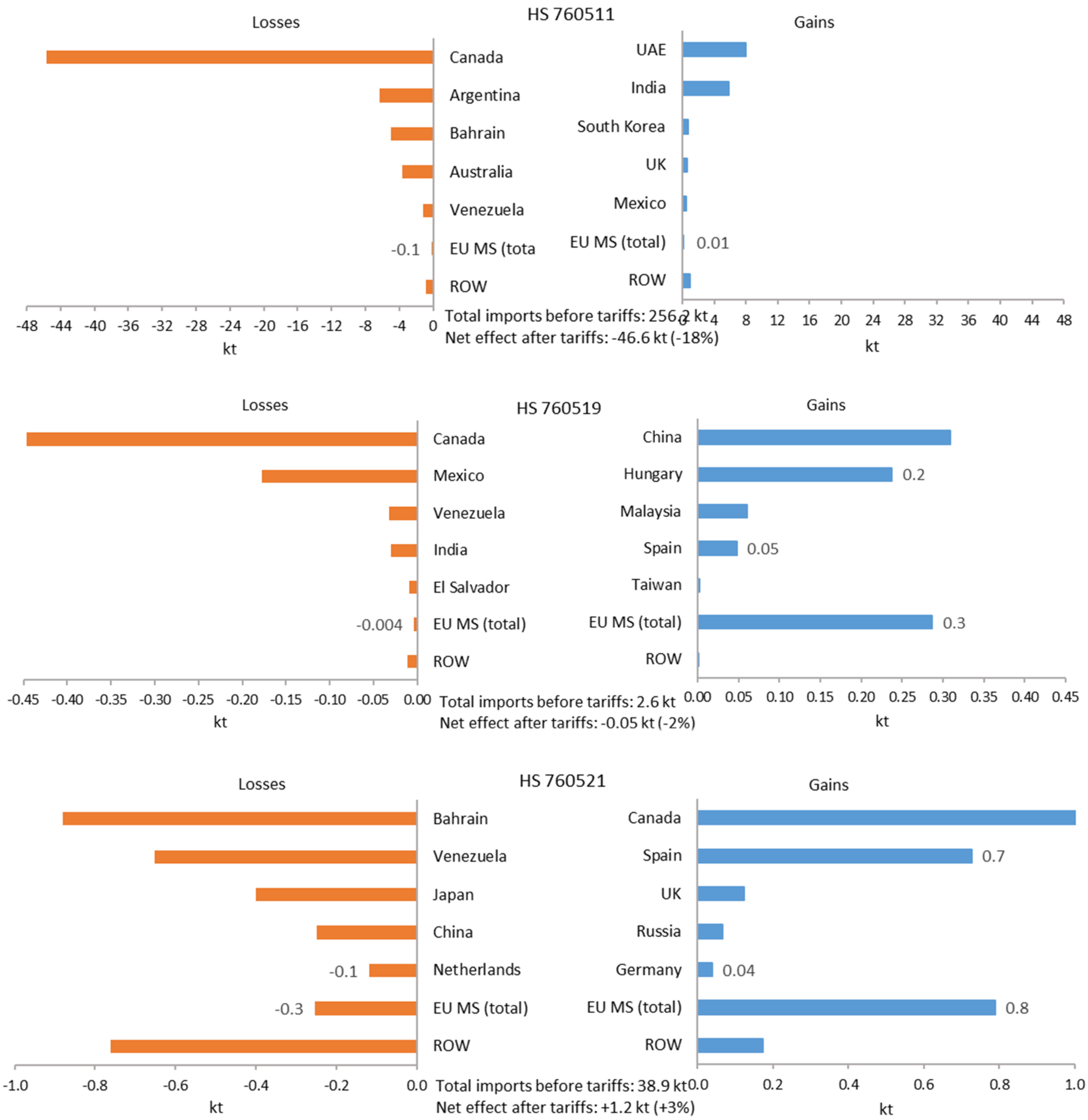
It is noted that the existing capacity in 2015 allows the output to rise and cover more than half of the annual US imports of about 300 kt. For aluminium wire products, no announcements for capacity expansions have been announced recently (Aluminum Association, 2020a).

7.3 Impact of the tariffs in the US

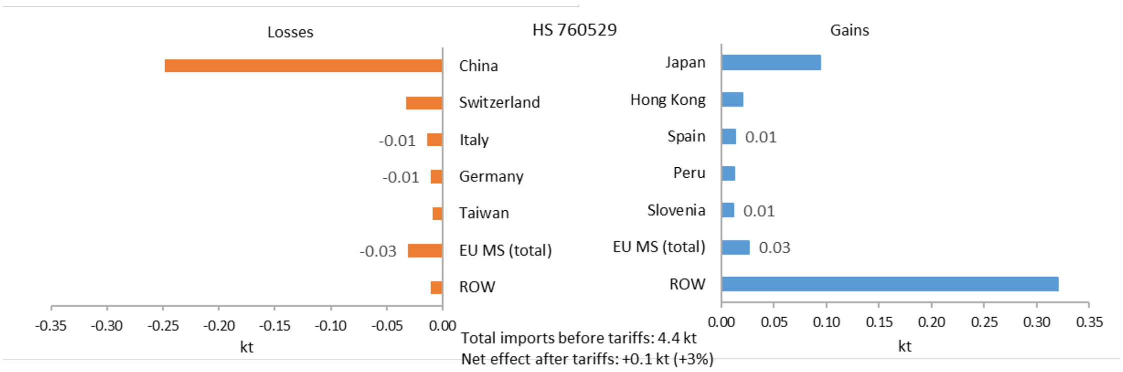
7.3.1 US imports of aluminium wire

Exports to the US of aluminium wire products (HS 7605) decreased after the implementation of tariffs by an overall rate of 15%. The major decrease in US imports is registered for non-alloyed wire of over 7 mm (HS 760511). This product accounted for 84% of aluminium wire imports in the US before tariffs' implementation. Canada's share of exports to the US had by far the most significant drop, driven by losses in exports of HS 760511 (see Figure 114).

Figure 114. Effect of tariffs on annualised imports ([127]) of aluminium wire products (HS 7605) by top-5 affected countries



([127]) Data are analysed for a period of 20 months after the tariffs (April 2018 – November 2019) in comparison to a period of 20 months before the imposition of tariffs (August 2016 – March 2018).



Source: Background data in (USITC Dataweb, 2020)

7.3.2 Production and employment

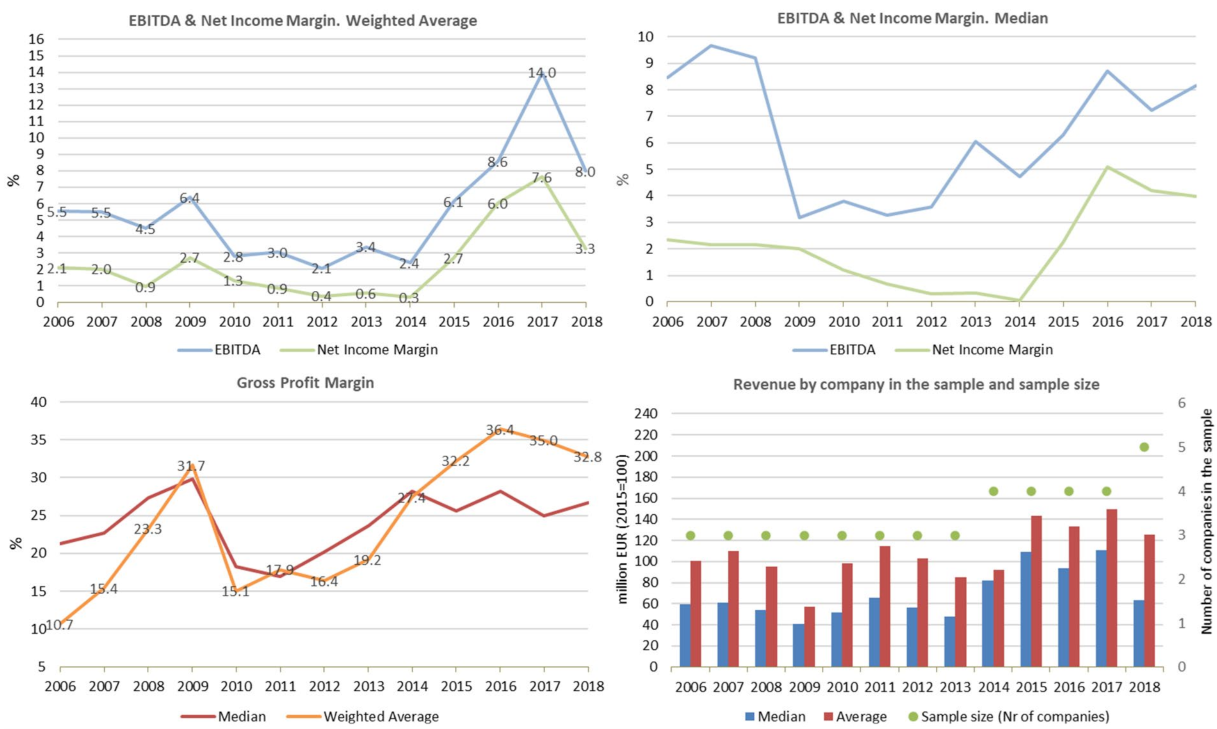
No information is available from open sources for aluminium wire production in the US. Figure 98 encompasses employment data for enterprises producing aluminium wire by drawing.

7.4 EU

7.4.1 The wire segment of the EU aluminium industry

The European industrial association does not provide separate information on the number and location of wire producing plants in the EU (European Aluminium, 2020b). A sample consisting of five companies producing aluminium wire was used for mapping the trend in corporate performance from 2006 to 2018 (see Annex 13 for the list of companies). The companies' total turnover in the sample amounted to about EUR 375 million as an annual average over the period 2006-2018.

Figure 115. Profitability indicators for EU companies producing aluminium wire, 2006-2018.



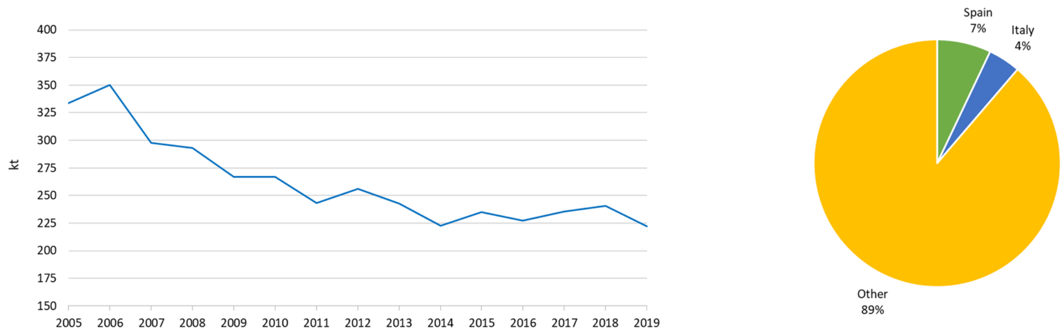
Source: Background data from (S&P Global, 2020d)

As Figure 115 demonstrates, the EBITDA and net income margin had an overall declining trend up to 2014 ranging at substantial weak levels. The period of distress in 2006-2014 coincides with the steadily declining sales volume of aluminium wire by EU producers (see Figure 116). Following the long period of low profitability margins, companies producing aluminium wire improved significantly their performance in 2015-2017. Nevertheless, in 2018 corporate profits deteriorated.

7.4.2 Supply and demand for aluminium wire in the EU

From 2006 to 2014, the EU production of aluminium wire declined substantially. In the previous decade (2010-2019) deliveries by EU wire producers fell by a CAGR of 1.8%. Production levels have been stabilised since 2014 (Figure 116). Shipments of aluminium wire by EU producers stood at 220 kt in 2019, a drop of about 130 kt (37%) compared to 2006. Producers of aluminium wire in the EU shipped 27% of their products outside the EU in 2019, the uppermost share since 2012 when it amounted to 35% of domestic production was exported.

Figure 116. Evolution of EU production ([128]) (volume sold) of aluminium wire from 2005 to 2019 (left), and EU producing countries ([129]) in 2019 (right)



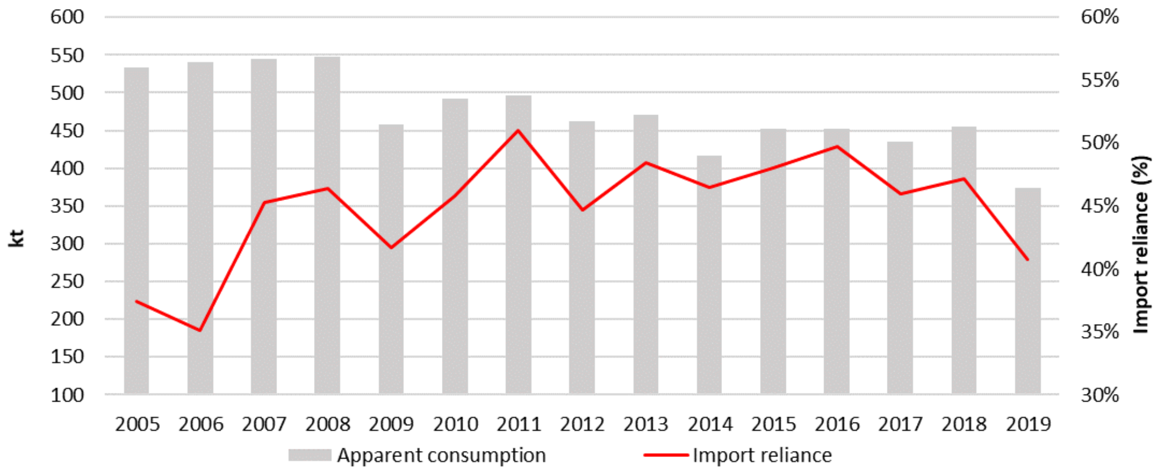
Source: Background data in (Eurostat Prodcom, 2020)

The apparent consumption of aluminium wire was relatively flat from 2015 to 2018 at approximately 450 kt per year, almost 100 kt less than the levels prior to the 2009 recession (see Figure 117). In 2019, apparent consumption in the EU was significantly weaker by about 20% compared to 2018. The EU's dependency on imports is significant; imports as a share of apparent consumption ranged between 45% and 50% in 2010-2018, showing an improvement in 2019, when import reliance was the lowest after 2006 at 41%.

([128]) PRC codes 24422330 'Non-alloy aluminium wire (excluding insulated electric wire and cable, twine and cordage reinforced with aluminium wire, stranded wire and cables)', and 24422350 'Aluminium alloy wire (excluding insulated electric wire and cable, twine and cordage reinforced with aluminium wire, stranded wire and cables)'.

([129]) The production shares in 2019 do not show data for certain EU countries and product categories due to confidentiality. For PRC code 24422330 production figures for Belgium, Bulgaria, Czechia, Germany, Spain, France, Hungary, Austria, Poland, Portugal, and Sweden are withheld. For PRC code 24422250 the shares do not include the production from Belgium, Germany, Spain, Ireland, Greece, France, Hungary, Netherlands, Portugal, Slovenia, and Slovakia. Production from these EU countries is included in the category "Other".

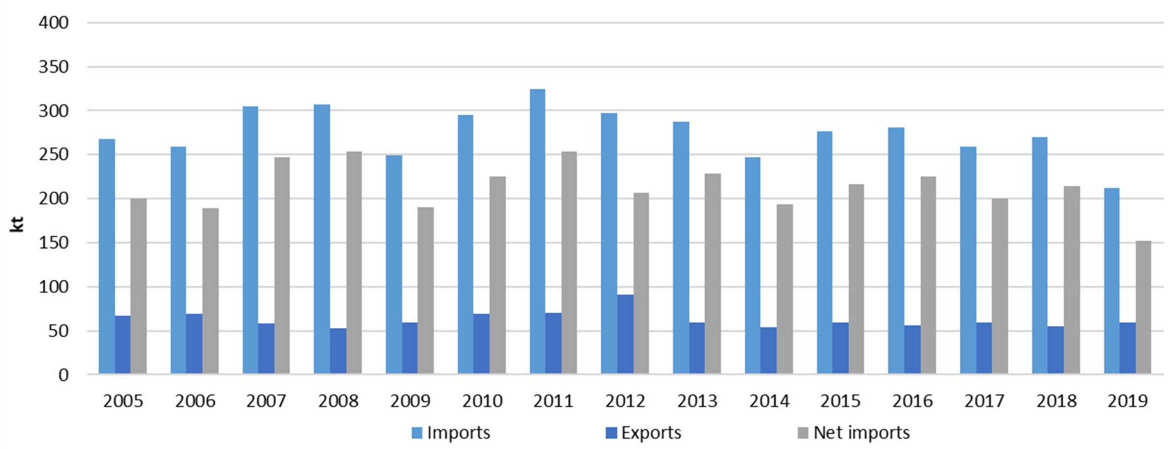
Figure 117. EU apparent consumption (left axis) and import reliance (right axis) for aluminium wire, 2005-2018



Source: Background data from (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

Trade flows for aluminium wire classified under HS 7605 reveal no persisting trend between 2005 and 2019. Imports reached a record high in 2011 of about 325 kt, and exports in 2012 at a level of approximately 90 kt. Since then, the annual EU imports and exports range at lower levels, i.e. 270-280 kt per year for imports, and 60 kt per year for exports between 2015-2018 (see Figure 118). In 2019, exports remained stable but imports fell greatly year-over-year by almost 60 kt or 21%.

Figure 118. EU trade flows for aluminium wire, 2005-2019

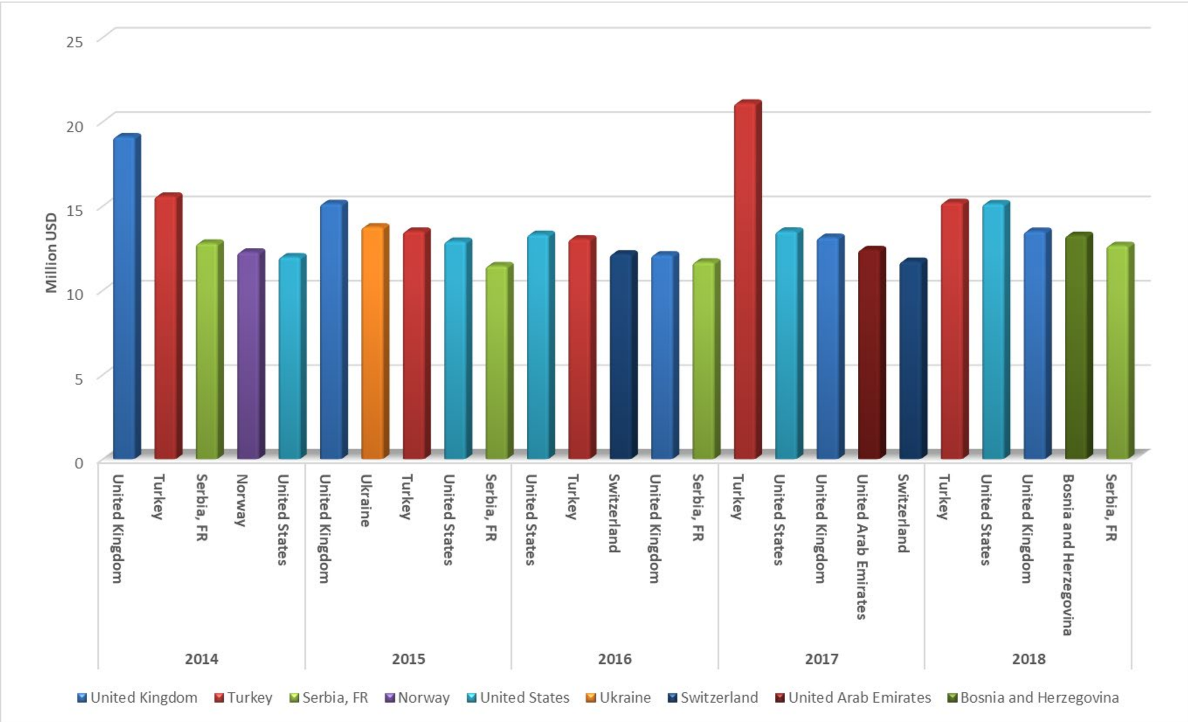


Source: Background data from (Eurostat Comext, 2020)

7.4.3 EU exports of aluminium wire

Turkey, United Kingdom and United States were constant destinations of extra-EU exports of aluminium wire, accounting together for an annual share of more than 20%.

Figure 119. EU exports of aluminium wire (HS 7605) to its main destinations over the period 2014-2018 (HS 7605; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

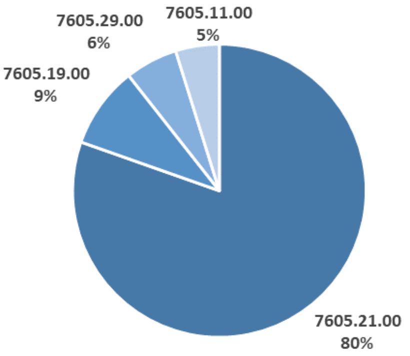
Four EU countries – Spain, Netherlands, Germany, and Romania were the main contributors to the extra-EU exports of aluminium wire. In 2018, these four countries accounted for three quarters of total extra-EU exports.

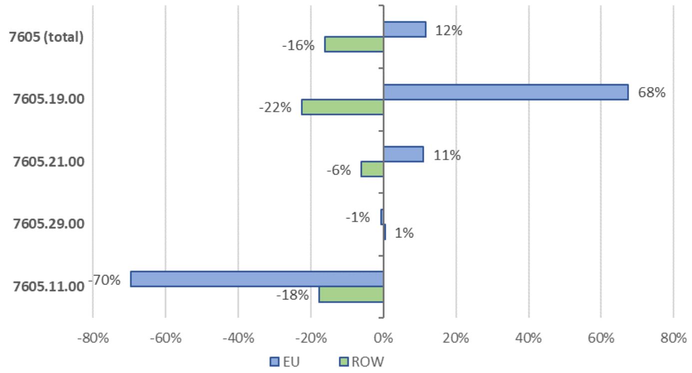
7.5 Impact of the tariffs on the EU

7.5.1 EU exports of aluminium wire to the US

Notwithstanding the implementation of extra-tariffs, EU exports to the US performed better than rest-of-the-world countries. They rose by 12%, as exports of the main product exported to the US increased, i.e. HTS 7605.21.00 '*Aluminum alloy, wire, with a maximum cross-sectional dimension over 7 mm*', driven by Spain's exports (see Figure 114). This subheading includes speciality wire products such as aluminium grain refiners. Exports of HTS 7605.19.00 '*Aluminum (other than alloy), wire, with a maximum cross-sectional dimension of 7 mm or less'* also registered a growth led by exports from Hungary (see Figure 114). A decline is observed for HTS 7605.11.00 *'Aluminum (other than alloy), wire, with a maximum cross-sectional dimension over 7 mm'* which, nevertheless, represented already a low portion of EU exports (Figure 120). Consequently, EU exporters increased or maintained their share in US imports for the majority of aluminium wire products, preserving the overall low EU share in the US for HS 7605 (Figure 121).

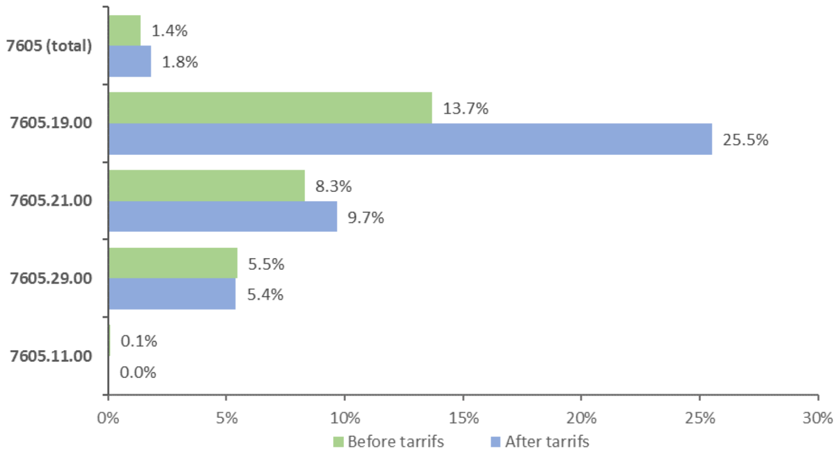
Figure 120. Breakdown of EU exports to the US per product before tariffs' imposition (left), and relative change (%) after tariffs' enforcement (right), by HTS 8-digit codes of products of aluminium wire (HS 7605) ([130])





Source: Background data in (USITC, 2019b)

Figure 121. EU share in the US imports before and after the tariffs, by HTS 8-digit codes of products of aluminium wire (HS 7605)



Source: Background data in (USITC, 2019b)

7.5.2 EU-directed trade reorientation for aluminium wire

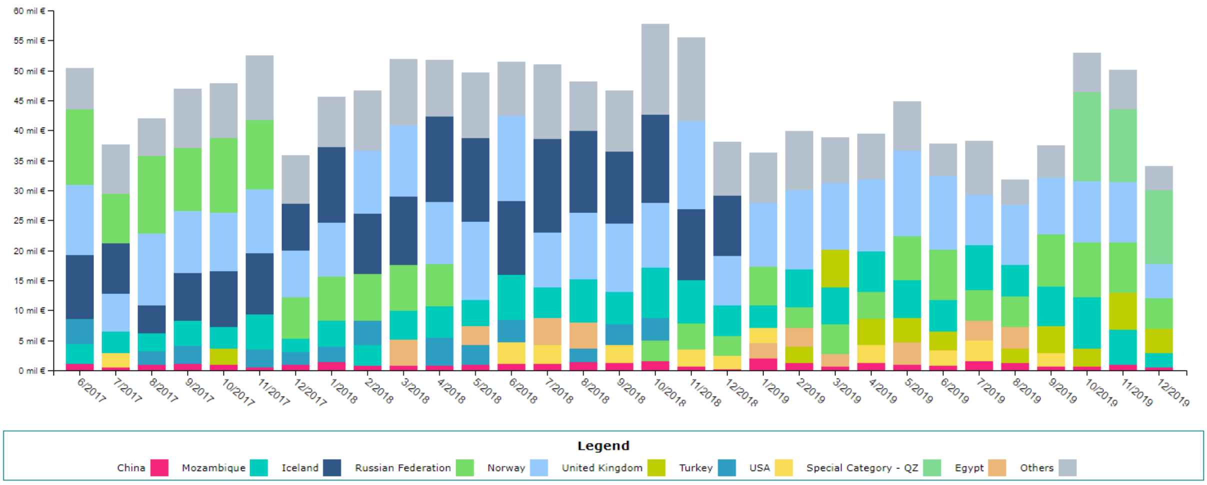
EU imports of aluminium wire fell by 12.5% in 2019 as compared to 2017. In 2019, Norway and Russian Federation were the main EU suppliers, contributing together with a share of more than 40% of the total EU imports of aluminium wire.

China annual share of EU imports in the last 3 years was small, between 2% and 3%.

The EU average monthly share of imports increased by 13% in July-December 2018 compared to the same period the previous year.

([130]) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) before tariffs were enacted for the EU.

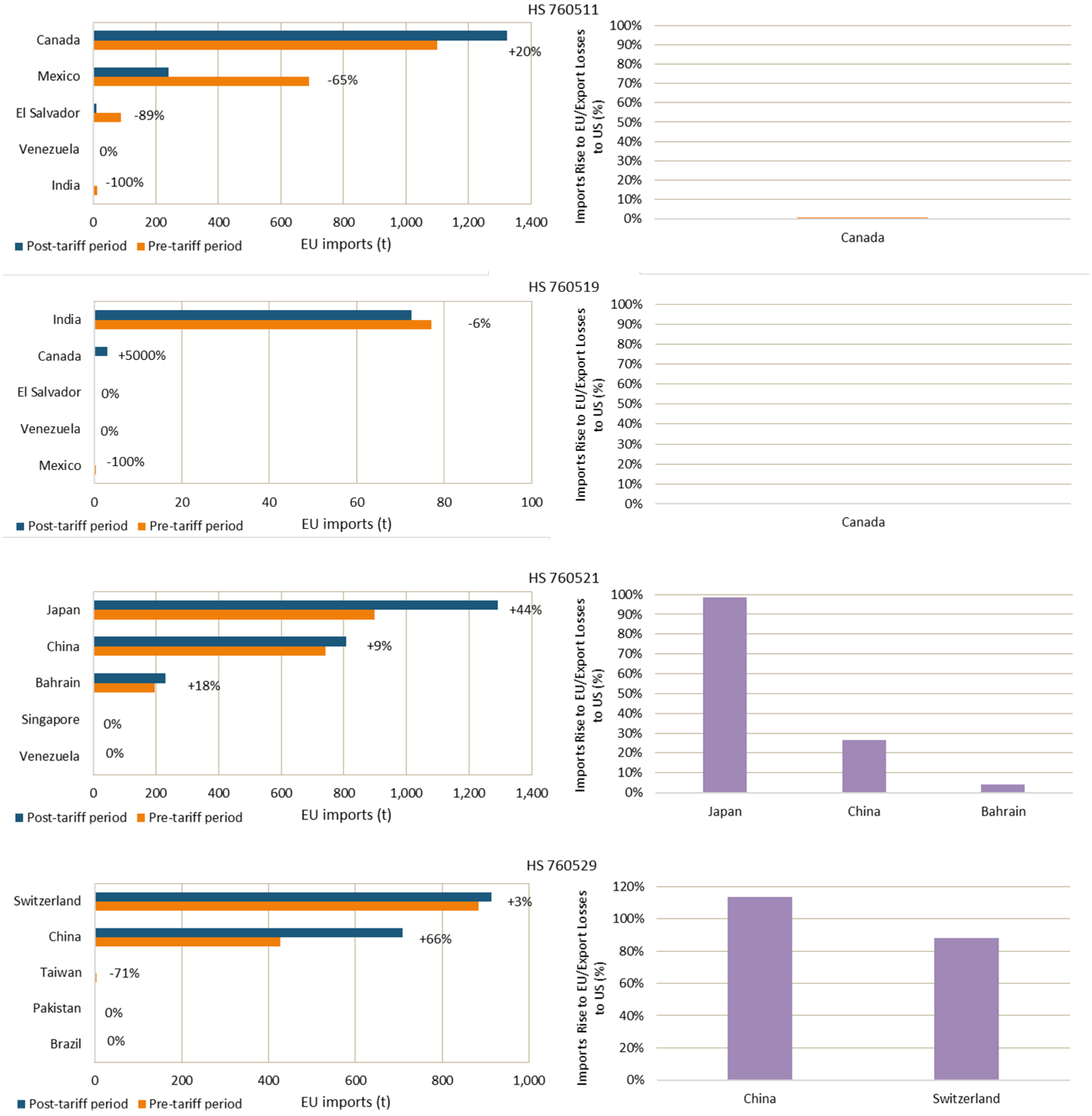
Figure 122. Evolution of the EU monthly imports of aluminium wire (HS 7605) by main country supplier over the period June 2017-December 2019



Source: Data from (Eurostat Comext, 2020)

As regards trade diversion from countries that lost the most in the US after the imposition of tariffs, the following figure demonstrates that a surge in imports occurred from Japan for aluminium alloy wire with maximum cross-sectional dimension of over 7 mm (HS 760521), and from China and Switzerland for aluminium alloy wire with maximum cross-sectional dimension of 7 mm or less (HS 760529). These countries recorded losses in their exports destined to US approximately equal to the rise in their exports to the EU in the post-tariff period. The rise in imports from Canada for HS 760511 was minimal in comparison to Canada's losses in the US.

Figure 123. EU annualised imports ([131]) of aluminium wire (HS 7605) by HS6 product group (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

([131]) Source countries that had the highest losses in the US after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length, i.e. 20 months, before the tariffs took effect (August 2016 – March 2018).

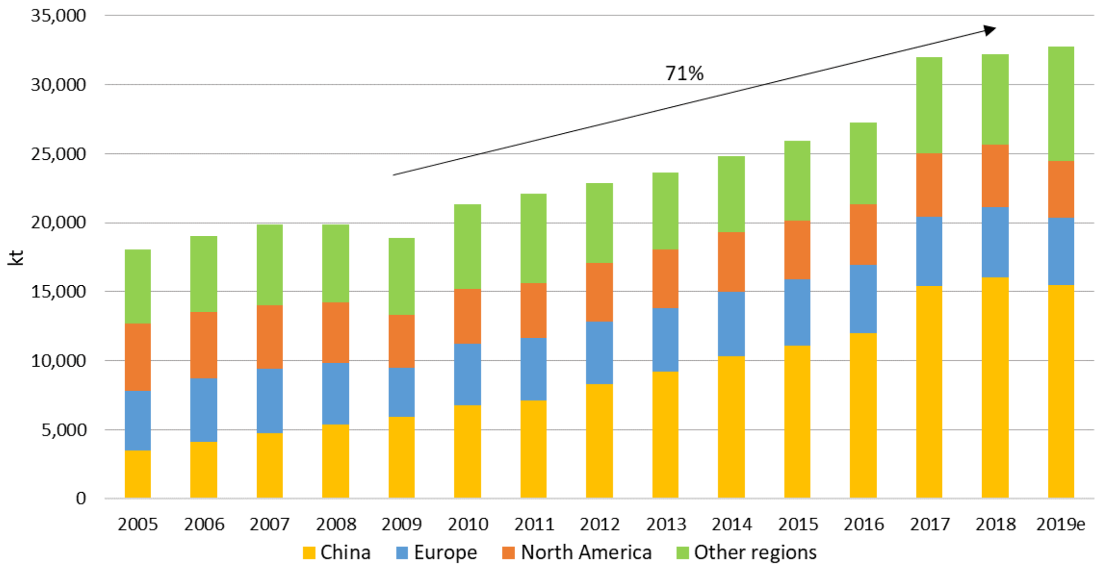
8 Aluminium plates, sheets, and strip

8.1 Overview

8.1.1 World production

Data published by the International Aluminium Institute show that the world production of rolled aluminium products increased by 71% in the decade following the financial crisis of 2009 at a CAGR of 6.1%. In this period, Chinese production of rolled productions rose at an overwhelming percentage of 171%. European mills increased their overall output by 42% and North American by 30%, while in rest-of-the-world countries the output rose by 17%. The global output stood at 32.2 Mt in 2018, up 0.6% over 2017. In 2018, growth of Chinese production was much higher than the global average at 4%. In Europe, rolling mills production increased by 0.9%, whereas in North America and rest-of-the-world countries declined by 0.5% and 7.1% correspondingly.

Figure 124. World production of rolled products by regions, 2005-2019 ([132])



Source: Background data in (IAI, 2020a)

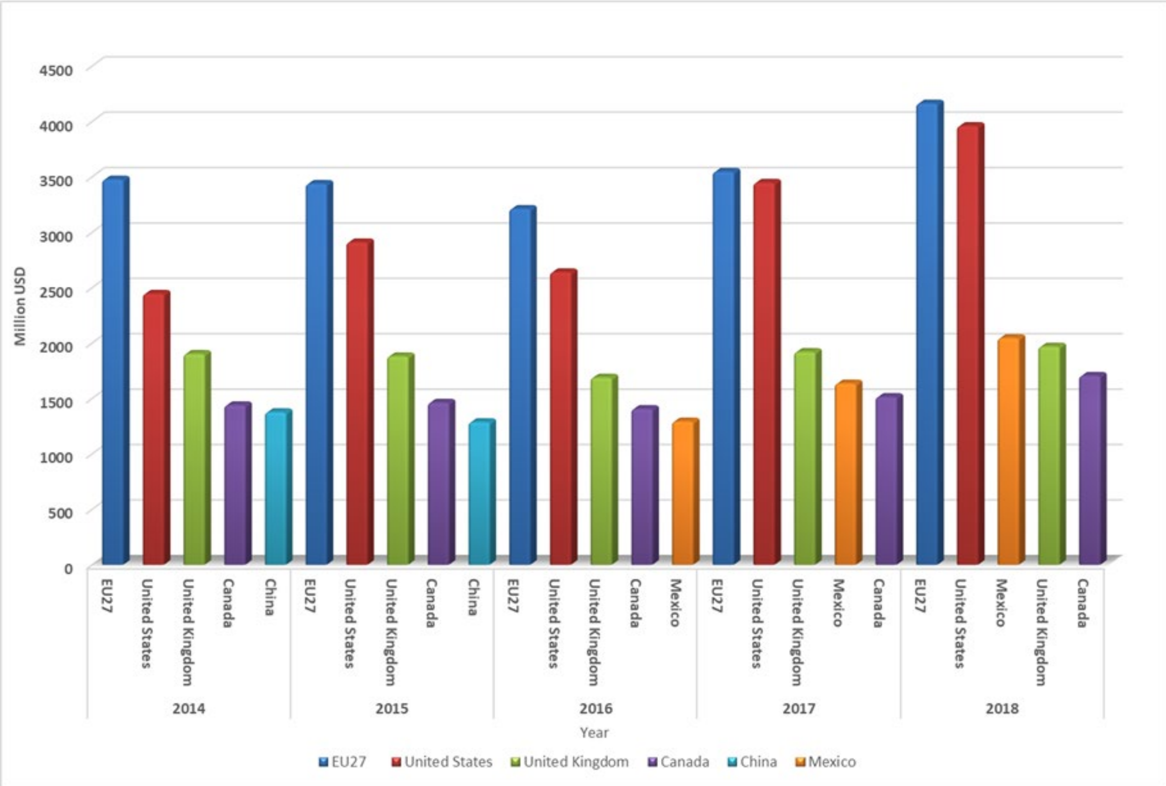
8.1.2 Main suppliers and importers

EU was the largest global world's importer of aluminium plates, sheets, and strip over the period 2014-2018, with a share of around 12% share of annual global imports.

Following the EU is the US, with an average annual share of 10%. As compared with 2014, the EU's and US' imports rose highly in 2018, by 20% and 62% respectively.

([132]) Data shown for 2019 are projected.

Figure 125. Main five global importers of aluminium plates, sheets, and strip over the period 2014-2018 (HS 7606; total import value; million USD; EU as a trading bloc)



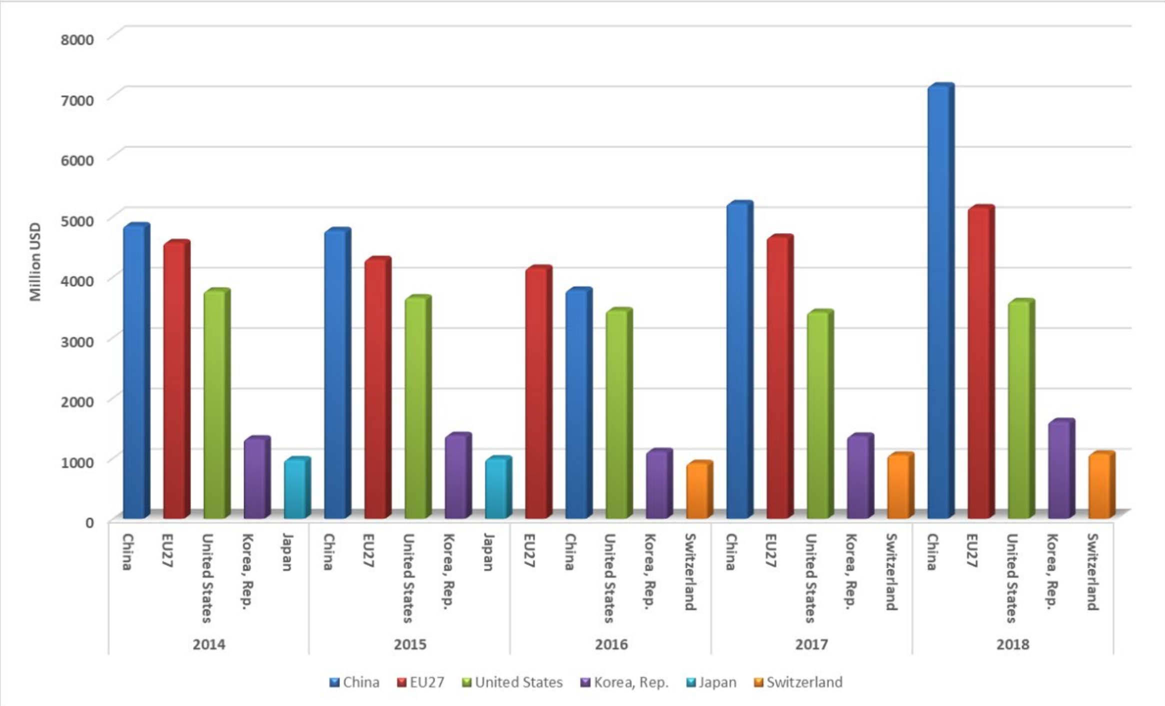
Source: UN Comtrade data, accessed via (WITS, 2020)

At HS six-digit level:

- -The EU was the largest world importer of not-alloyed rectangular plates, sheets, and strip (HS 760611) over the entire period; since 2016, the US is no longer among the top five world importers;
- The EU and the US were the biggest world importers of alloyed rectangular plates, sheets, and strip (HS 760612) over the entire period;
- In 2018, the EU became the largest importer of not-alloyed other-than-rectangular plates, sheets, and strip (HS 760691);
- The US imports of alloyed other-than-rectangular plates, sheets, and strip (HS 760692) increased massively, by 94% in 2017 and almost 80% in 2018, as compared to their 2014 level.

China, the EU, and the US were the largest global world's exporter of aluminium plates, sheets, and strip over the period 2014-2018, accounting for together around 45% of total world exports in 2018.

Figure 126. Main five global exporters of aluminium plates, sheets, and strip over the period 2014-2018 (HS 7606; total export value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

At HS six-digit level:

- China was by far the largest world importer of not-alloyed rectangular plates, sheets, and strip (HS 760611) over the entire period; in 2018, its exports more than doubled, as compared the previous year, accounting for 42% of the world's exports of this product group, with a rise of US is no longer among the top five world importers;
- The EU, China, the US, South Korea, and Switzerland were the top five world's exporters of alloyed rectangular plates, sheets, and strip (HS 760612) over the entire period; China overtook the EU as the world's leading exporter in 2018;
- China, the EU, and the US were the most significant world's exporters of not-alloyed other-than-rectangular plates, sheets, and strip (HS 760691) over the period 2014-2018; the US' exports increased by 92% in 2018 as compared to 2014, overtaking China as the world's leading exporter in 2018;
- EU exports of alloyed other-than-rectangular plates, sheets, and strip (HS 760692) constantly increased over the entire period, by 46% in 2018 as compared with 2014.

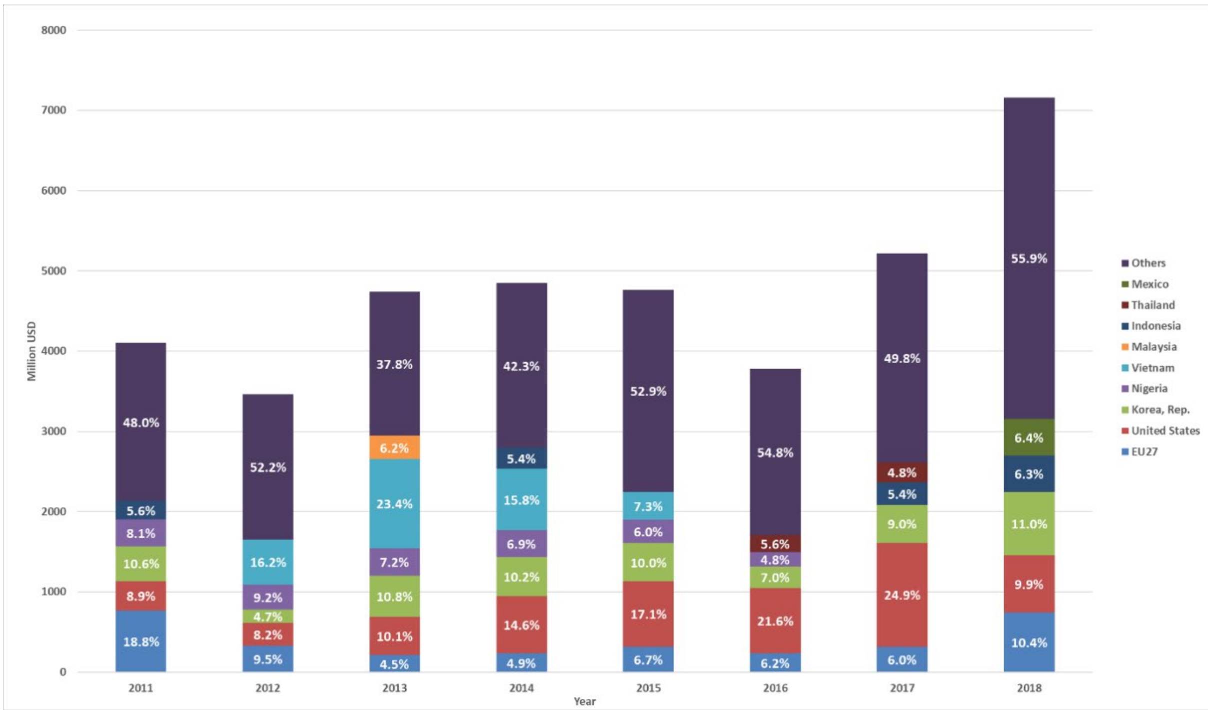
8.1.3 Chinese exports of aluminium plates, sheets, and strip

China exports of aluminium plates, sheets and strip rose significantly over the period 2011-2018, by 75 per cent compared to 2011. The EU, the United States and South Korea were among China's main export destinations over 2011-2018.

EU share in China's total annual exports increased from 4.5% in 2013 to 10.4% in 2018.

US share in China's exports increased from 9% in 2011 to 25% in 2017 and then fell back to 10% in 2018.

Figure 127. China's exports of aluminium plates, sheets, and strip (HS 7606) to its main destinations, EU and US over the period 2011-2018 (HS 7606; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

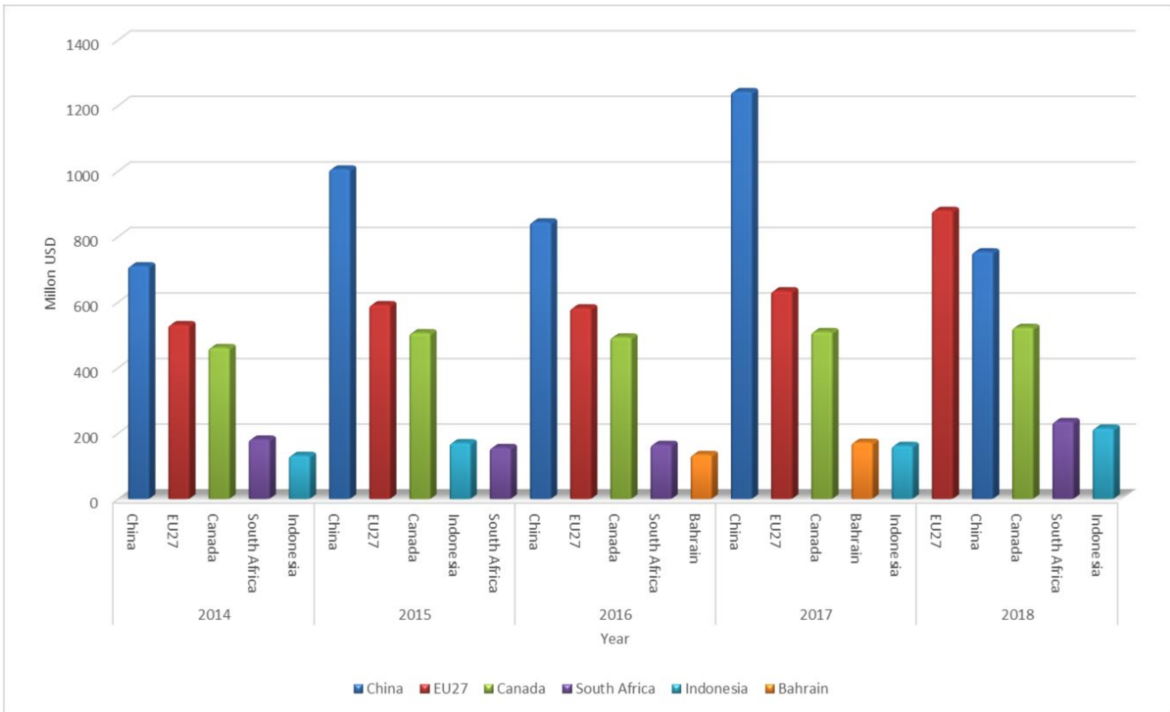
8.2 US

8.2.1 Imports

US imports of aluminium plates, sheets and strip increased by 62 per cent in 2018 as compared with 2014. EU, China, and Canada supplied more than half of the US' total annual imports.

As compared with 2014, the US imports coming from the EU increased by 65% in 2018. In the same year, the EU became the US' leading supplier, overtaking China.

Figure 128. US imports of aluminium plates, sheets, and strip (HS 7606): the leading five supplier countries over the period 2014-2018 (import value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

At HS 6-digit level:

- The EU and China were the leading suppliers of not-alloyed rectangular plates, sheets, and strip (HS 760611) over the period 2014-2017, providing together more than 65% of US total annual imports);
- In 2018, the US imports from both EU and China fell significantly, by 37% and 58% respectively. By far, Germany was the most important EU supplier country (80% of the total US imports from EU in 2018;
- The EU, China, and Canada were the leading suppliers of alloyed rectangular plates, sheets, and strip (HS 760612) over the period 2014-2017, providing together more than 68% of US total annual imports);
- In 2018, the EU overtook China as the leading US supplier, accounting for 20% of total US imports; that because while the US imports from the EU rose by 52%, those from China fell by 39%, as compared with 2017. Austria, Germany, and France accounted together for 65% of total US imports from EU in 2018;
- US imports of not-alloyed other-than-rectangular plates, sheets, and strip (HS 760691) fell by one third in 2018 as compared to previous year, with lower import shares for EU (the leading source of US imports over the entire period) and China;
- US imports of alloyed other-than-rectangular plates, sheets, and strip (HS 760692) almost doubled in 2018 compared with 2014, out of which those coming from EU increased with 350%. Sweden contributed with almost half of the EU imports to the US in 2018.

8.2.2 Capacity

The following table presents published information on the US production capacity and capacity utilisation in 2015 for rolled products. The table also shows the theoretical potential to increase output based on the 2015 nameplate capacity, at an 85% capacity utilisation rate.

Table 21. Overview of production and capacity of the US aluminium rolling industry

Product group	Reference year	Production (kt)	Capacity (kt)	Capacity utilisation rate (%)	Appraisal for the potential to increase production (kt) ([1])
Plates	2015	268	270	99%	0
Sheet, strip ([2])	2015	3,685	3,936	94%	0
Foil ([2])	2016	440	529	83%	10
Rolled products - Total		4,393	4,735	93%	10

([1]) Rounded values. The minimum rate of utilisation of production capacity is assumed to be 85%.
([2]) Data for sheets, strips and foil provided by the survey of Al producers in (USITC, 2017) were disaggregated on the basis of foil production and capacity reported referring to 2016 and reported by (CRU, 2017)

Source: Background data in (USITC, 2017) (CRU, 2017)

It is noted in the above table that the US industry operated close to nameplate capacity at the end of 2015 for plates, sheet, and strip, hence there was a minor margin for production increase. Growth in wrought production capacity during 2011-2015 reflected the US industry's transition away from commodified production of lower-value flat-rolled products such as foil towards higher value-added automotive sheet production due to increasing demand from the auto industry (USITC, 2017).

However, massive investments of USD 3.7 billion for capacity expansions and greenfield rolling mills have been commissioned from 2016 to 2019 or announced to be completed by the end of 2021. Data compiled and shown in Table 22 below reveal that three-quarter (76%) of the total investment for capacity expansions in the US rolling industry was announced before the enforcement of the 10% import tariffs in March 2018. The enormous investments to boost rolling capacity for auto sheet are going to capture the anticipated growth in aluminium's use in the automotive sector in the coming years (Aluminum Association, 2020a). On the other hand, all investment intentions for common alloy products have been made public after the imposition of tariffs, arguably relating more to the common alloy dumping investigation initiated in December 2017 targeting Chinese rolled products (see Section 3.8.1), rather to Section 232 tariffs. According to the US industrial association, the majority of the investments in the US aluminium sector were driven mostly by macroeconomic factors unrelated to Section 232 tariffs (e.g. growing economy, rising demand for aluminium in transport applications and targeted anti-dumping measures) (Aluminum Association, 2019).

Table 22. Overview of commissioned and announced expansions and greenfield projects in the US rolling aluminium industry for the period 2016-2021

Product group	Products	Investment (million USD)	Capacity (kt)	Announcement ([1])
Plates, sheets, and strips	Automotive sheet ([2])	850	520	Pre-tariff
	Common alloy sheet ([3])	815	240	Post-tariff
	Automotive sheet & canstock ([4])	168	80	Pre-tariff
	Automotive sheet & products for transport and packaging ([5])	1,700	300	Pre-tariff
Foil	Standard and light gouge foil ([6])	169	50	65% of the total investment pre-tariff, 35% post-tariff
Total		~ 3,700	~ 1,200	

([1]) In relation to the implementation of tariffs in March 2018
([2]) It includes the construction of the greenfield rolling mill announced by Novelis (Guthrie), the commissioned greenfield mill of Constellium (Bowling Green), and the expansion in the rolling mill operated by Aleris (Lewisport).
([3]) It comprises JW Aluminum (Goose Creek), Texarkana Aluminum (Texarkana), and Arconic (Knoxville). For Arconic (Knoxville), capacity is roughly estimated by the announced number of new jobs using the average productivity of US rolling mills in 2015 (2.9 workers/1,000 tonnes, reported in (USITC, 2017)).
([4]) Logan Aluminum (Russellville).
([5]) Greenfield rolling mill announced by Braidy Industries/Rusal (Ashland).
([6]) JW Aluminum (Goose Creek), Granges (Newport), Granges (Huntingdon). Capacity expansion for JW Aluminum (Goose Creek) is not available. Capacity for Granges (Huntingdon) is roughly estimated by the anticipated number of new jobs using the average productivity of rolling mills in the US in 2015, i.e. 2.9 workers/1,000 tonnes in (USITC, 2017).

Source: Data compiled from (Aluminum Association, 2020a), and industry announcements in companies' websites

Typically, the same equipment and machinery destined to produce automotive sheet can also switch production to other products such as standard alloy sheet and plates. Under the assumption that the new capacity of the US rolling mills will not be entirely utilised to serve the automotive industry, it is inferred that a part of the vast capacity expansion of about 1 million tonnes for automotive sheet products could be channelled to the production of other rolled products should the demand arise.

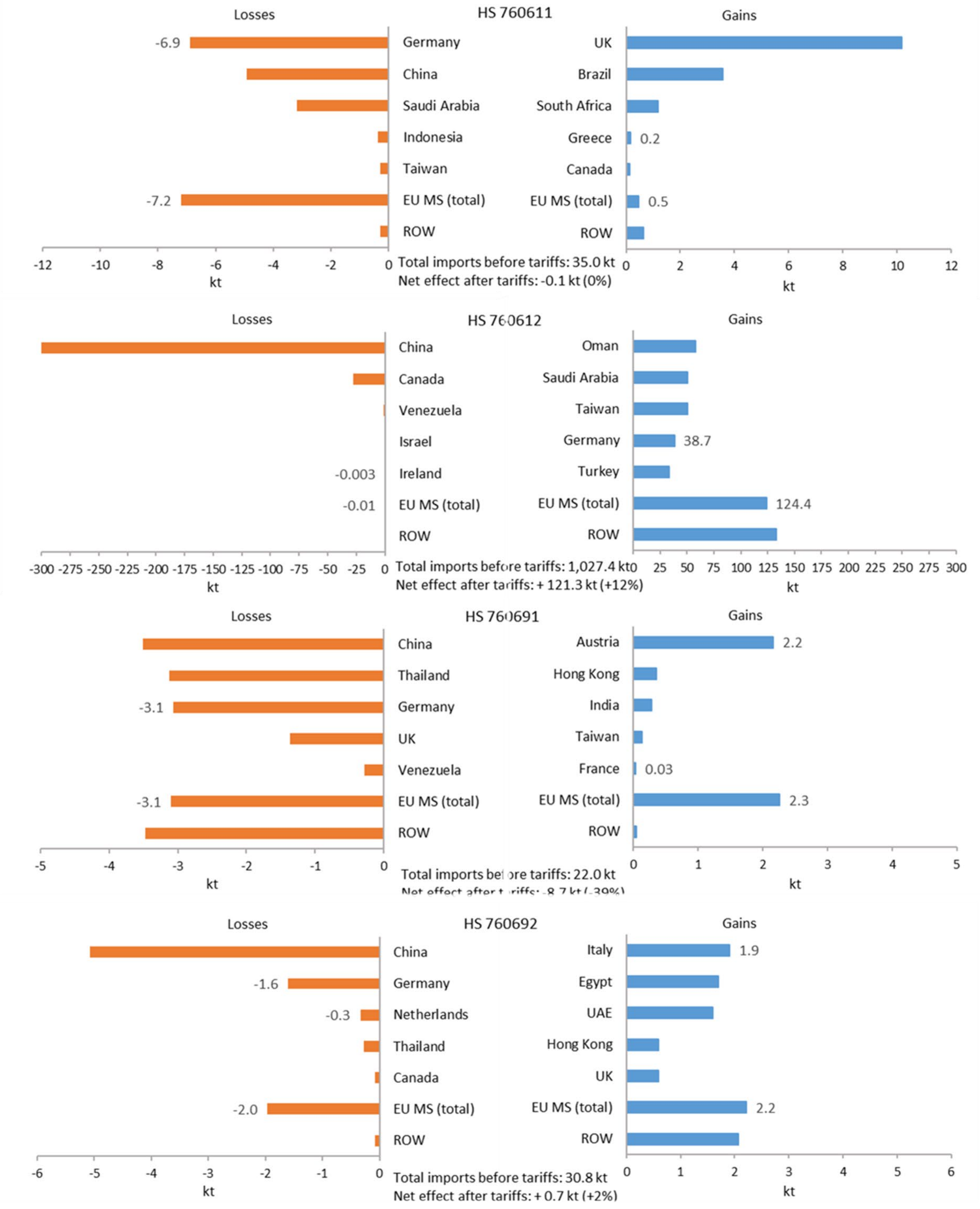
In contrast, the net additions to the US manufacturing capacity for foil are estimated to be minor, as the announced expansions will be offset by a production facility closure, scheduled for May 2020 (JW Aluminum, 2020).

8.3 Impact of the tariffs in the US

8.3.1 US imports of aluminium plates, sheets, and strip

The US imports of plates, sheets, and strip of aluminium (HS 7606) increased by an overall rate of 10% during the period following the implementation of tariffs. Notable gains in terms of volume include United Kingdom's exports of common non-alloyed products (HS 760611), EU Member States' exports of common alloyed products (HS 760612), Austria's exports of non-alloyed products with a shape other than rectangular or square (HS 760691), and Italy's exports of alloyed products with of shape other than rectangular or square (HS 760692). Conversely, countries that experienced the highest losses in exports into the US for the same product groups include Germany for HS 760611, China for HS 760612, China, Thailand and Germany for HS 760691, and China for HS 760691 (Figure 129).

Figure 129. Effect of tariffs on annualised imports ([133]) of aluminium plates, sheets, and strip (HS 7606) by top-5 affected countries



Source: Calculations based on background data in (USITC Dataweb, 2020)

([133]) Data compare imports in the period April 2018 – November 2019 (20 months after the introduction of tariffs) with imports in the period August 2016 – March 2018 (20 months before the imposition of tariffs).

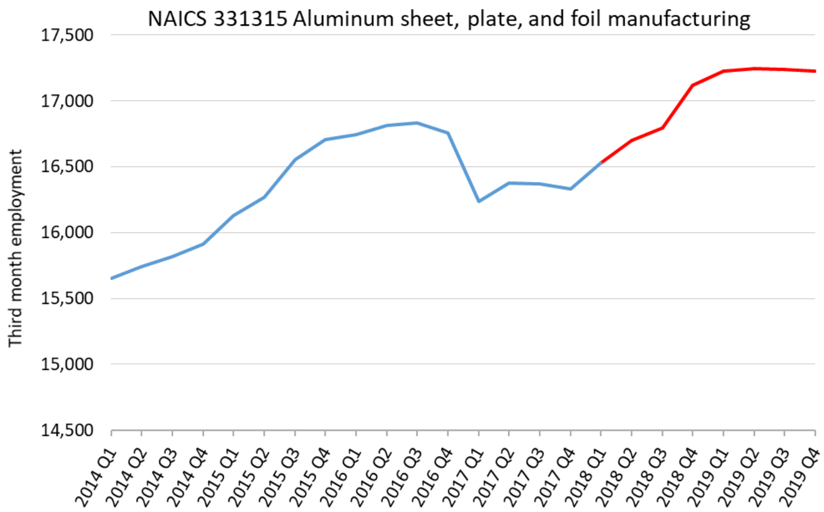
8.3.2 Production and employment

The industrial production data shown in Table 10 demonstrate that the output of US industry's rolling segment rose by 2.9% in the post-tariff period (April 2018-December 2019) versus the pre-tariff output period (July 2016-March 2018).

In the period 2017-2019 demand for aluminium rolled products in North America surged by 4.1% (data in Figure 18). US output by volume is not publicly available.

The following figure shows direct employment in the US rolling segment that increased by 4% from Q1 2018 to Q4 2019.

Figure 130. Direct employment in the rolling segment of US aluminium industry in number of employees, Q1 2014 – Q4 2019



NB: In red the period after the implementation of tariffs

Source: Data from (US Department of Labor, 2020)

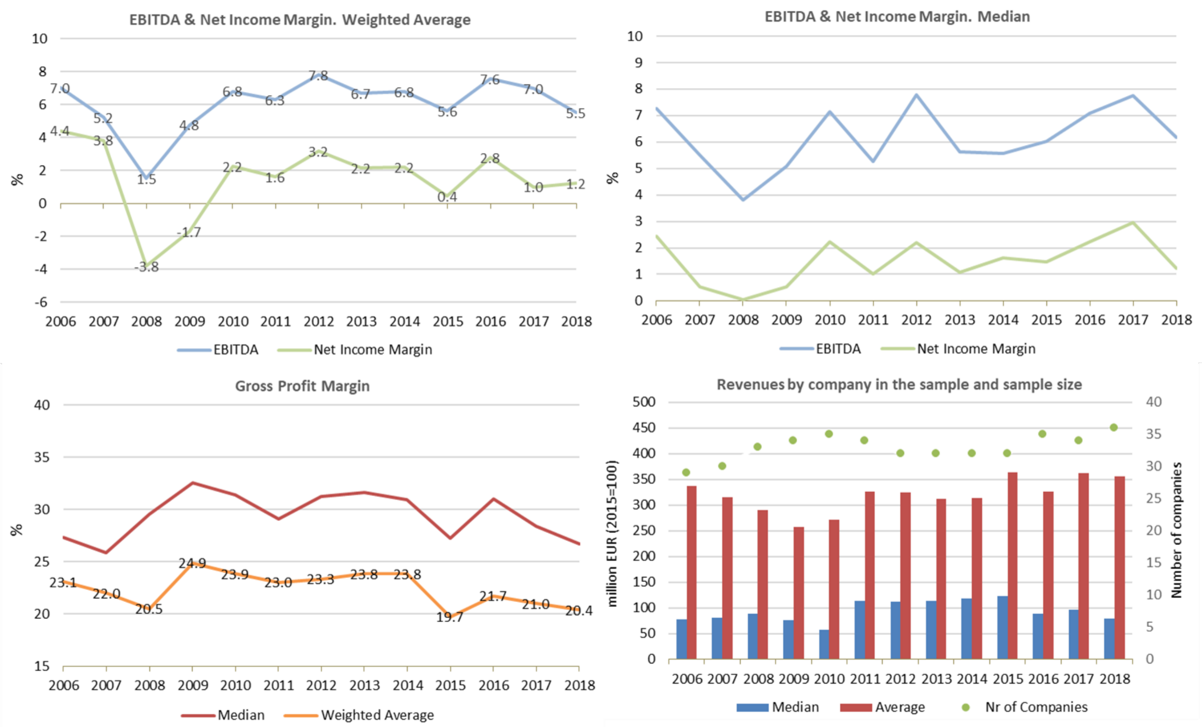
8.4 EU

8.4.1 The rolling segment of the EU aluminium industry

The European aluminium producers' Association reports that about 50 rolling mills are operating in the 27 EU Member States (European Aluminium, 2020b). A sample consisting of 48 companies producing rolled aluminium products ([134]) was used for assessing the profitability performance of the rolling segment of the EU aluminium industry between 2006 and 2018 (see Annex 13 for the list of companies). The average annual turnover of the sample in the period of consideration amounts to EUR 10.1 billion. The trend of profitability margins in the period 2006-2018 is shown in the figure below.

([134]) Among them there are eleven companies performing surface treatment of rolled products.

Figure 131. Profitability indicators of EU companies producing rolled products, 2006-2018



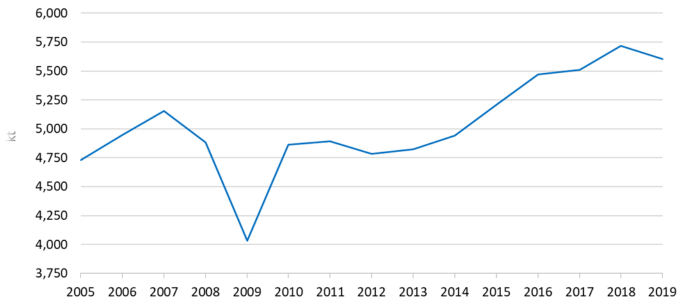
Source: Background data from (S&P Global, 2020d)

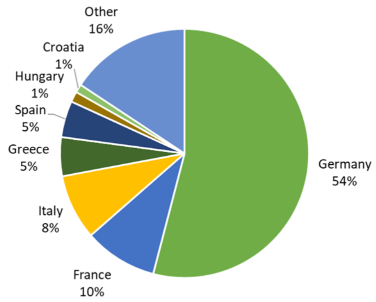
The global financial crisis for EU rolling mills was more intense in 2008 than in 2009, differently with other segments of the aluminium industry. In 2010, the profitability margins improved and their recovery was maintained until 2014, despite relatively steady shipments (see Figure 132); though, net margins were consistently lower compared to pre-crisis levels. Following a year (2015) of weak profitability performance and a year (2016) of improved margins amid increasing production for flat-rolled products (Figure 132), the weighted average of gross profit and EBITDA of the companies in the sample decreased in 2017 and 2018 regardless of record sales volumes. This may suggest unfavourable conditions of competition. In the last two years of the period under consideration, i.e. 2017-2018, the weighted average of net profit returns was considerably reduced compared to 2016. In general, the net profitability of EU's rolling mills as a weighted average has not recovered to its level prior to the 2008/2009 financial crisis.

8.4.2 Supply and demand for aluminium plates, sheets and strip in the EU

Deliveries of aluminium flat-rolled products by EU producers grew from 2009 to 2019 at a robust CAGR of 3.3%, with a strong growth after 2014 when the pre-crisis production levels were overtaken. In 2018, the EU's output (volume sold) added up to 5,720 kt of plates, sheets, and strip, which is the highest level ever registered (see Figure 132). Though, in 2019 there has been a drop in domestic output of 2.0% over the figure for 2018. Germany is the leading producing EU country of aluminium plates, sheets, and strips with a share of 54% in 2018, followed by France and Italy (see Figure 132). The rise in deliveries by EU rollers was supported by sustained domestic consumption and rising export demand (see Figure 133 and Figure 134). EU producers of flat-rolled products exported outside the EU 24% of their output in 2019, the highest ever proportion.

Figure 132. Evolution of EU production ([135]) (volume sold) for aluminium plates, sheets, and strips from 2005 to 2019 (left), and EU producing countries ([136]) in 2018 (right)

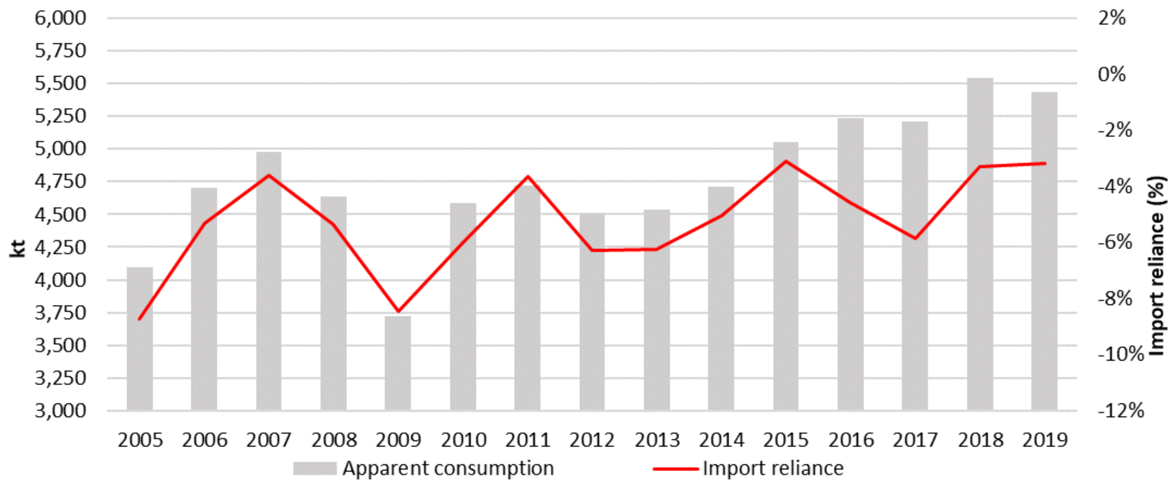




Source: Background data in (Eurostat Prodcom, 2020)

The EU apparent consumption of aluminium plates, sheets and strip rose to the record level of about 5,540 kt in 2018, up 6% over 2017. The growth of the apparent domestic consumption in 2018 in comparison to the most recent low point of 2012 was 22% (or 1,000 kt) and 10% (or 500 kt) compared to its highest level in 2007 before the global recession of 2009 (see Figure 133). However, in 2019 the apparent consumption of aluminium plates, sheet and strips in the EU fell by 1.9%, according to Eurostat data. The latest data published by the European aluminium producers' association demonstrate that the demand for flat-rolled products in Europe had a marginal increase of 1% in 2019 (European Aluminium, 2020a).

Figure 133. EU apparent consumption (left axis) and import reliance (right axis) for aluminium plates, sheets, and strips, 2005-2019



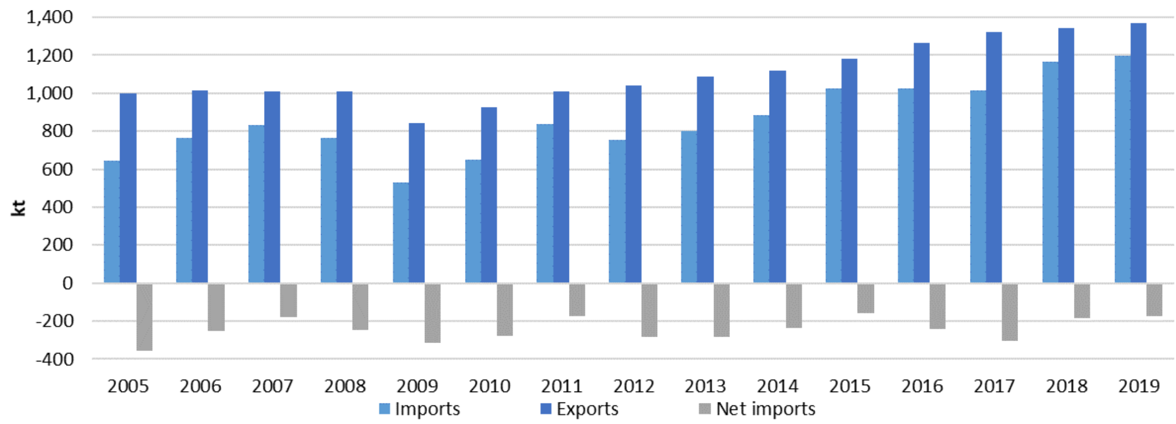
Source: Data from (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

The EU is a net exporter of aluminium plates, sheets and strips. Exports recorded steady growth for ten consecutive years (2010 to 2019) with a CAGR of 5%, whereas import volumes reflected an even stronger rising trend at a higher rate (CAGR 8.5%) in the same period. Throughout 2019, imports surged to record highs of about 1,200 kt per year, increased by 18% compared to 2017 and by about two times compared to 2010.

([135]) PRC codes 24422430 'Aluminium plates, sheets and strips > 0,2 mm thick', and 24422450 'Aluminium alloy plates, sheets and strips > 0,2 mm thick'.

([136]) The production shares in 2018 do not show data for certain EU countries and product categories due to confidentiality. For PRC code 24422430 production figures for Belgium, Bulgaria, Czechia, Ireland, France, Latvia, Netherlands, Austria, Poland, Romania, Slovakia, Slovenia, and Sweden are withheld. For PRC code 24422450 the shares do not include the production from Belgium, Bulgaria, Latvia, Hungary, Netherlands, Austria, Poland, Romania, Slovenia, and Sweden. Production from these EU countries is included in the category "Other".

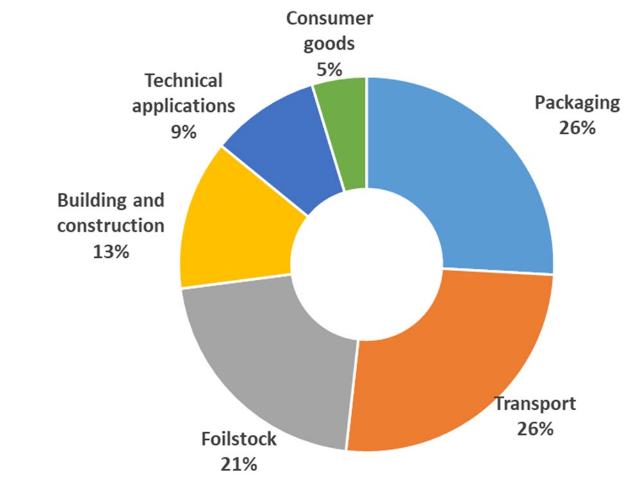
Figure 134. EU trade flows for aluminium plates, sheets and strips, 2005-2019



Source: Background data from (Eurostat Comext, 2020)

The packaging sector is the most important sales outlet for rolling mills worldwide. The packaging/foil stock applications represent almost half of the market demand for flat-rolled products, and applications in the transport sector account for one-quarter (Figure 135). In comparison to the structure of demand for flat-rolled products worldwide (see Figure 9), the transport sector consumes a higher share in Europe, i.e. 25% versus 17% globally in 2019.

Figure 135. End-use sectors ([137]) for flat-rolled products in Europe in 2019



Source: Background data from (European Aluminium, 2020a)

The growing demand in Europe for flat-rolled products in 2018 was driven mainly by the packaging and transport sectors (European Aluminium, 2019a). The deceleration in 2019 after several years of robust growth is attributed to slowdown in the EU's automotive production whereas for the segments of packaging and transport demand continued to grow (European Aluminium, 2020a).

8.4.3 EU exports of aluminium plates, sheets, and strip

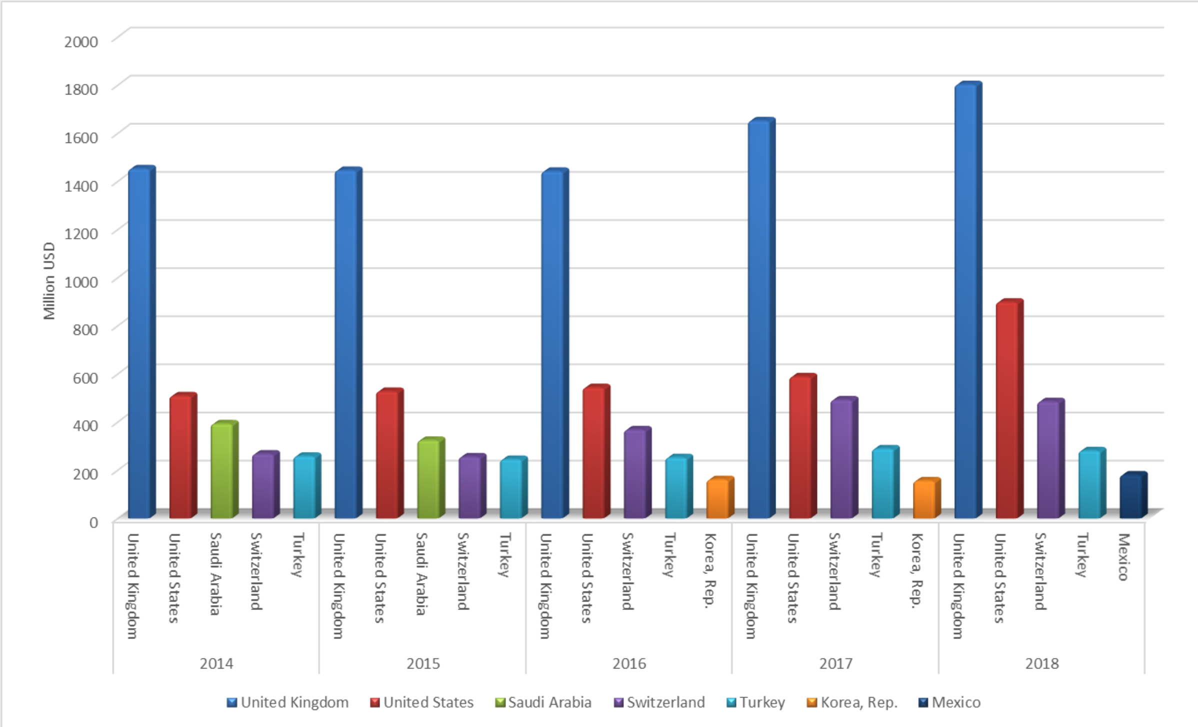
United Kingdom was by far the leading destination of EU exports of aluminium plates, sheets and strip – 35% of total annual extra-EU exports over the period 2014-2018.

Germany contributed to more than half of total annual extra-EU exports.

([137]) Stocklists reported in the source of data were distributed among the end-use sectors.

EU exports to the US (the second-ranking export destination) continued to increase over the entire period, by 76% in 2018 compared to 2014.

Figure 136. EU exports of aluminium plates, sheets, and strip (HS 7606) to its main destinations over the period 2014-2018 (HS 7606; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

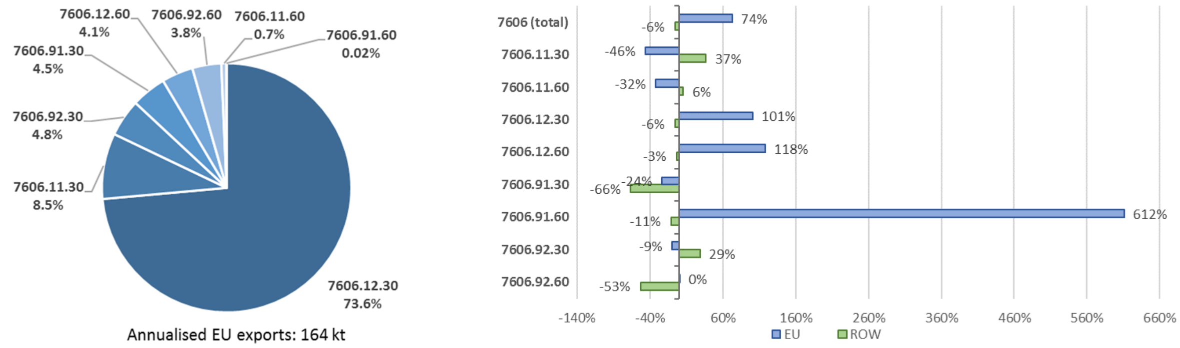
8.5 Impact of the tariffs on the EU

8.5.1 EU exports of aluminium plates, sheets, and strip to the US

8.5.1.1 Overview

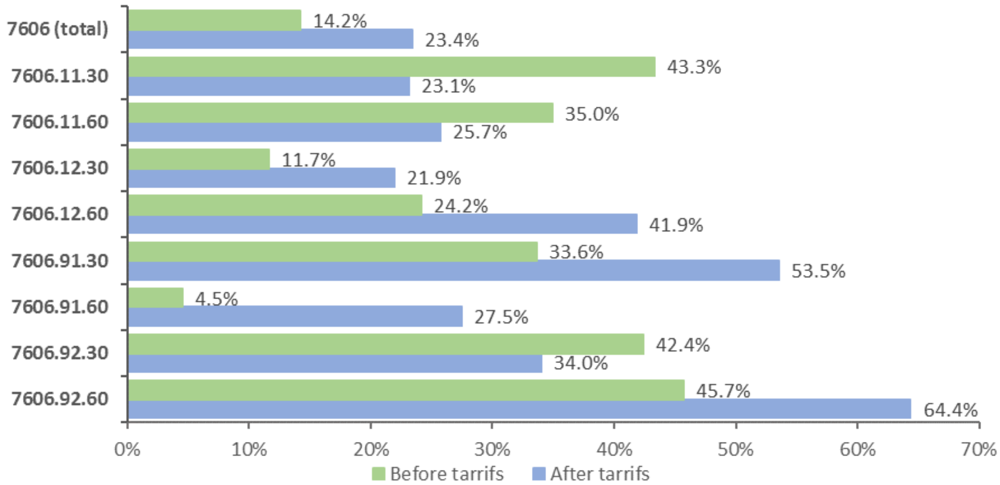
Regardless of the tariffs, most of the products exported from the EU classified as aluminium plates, sheets, and strip have performed better in the US in comparison to the rest-of-the-world countries (see Figure 137), except for products belonging to HS 760611 *'Not alloyed Aluminium plates, sheets and strip, of a thickness exceeding 0.2 mm'*. As a result, most flat-rolled products originating from the EU have increased their share in US imports following the imposition of Section 232 duties (see Figure 138).

Figure 137. Breakdown of EU exports to the US per product prior tariffs' enforcement (left), and relative change (%) in EU exports to the US compared to rest-of-world (ROW) countries after tariffs' enforcement (right), by HTS 8-digit codes for products of aluminium plates, sheets, and strip (HS 7606) ([138])



Source: Background data in (USITC Dataweb, 2020)

Figure 138. EU share in US imports before and after the tariffs by HTS 8-digit codes of products of aluminium plates, sheets, and strip (HS 7606)



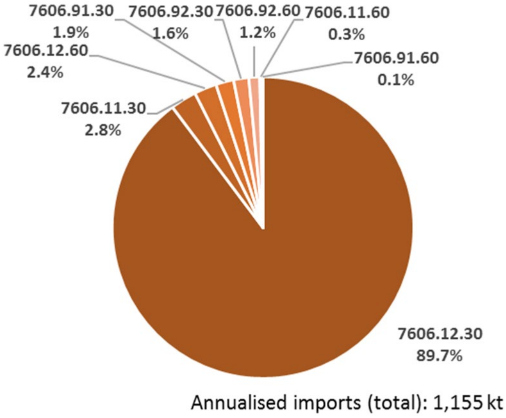
Source: Background data in (USITC Dataweb, 2020)

8.5.1.2 Disaggregated trade codes

The 8-digit subheading HTS 7606.12.30 "*Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. square), not clad*" represents by far the top product imported by the US with a share of almost 90% in terms of the overall volume of imports of aluminium plates, sheets and strip (HS 7606) (see Figure 139).

([138]) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) before tariffs' implementation against the EU.

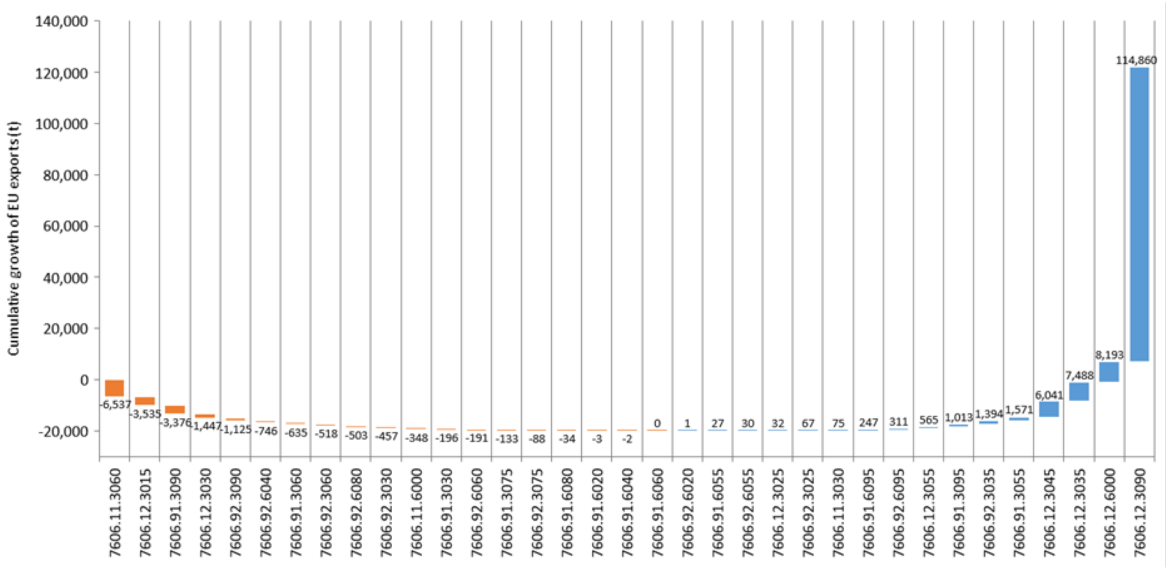
Figure 139. US imports prior tariffs' imposition by volume of HTS 8-digit subheadings for products of aluminium plates, sheets, and strip (HS 7606)



Source: Background data in (USITC Dataweb, 2020)

After the enforcement of tariffs, the growth of EU exports for HTS subheading 7606.12.30 has been the major driver of the strong rise of EU exports to the US (see Annex 11). The annualised EU exports doubled for HTS 7606.12.30 to reach 243 kt from 121 kt, accounting for 85% of the total EU exports for HS 7606 in the post-tariff period, and for the entire net upsurge of EU exports for HS 7606 (121 kt). Figure 140 displays each product's contribution in the cumulative increase of 121 kt at the narrowest classification available of HTS-10 subheadings.

Figure 140. Growth of annualised EU exports ([139]) after tariffs' imposition for aluminium plates, sheets, and strip (HS 7606) by HTS 10-digit product code



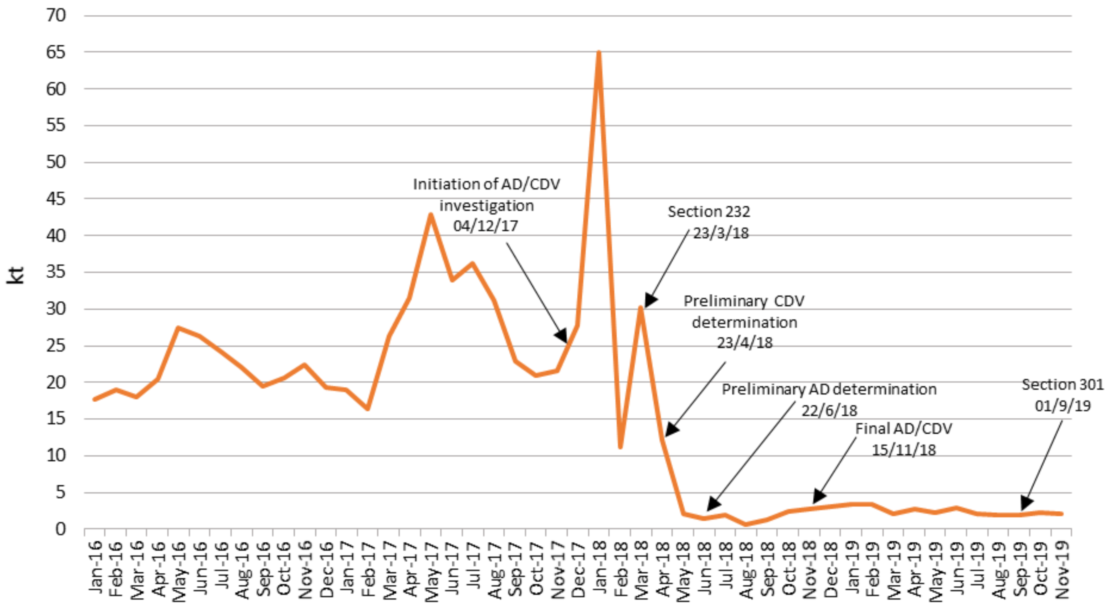
Source: Background data from (USITC Dataweb, 2020)

As it is shown in the figure above, the outstanding growth of EU exports identified for products classified under HTS 7606.12.30 is attributed to the exceptional performance of exports of HTS 7606.12.3090 *"Aluminium plates sheets and strip rectangular (including square), alloy, not clad with a thickness of 6.3 mm or less, nesoi"*. The annualized EU exports for HTS 7606.12.3090 increased by almost 115 kt, accounting for 94% of the total growth of EU exports for HTS 7606.12.30. The product classified under HTS 7606.12.3090 is a common alloy aluminium sheet. Anti-dumping and countervailing duty measures have been enforced by the US to imports from China (see Section 3.8.1), in addition to Section 232 tariffs. Products from China covered by this HTS

([139]) Imports are annualised over 19 months before (Nov 2018 – May 2018), and after (June 2018 – December 2019) the implementation of Section 232 tariffs against the EU.

subheading are also subject to the additional tariffs of Section 301 (List 4A) (see 3.8.2). By far, China was the top exporter to the US for HTS 7606.12.3090, with a share in US imports of 39% before March 2018. Nevertheless, following an immediate export surge after the initiation of investigation and ahead of the preliminary duties, the combined effect of the above measures almost eliminated US imports from China (Figure 141).

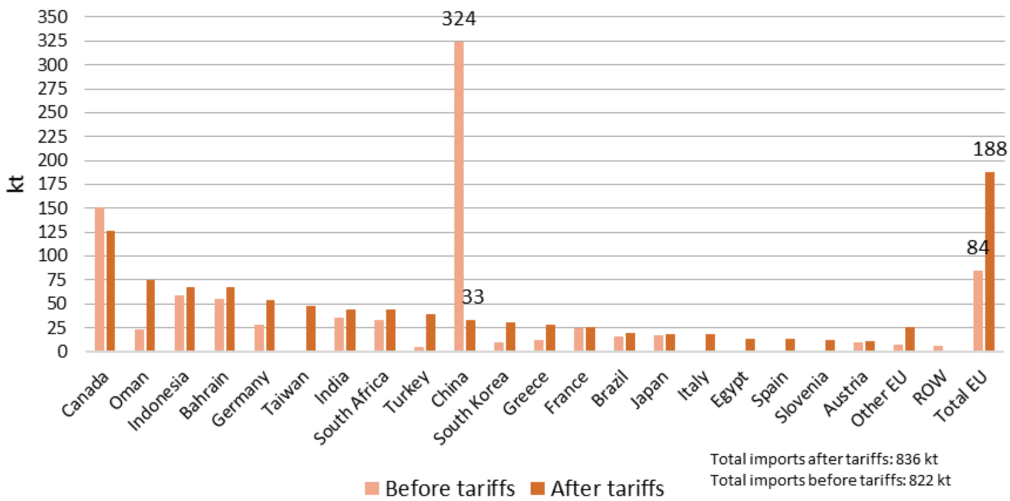
Figure 141. Monthly US imports from China for HTS 7606.12.3090 and trade measures applied by the US



Source: Data from (USITC, 2019b) (USITC, 2019a) (USITC Dataweb, 2020)

Figure 142 shows how several ex-China countries replaced US imports of HTS 7606.12.3090. The EU Member States have accounted for more than one-third of the annual void of nearly 290 kt in the US.

Figure 142. Comparison of annualised ([140]) US imports for HTS 7606.12.3090 before and after Section 232 tariffs' imposition by origin ([141])



Source: Calculations based on background data from (USITC Dataweb, 2020)

([140]) Imports are annualised over 20 months before (August 2016 – March 2018), and after (April 2018 – November 2019) the imposition of Section 232 tariffs.

([141]) All countries shown in the chart (excluding China for which AD/CVD duties already applied) were subject to AD/CVD investigation launched in March 2020, except Canada, France, Japan, and Austria (see Section 3.7).

Other products for which EU exports of plates, sheets and strip registered a noticeable growth in terms of volume include the following HTS statistical reporting numbers (see Figure 140):

- Products classified under HTS subheading 7606.12.6000 that represent common (clad) aluminium alloy sheet, for which anti-dumping and countervailing duty orders (see 3.8.1), and Section 301 tariffs (List 4A, see 3.8.2) have been imposed by the US to imports from China;
- Products classified under HTS subheading 7606.12.3035 comprise aluminium alloy plates. Chinese exports are subject to Section 301 duties (List 4A, see 3.8.2);
- Products classified under HTS subheading 7606.12.3045 which refer to aluminium can (body) stock. Chinese exports of can stock (and lid stock) are covered by the scope of Section 301 duties (of List 4A, see 3.8.2).

Products for which a decline in exports is observed in terms of volume include the following HTS statistical reporting numbers (see Figure 140):

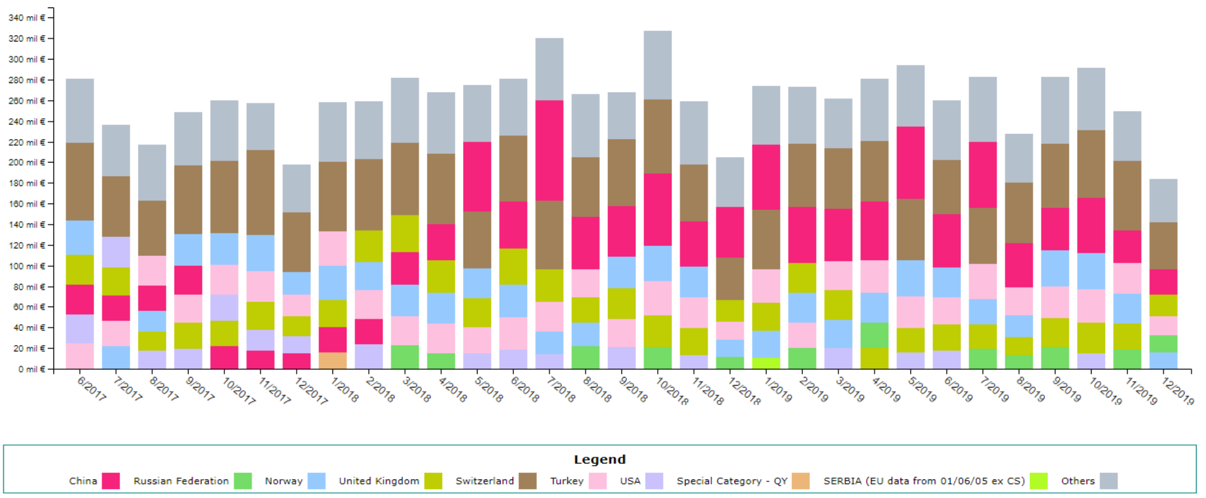
- Products classified under HTS subheading 7606.11.3060 belong to the broad category of common aluminium sheet, for which anti-dumping and countervailing duty measures have been enforced by the US to Chinese imports (see 3.8.1). Aluminium lithographic sheets can be classified under this specific code;
- Products classified under HTS subheading 7606.12.3015, which refer to plates of high-strength heat-treatable alloys of Al-Cu and Al-Zn designated in aluminium alloy series 2XXX and 7XXX respectively (USITC, 2020b);
- Products classified under HTS subheading 7606.91.3090 that refer to not alloyed sheet or strip with other than rectangular (or square) shape, excluding disks and circles, such as embossed color-coated and composite panels of aluminium sheet and strip.

8.5.2 EU-directed trade reorientation for plates, sheets, and strip

Switzerland and China were the main EU suppliers in the period 2017-2019, contributing together with a share of around 40% of the total annual EU imports of aluminium plates, sheets, and strip. Other significant suppliers were Norway, Turkey, and United Kingdom.

As compared to their value in 2017, EU imports from China rose by 122% in 2018 and by 130% in 2019. As compared to the period July-December 2017, the EU average monthly share of imports from China increased by 168% in the same period of 2018 and by 95% in the same period of 2019. For the same periods, the EU average monthly share of imports from its second-ranking supplier, Switzerland, decreased slightly, by 8% and 9% respectively.

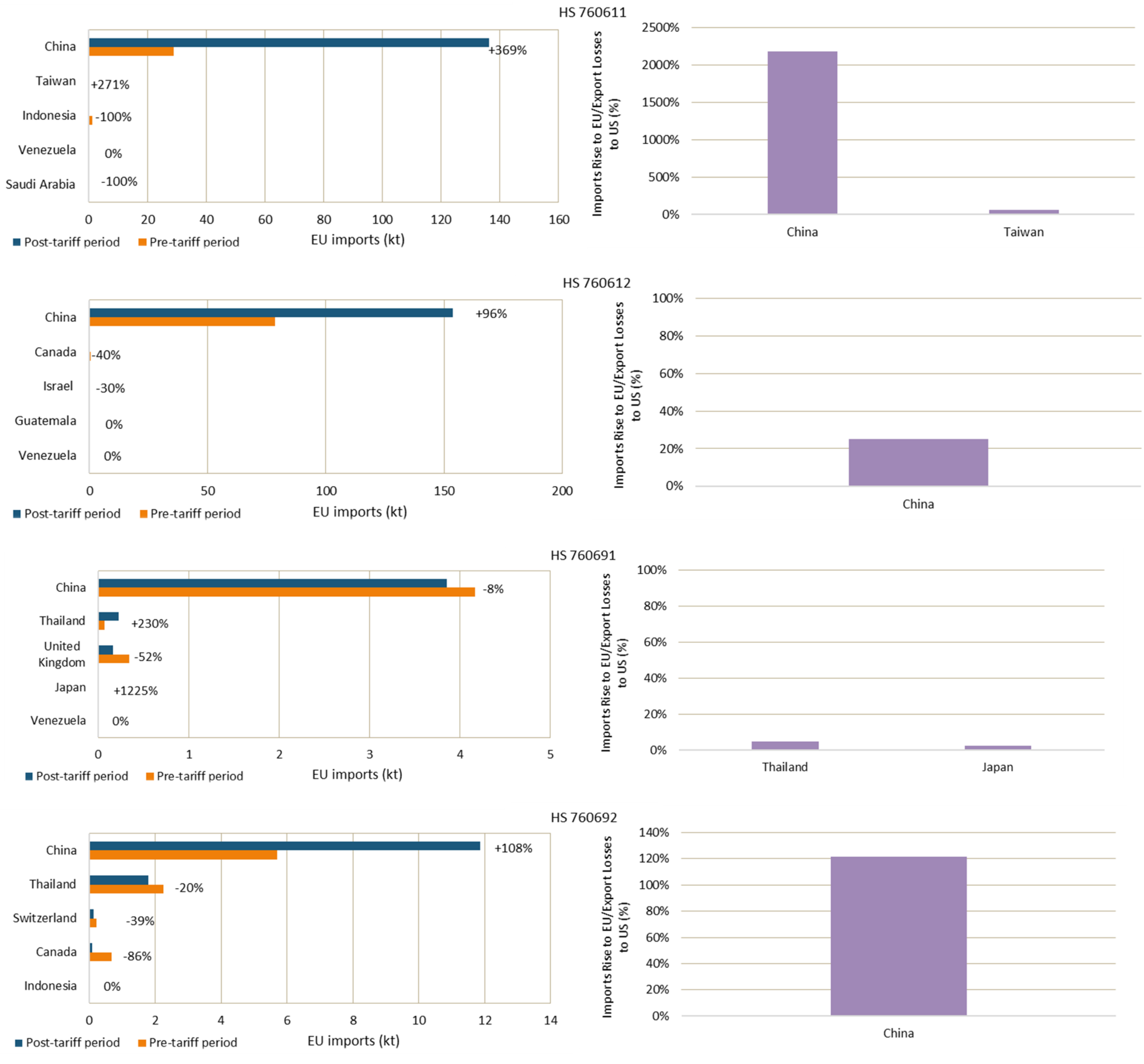
Figure 143. Evolution of the EU monthly imports of aluminium plates, sheets, and strip (HS 7606) by main country supplier plus China over the period June 2017-December 2019



Source: Data in (Eurostat Comext, 2020)

Looking at the EU imports from the countries which experienced the most considerable losses in the US after the imposition of tariffs, it is observed that Chinese exports had a dramatic rise in the EU in the post-tariff period. Chinese exports for non-alloy products over 2 mm thick (HS 760611) rose by 3.5 times and doubled for aluminium alloy products of plate, sheet or strip exceeding 2 mm of thickness (HS 760612 and HS 760692), corresponding to a total increase of about 190 kt on an annualised basis. The rise in Chinese exports for non-alloyed rolled products (HS 760611) was about 22 times the drop of Chinese exports to the US, whereas for aluminium alloy rolled products of HS 760612 and HS 760692, the volumes diverted to the EU were 25% and 120% respectively of export losses for these products in the US. Undoubtedly, the combination of US trade measures against China contributed to the surge of imports of flat-rolled aluminium products in the EU (Section 3.8.1 and Section 3.8.2).

Figure 144. EU annualised imports ([142]) of aluminium plates, sheets, and strip (HS 7606) by HS6 product group (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

([142]) Source countries that had the highest losses in the US after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length, i.e. 20 months before the tariffs took effect (August 2016 – March 2018).

8.5.3 Impacts of the US anti-dumping and countervailing investigation for common alloy aluminium sheet

The import supply of common alloy aluminium sheet (CAAS) targeted by the US investigation (see Section 3.7) amounted to 677 kt in 2019, accounting for 69% by volume of the total US of common alloy sheet imports in 2019.

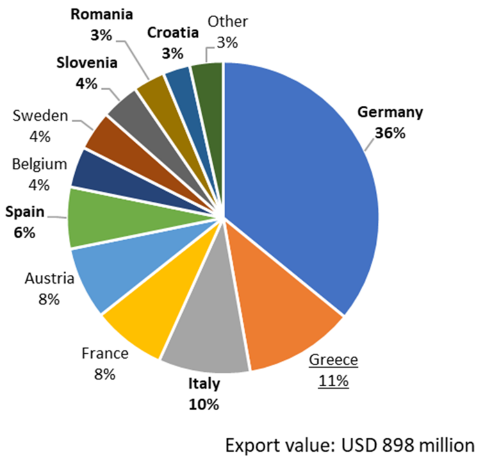
In January-April 2020, total US imports of common alloy sheet were down 91% by volume year-over-year (USITC Dataweb, 2020) as demand evaporated due to the Covid-19 outbreak. US imports from all countries in the scope of investigation slumped by 96%, while CAAS imports from the EU countries in the investigation scope were lower by 87%. Regardless of the recovery in demand as the economy was getting out of the lockdowns, US imports from the countries in the scope of the investigation were definitely impacted following the affirmative preliminary determination in October 2020; the duties held on deposit pending the definitive resolution create high uncertainty for importers.

The definitive determination of dumping margins and subsidy rates was published on 27 April 2021, impacting 645 kt of import supply (in 2019 terms). It is reasonable to expect that a high amount of US import supply for CAAS products will be eliminated, as happened in the case of CAAS products from China (see Section 3.8.1 and Figure 141). Following the duty enforcement against the targeted countries, buyers in the US will seek to replace an enormous supply quantity. If the rate of import decline from the targeted countries is similar to the one that occurred in Chinese CAAS due to AD/CVD duties, then US buyers will have to switch suppliers for about 500 kt annually.

Recent investments for capacity expansion in common alloy products in the US are about 240 kt (see Table 22), capable of covering an essential part of the supply gap. US rolling capacity coming online for the auto sector's needs could balance the supply deficit by switching production to CAAS. US exporters excluded from the scope of the investigation or duties may benefit from filling the remainder of the supply gap.

The EU countries for which the US Department of Commerce issued anti-dumping (AD) duty orders (see Figure 145) have a significant share of sales in the US. In 2019, the total US imports of CAAS from the EU totaled 256 kt and were valued at almost USD 900 million. Imports originating from the six Member States for which AD duties are established amounted to 166 kt and USD 555 million (2019 figures), i.e. 65% and 62% of the total EU CAAS exports to the US by volume and value, respectively. The flat-rolled products under the definition of 'common alloy sheet' are the principal subgroup of aluminium products that the EU exports to the US. In 2019, exports of common alloy sheet from the six Member States accounted for almost one-third (32%) by value of the total EU exports to the US of all tariffed aluminium products (USD 1,730 million). The following figure shows EU countries' share in the total EU exports to the US for common alloy sheet.

Figure 145. Breakdown of EU exports to the US of common alloy sheet ([143]), by countries in 2019



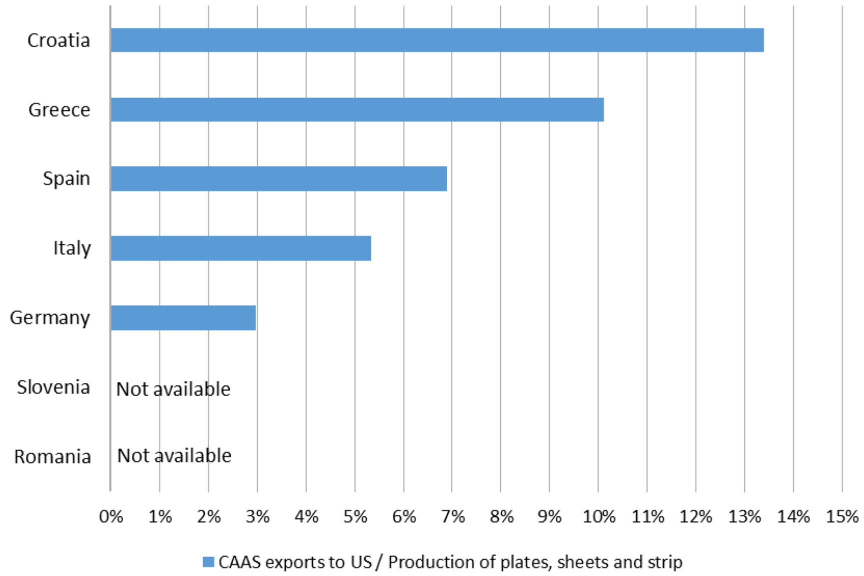
NB: Member States subject to anti-dumping duties in the US are indicated in bold. Greece was targeted by the US investigation but zero dumping margin was finally determined.

Source: Background data in (USITC Dataweb, 2020)

([143]) See note (69) for the HTS codes under which 'common alloy sheet' is classifiable.

The following figure shows the proportion of common alloy sheet exported to the US originating in the Member States within the scope of the investigation in relation to the total national production of flat-rolled products. Using these metrics to assess the country's exposure to the US, it turns out that the aluminium rolling industry in Croatia is the most vulnerable to trade measures imposed by the US, as more than 13% of its production is directed to the US as CAAS. However, production data for Romania and Slovenia are not available for a full assessment.

Figure 146. CAAS exports to the US ([144]) as a ratio of the total production of rolled products in 2019, by EU Member States subject to the AD investigation

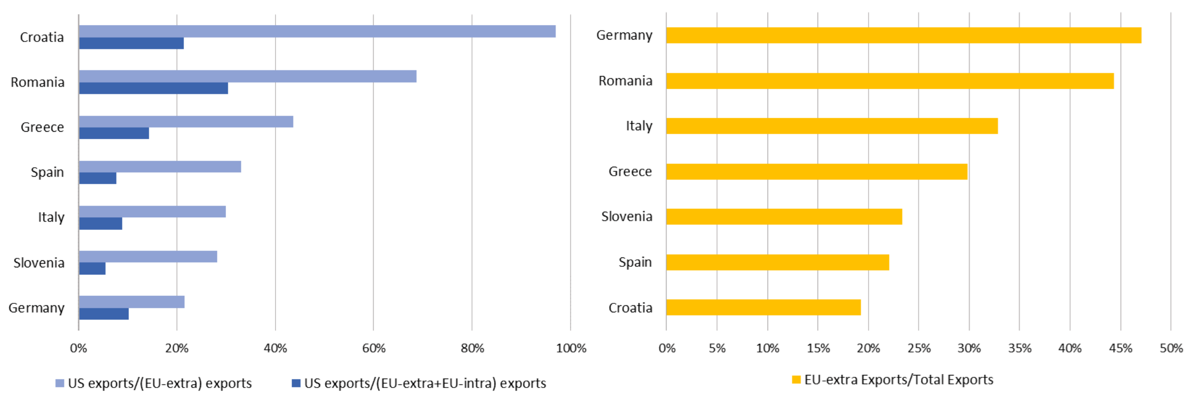


N.B. Production data for Romania and Slovenia are not available for the year 2019

Source: (Eurostat Prodcom, 2020) (USITC Dataweb, 2020)

The magnitude of EU exports destined to the US in relation to the total exports for common alloy sheet can also be used to measure each country's rolling industry's exposure and the potential negative impact. Furthermore, the ratio of exports shipped outside the EU to total exports is a complementary indicator for the assessment, measuring export diversification to external sales destinations (Figure 147).

Figure 147. Exports to the US as a proportion of total exports for common alloy sheet (left), and exports diversification (right) for EU countries targeted by the US anti-dumping investigation, by value in 2019



Source: Background data in (Eurostat Comext, 2020)

([144]) Production data of rolled products for Romania and Slovenia are not available for the year 2019.

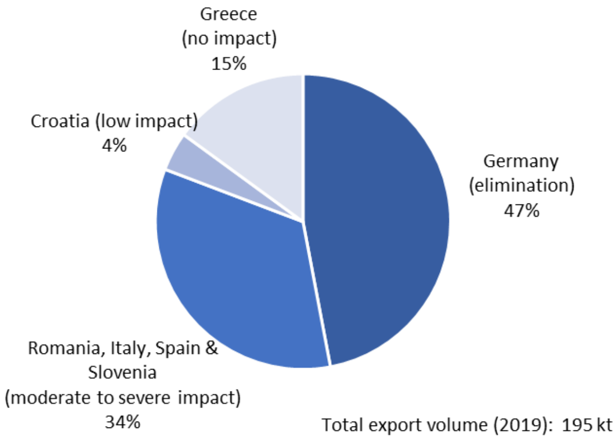
As shown in Figure 147, rolling mills from Romania and Croatia have the most significant exposure to the US; the US is the destination for 30% and 21% of their total CAAS exports (EU-extra + EU-intra), respectively. With regards to external trade only, the ratio of US exports to EU-extra exports for common alloy sheet products is 97% for Croatia and 69% for Romania. In contrast, exports of CAAS to the US originating in Italy, Spain and Slovenia represent around one-third of their total CAAS EU-extra exports. Germany is the leading EU country in exported volume to the US at over 90 kt in 2019 (USITC Dataweb, 2020). Still, it has the least exposure to the US and the most diversified export base (47% of German CAAS exports destined to external sales destinations in 2019). CAAS exports from Romania are also directed to EU-extra markets to a great extent, so the impacts of losing the US market could be moderated. By contrast, exports from Croatia, which have the highest exposure to the US, have the lowest diversification in external sales destinations.

The final dumping rates estimated by US authorities — and the AD duties that are going to be imposed — are extremely high for producers from Germany. The corresponding AD duties are assessed as medium to high for producers from Romania and ranging from low to high levels for producers from Italy and Spain. Finally, the AD duties for Slovenian producers are assessed of medium level and low for Croatian producers. On the other hand, the investigation concluded that Greek producers do not dump their sales; therefore, no AD duties will be imposed (see Annex 14).

The levels of definitive dumping rates determined by the US authorities suggest that exports of common alloy sheet from Germany to the US are on the verge of elimination. Exports from Germany accounted for 92 kt and USD 322 million in 2019. The assessment for exports to US from Romania, Italy, Slovenia and Spain is that they are going to suffer losses as the duty rates range widely from low to high levels; exports from these countries in 2019 amounted to 66 kt, valued at about USD 208 million. On the contrary, common alloy sheet exports from Croatia and Greece are expected to have the least impact among the European rollers subject to the investigation; the preliminary and the definitive dumping rates imposed by US authorities are low to zero. Exports from these two Member States reached approximately 38 kt and USD 127 million in 2019. In summary, US anti-dumping duties will have severe impacts for around 160 kt EU exports of common alloy sheet valued at USD 530 million.

The following figure provides the qualitative assessment of the impact the US anti-dumping duties will have on the volumes of EU exports of common alloy sheet.

Figure 148. Expected impact of US anti-dumping duties on EU exports of common alloy sheet, by volume (2019 figures)



Source: Background data in (USITC Dataweb, 2020)

An additional challenge for EU producers is the potential CAAS export redirection from non-EU countries in the investigation scope. In the event of US AD/CVD duties against them, foreign producers will look for redirecting their supplies to other destinations. Except for increasing the competitive pressure in export activities, trade diversion of CAAS to the EU is probable as the volumes involved are significant. CAAS exports to the US from Bahrain, Brazil, Egypt, India, Indonesia, Oman, Serbia, South Africa, South Korea, Taiwan, and Turkey stood at approximately 480 kt in 2019. Furthermore, a potential diversion of Chinese CAAS exports to the EU exaggerates the risk. The combined effect of Section 232 duties, AD/CVD duties (see Section 3.8.1) and Section 301 duties (see Section 3.8.2) was the removal of 310 kt of Chinese CAAS from the US in 2019 in comparison to 2017 (86% of decline) (USITC Dataweb, 2020).

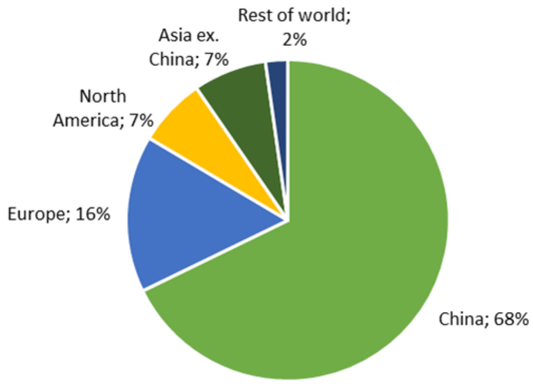
9 Aluminium foil

9.1 Overview

9.1.1 World production

Data for foil production worldwide are not publicly available. According to the European Aluminium Foil Association (EAFA), aluminium foil's global production was 5.9 Mt in 2019. China represented more than two-thirds (68%) of world output and 54% of global demand (Holthoff-Schlegel, 2020).

Figure 149. Global foil production in 2019

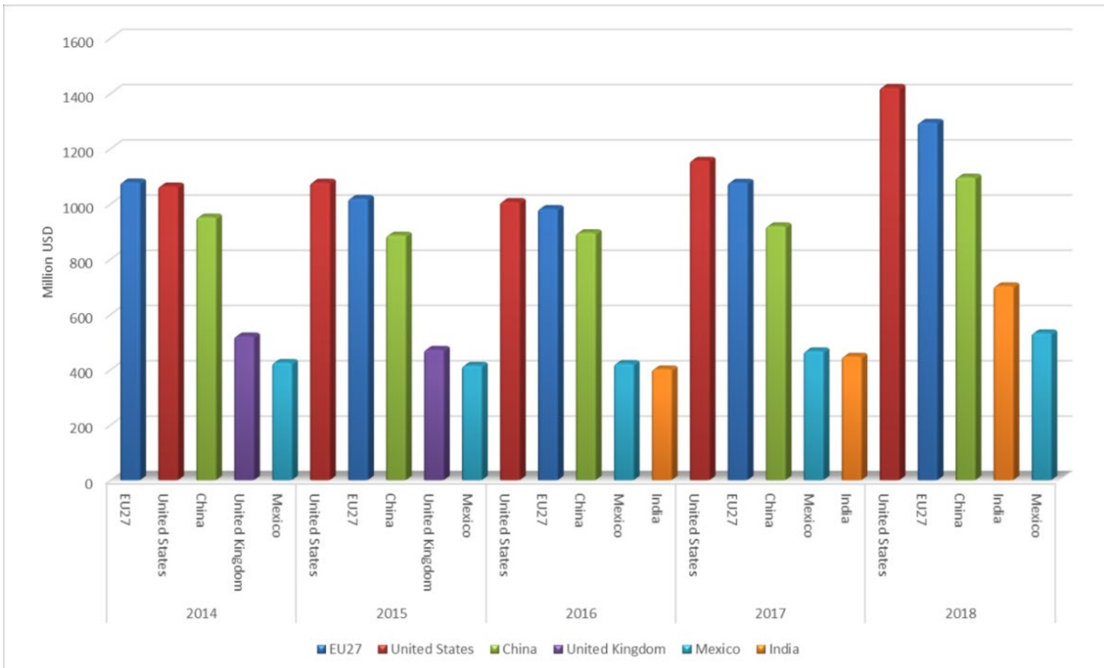


Source: Background data in (Holthoff-Schlegel, 2020)

9.1.2 Main suppliers and importers

The United States, EU and China were by far the main global importers of aluminium foil, all three accounting for more than a quarter of total annual global imports over 2014-2018. The EU's and the US' imports rose in 2018 by 20% and 34%, respectively, compared to their corresponding value in 2014.

Figure 150. Main five global importers of aluminium foil (HS 7607) over the period 2014-2018 (total import value; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

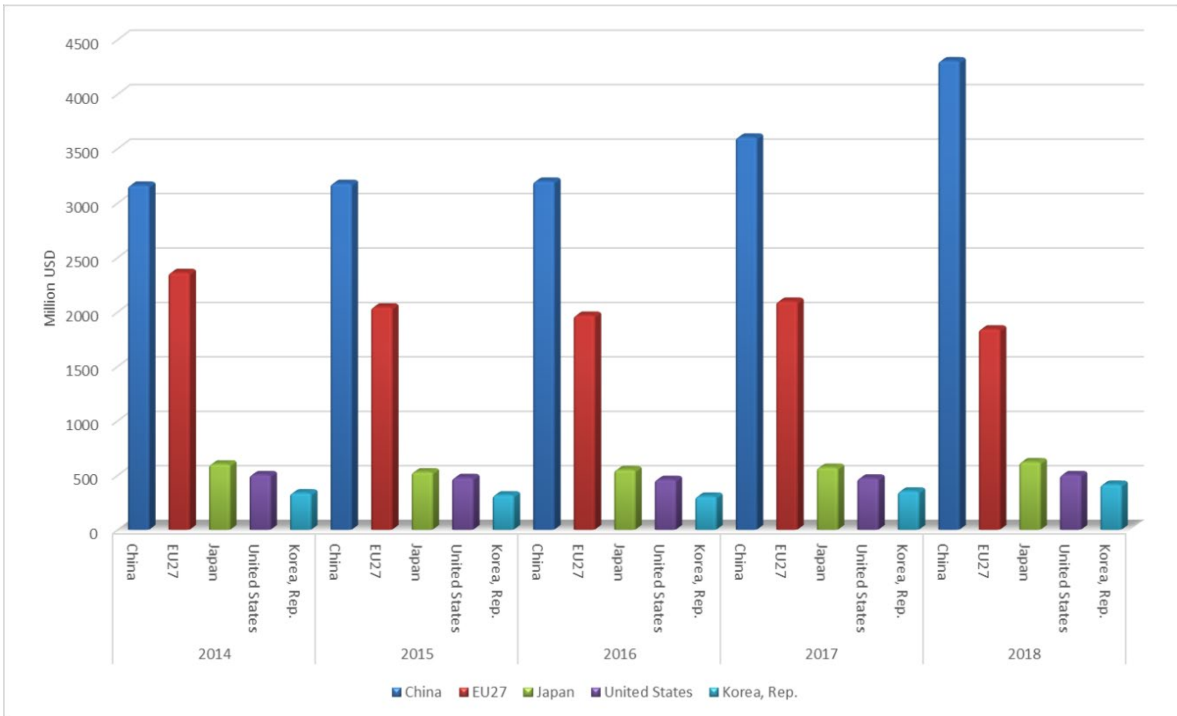
At HS 6-digit level, over the period 2014-207:

- The United States and EU were the leading global importers of aluminium foil not backed, rolled but not further worked (HS 760711). Germany was the biggest EU importers in the EU, accounting for more than a quarter of annual extra-EU imports over 2014-2017;
- China was the biggest importer of aluminium foil (HS 7607119) and backed aluminium foil (HS 760720) over the entire period, with an annual share of total global imports of 15% and 8%, respectively.

China and the EU were by far the biggest global exporters of aluminium foil, accounting together for more than 45% of total annual global exports over the period 2014-2018. As compared to their 2014 export value, while EU exports fell by 22%, China's rose by 36% in 2018.

China and EU were also the leading world exporters of the three HS-6-digit product groups belonging to HS 7607 heading - namely HS 760711, HS 760719, and HS 760720.

Figure 151. Main five global exporters of aluminium foil over the period 2014-2018 (HS 7607; total export value; EU as a trading bloc; million USD)

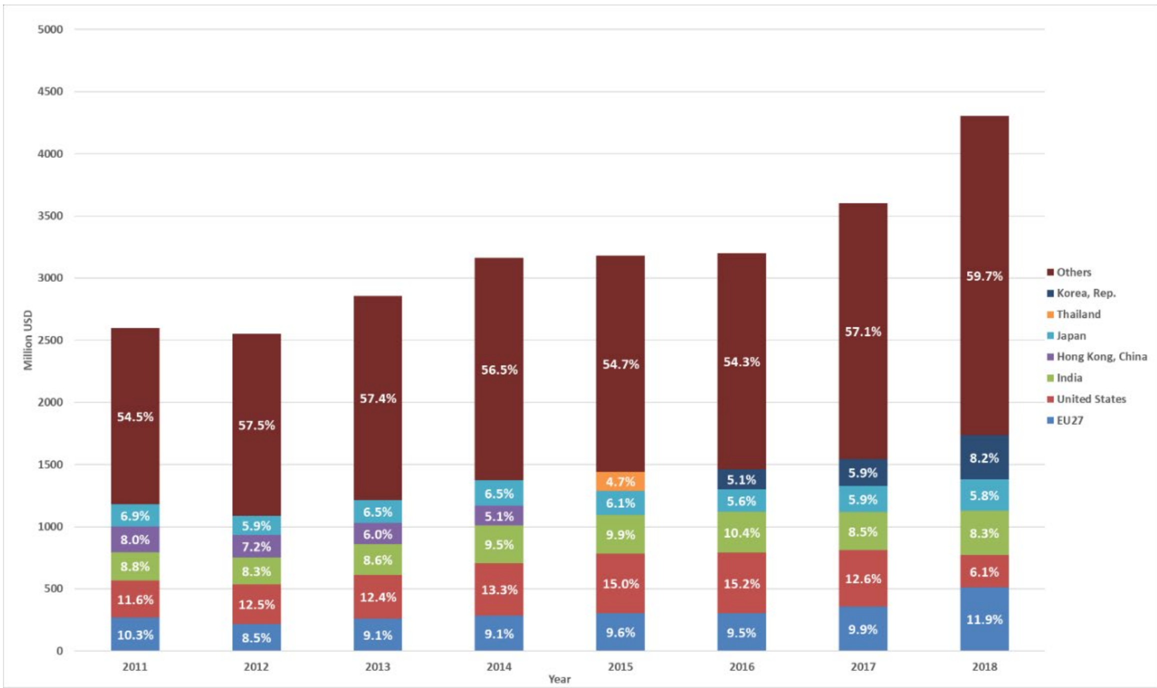


Source: UN Comtrade data, accessed via (WITS, 2020)

9.1.3 Chinese exports of aluminium foil

As compared to 2016, the share of Chinese exports of aluminium foil going to the EU increased from 9.5% to around 12% in 2018, while the US' share declined from 15% to 6%.

Figure 152. China's exports of aluminium foil (HS 7607) to its main destinations, EU and US over the period 2011-2018 (EU as a trading bloc; million USD)



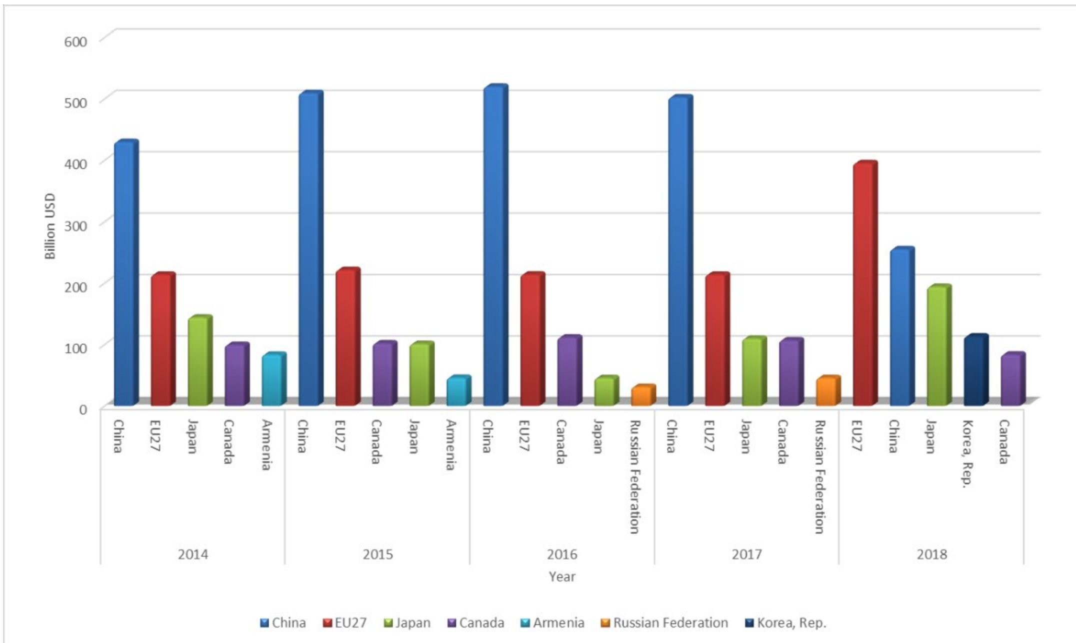
Source: UN Comtrade data, accessed via (WITS, 2020)

9.2 US

9.2.1 Imports

China was by far the US' larger supplier over 2014-2017, but its import share decreased abruptly, from more than half of US total imports in 2016 to 43% in 2017 and 18% in 2018. Meanwhile, the share of the EU imports (the second supplier up to 2017, and the leading one in 2018) increased from 21% in 2016 to 28% in 2018.

Figure 153. US imports of aluminium foil (HS 7607): the leading five supplier countries over the period 2014-2018 (import value; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

9.2.2 Capacity

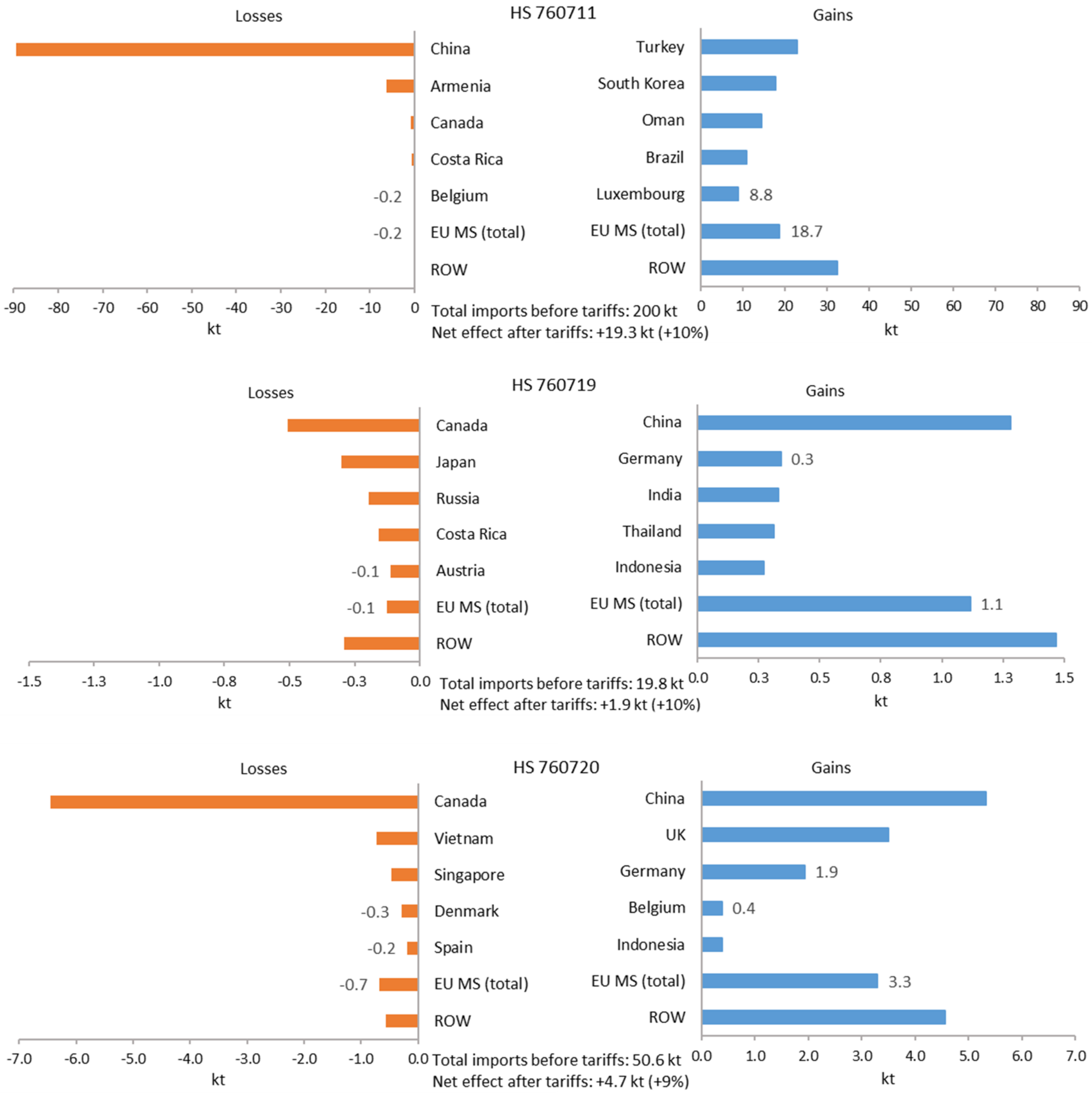
Section 8.2.2 describes the capacity of the US rolling industry, including aluminium foil.

9.3 Impact of the tariffs in the US

9.3.1 US imports of aluminium foil

The annualised US imports of aluminium foil (HS 7607) have increased by about 10% from April 2018 to November 2019, after the imposition of tariffs. China's exports of not backed and not further worked aluminium foil (HS 760711) have registered an outstanding decrease. Highly increased exports from Turkey, the EU (mainly from Luxembourg), South Korea and other countries replaced such imports in the US for HS 760711. For not backed but further world aluminium foil (HS 760719), and backed aluminium foil (HS 760720), Canada had the most considerable losses in US imports. Meanwhile, China and the EU countries (mainly Germany) augmented their exports to the US for HS 760719 and HS 760720 considerably.

Figure 154. Effect of tariffs on annualised imports ([145]) of aluminium foil (HS 7607) by top-5 affected countries



Source: Data from (USITC Dataweb, 2020)

([145]) Data are analysed for a period of 20 months after the tariffs (April 2018 – November 2019) in comparison to a period of 20 months before the imposition of tariffs (August 2016 – March 2018).

9.3.2 Production and employment

Open sources publish no information on US foil production. Employment data of the US aluminium rolling industry is shown in Figure 130.

9.4 EU

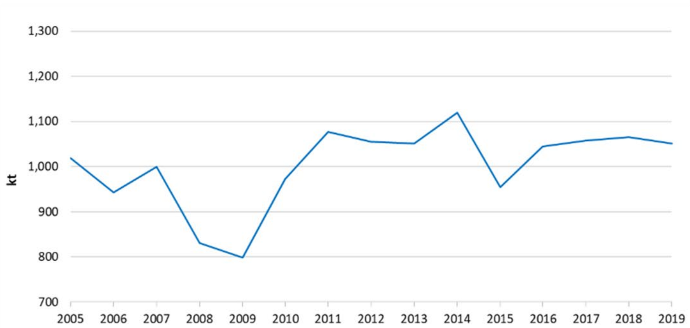
9.4.1 Foil segment of the EU aluminium industry

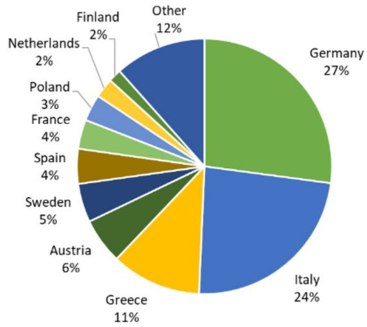
Companies belonging to the aluminium industry's foil segment are engaged in the rolling and rewinding of aluminium foil, and the manufacturing of semi-rigid aluminium foil containers and household foil. More than 40 companies are members of the European industry Association (AluFoil, 2020a). The segment of aluminium foil is merged in our analysis with the broader rolling segment (see Section 8.4.1).

9.4.2 Supply and demand for aluminium foil in the EU

The output of EU foil rollers has remained relatively flat after 2011 but higher than the levels seen before the financial crisis of 2009, ranging from approximately 1,050 to 1,080 kt per year. An exception is the period 2014-2015 when Eurostat data registered a record output in 2014 at 1,120 kt followed by a significant drop in deliveries the following year to about 950 kt (Figure 155). Germany and Italy are the EU countries with the largest share of production accounting for half of the total output in the EU. Producers of aluminium foil shipped one-third (33%) of their total sales to external sales destinations in 2019, a share which ranges from 30-34% in the last decade.

Figure 155. EU production ([146]) (volume sold) of aluminium foil (left) 2005-2019, and top-10 EU producing countries ([147]) in 2018





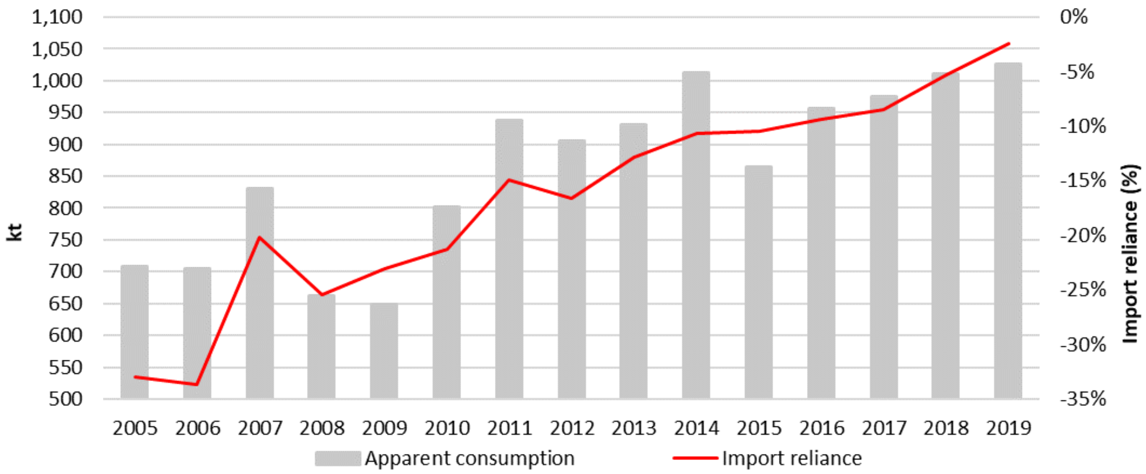
Source: Background data in (Eurostat Prodcom, 2020)

The EU apparent consumption for aluminium foil reached a record level of 1,025 kt in 2019, increased by a CAGR of 4.7% from 2009 to 2019.

([146]) PRC code 24422500 'Aluminium foil of a thickness (excluding any backing) <= 0.2 mm'.

([147]) Foil production reported under PRC code 24422500 from Bulgaria, Czechia, Ireland, Hungary, Portugal, Slovakia, and Slovenia is withheld in the available data. The category "Other" includes the production from these EU countries.

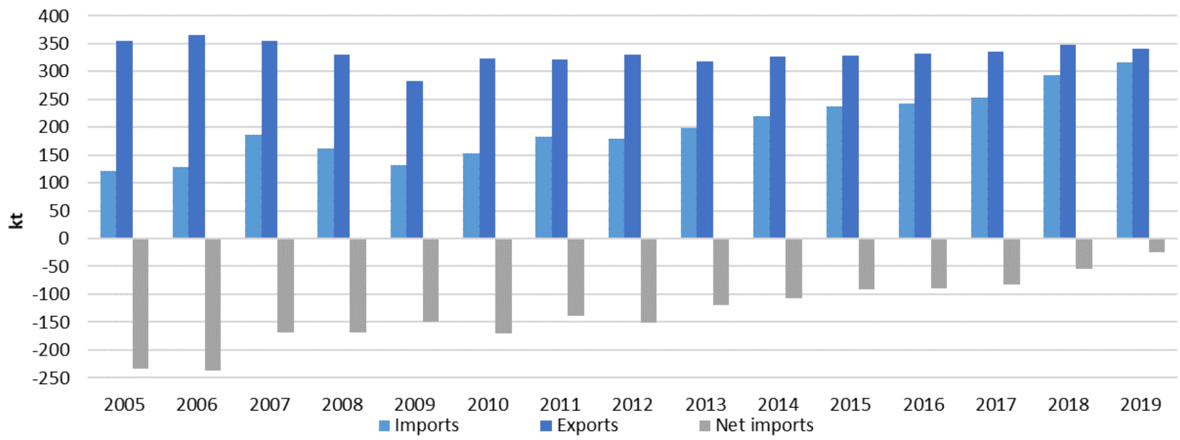
Figure 156. EU apparent consumption (left axis) and import reliance (right axis) for aluminium foil, 2005-2019



Source: Background data in (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

The EU is a net exporter of aluminium foil between 2005 and 2019. However, it is noted that since 2009 imports rose rapidly at a CAGR of 9.1% (see Figure 157). In 2019, imports of aluminium foil products reached a record level of almost 320 kt, more than doubled in comparison to 2010, and almost 70% higher compared to their peak level in 2007 prior to the financial crisis. On the other hand, exports have remained comparatively flat in 2010-2019, showing a year-over-year rise of 3.5% only in 2018, but without overpassing the levels seen before 2009. The overall CAGR for exports of aluminium foil in the period 2009-2019 is 1.9%. The constantly increasing import penetration has resulted in a significant decline of net exports in the last years.

Figure 157. EU trade flows for aluminium foil, 2005-2019



Source: Background data in (Eurostat Comext, 2020)

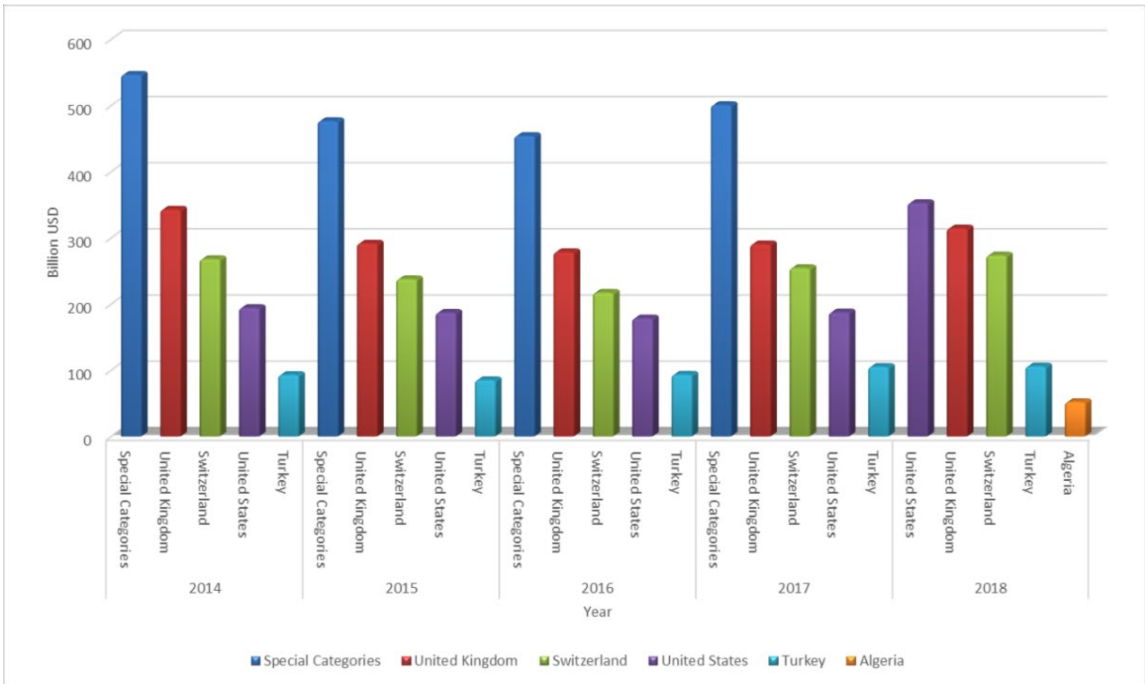
Approximately 75% of European production is used for packaging applications and household foil, and 25% is consumed in technical applications. Thinner gauge foils are primarily employed for flexible packaging and household foils. Thicker gauges are typically used for semi-rigid containers and technical applications such as automotive and heat exchange components (AluFoil, 2020b).

9.4.3 EU exports of aluminium foil

The United Kingdom was the most important destination of the extra-EU exports over 2014-2018 (e.g. 17% in 2018).

While having been the fourth destination of the extra-EU exports over the period 2014-2017, with an annual share of 8-9%, in 2018 the US became the leading destination of the total extra-EU 27 exports of aluminium foil, with an export share of 19%.

Figure 158. EU exports of aluminium foil (HS 7607) to its main destinations over the period 2014-2018 (EU as a trading bloc; million USD)



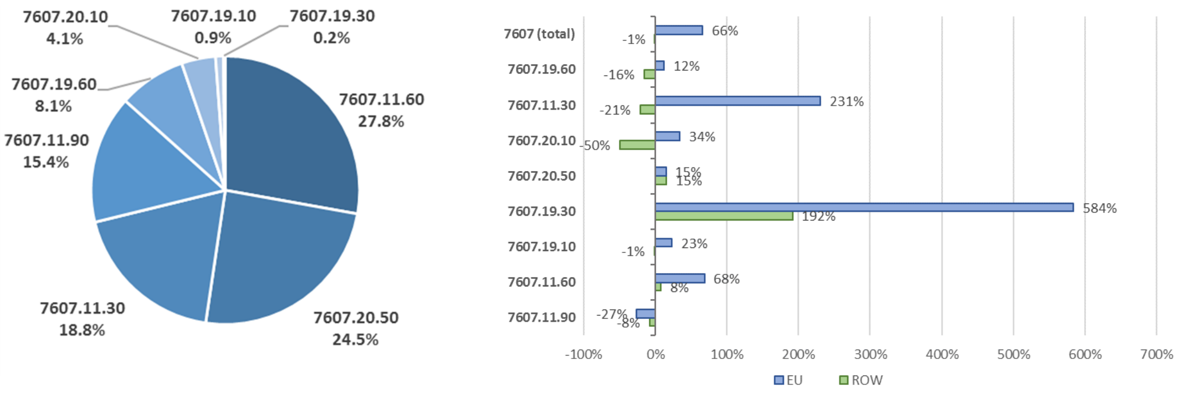
Source: UN Comtrade data, accessed via (WITS, 2020)

9.5 Impact of the tariffs on the EU

9.5.1 EU exports of aluminium foil to the US

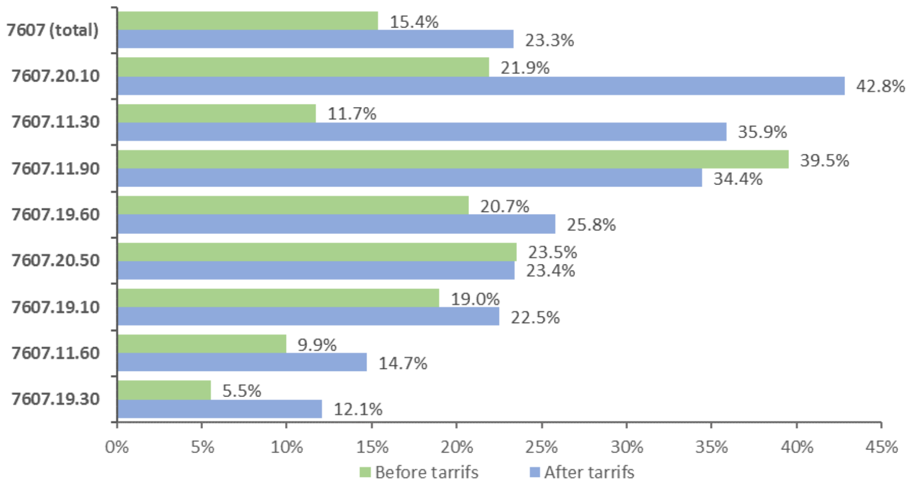
Foil products originating in the EU have performed better than exports from other countries to the US for almost all aluminium foil products. Figure 159 shows the relative change of US imports from the EU compared to US imports from rest-of-world countries. Consequently, most aluminium foil products exported from the EU to the US increased their share in US imports in the period following the implementation of Section 232 duties (see Figure 160).

Figure 159. Breakdown of EU exports to the US per product before tariffs' enforcement (left), and relative change (%) in EU exports to the US after the imposition of tariffs (right), by HTS 8-digit codes of aluminium foil products (HS 7607) ([148])



Source: Background data in (USITC Dataweb, 2020)

Figure 160. EU share in the US imports before and after the tariffs, by HTS 8-digit codes of aluminium foil products (HS 7607)



Source: Background data in (USITC Dataweb, 2020)

Figure 161 shows the breakdown of US imports for aluminium foil by 8-digit HTS code. The top-3 foil products imported by the US, accounting for 84% of the total, are the following:

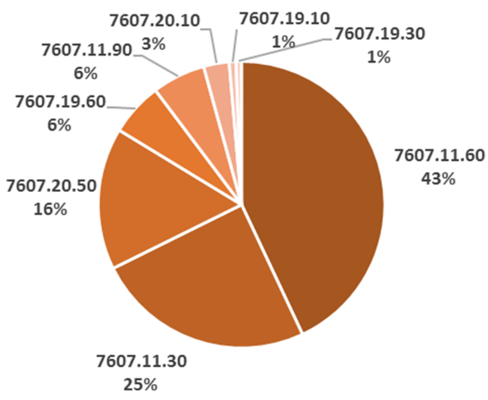
— HTS 7607.11.60 "Aluminium, foil, w/thickness over 0.01 mm but n/o 0.15 mm, rolled but not further worked, not backed";

— HTS 7607.11.30 "Aluminium, foil, w/thickness n/o 0.01 mm, rolled but not further worked, not backed";

— HTS 7607.20.50 "Aluminium, foil, w/thickness n/o 0.2 mm, backed, nesoi".

([148]) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) before tariffs were activated against the EU.

Figure 161. Annualised US imports of aluminium foil (HS 7607) after tariffs' enforcement by volume and HTS 8-digit product code.

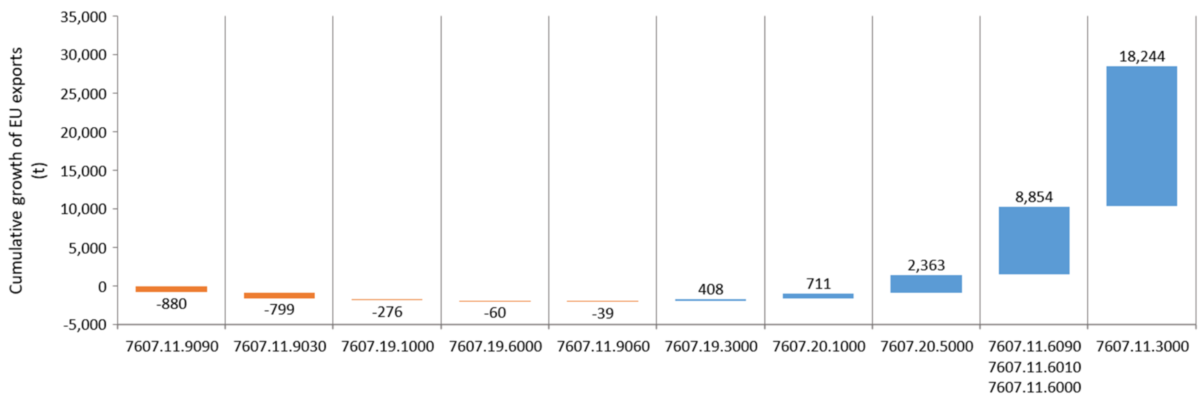


Source: Background data in (USITC Dataweb, 2020)

These three foil products are further analysed at disaggregated HTS 10-digit level due to their dominant share in US imports. Data show that the surge of EU exports is credited mainly to the following HTS-10-digit codes:

- 7607.11.3000 *"Aluminium foil of a thickness not exceeding 0.01 mm not backed, rolled but not further worked"*, which were more than tripled in the period following the implementation of tariffs (See Figure 160);
- 7607.11.6090 *"Aluminium foil of a thickness greater than 0.01 mm and lower than 0.15 mm, rolled not further worked, not backed, nesoi"*, and 7607.11.6010 "*Aluminium foil, boxed, weighing less than 11.3 kg, of a thickness greater than 0.01 mm and lower than 0.15 mm, rolled, not backed"* ([149]);
- 7607.20.5000 *"Aluminium foil of a thickness not exceeding 0.2 mm backed, other than covered or decorated with a character, design, fancy effect or pattern".*

Figure 162. Growth of EU exports after the imposition of tariffs for aluminium foil (HS 7607) by HTS 10-digit product code



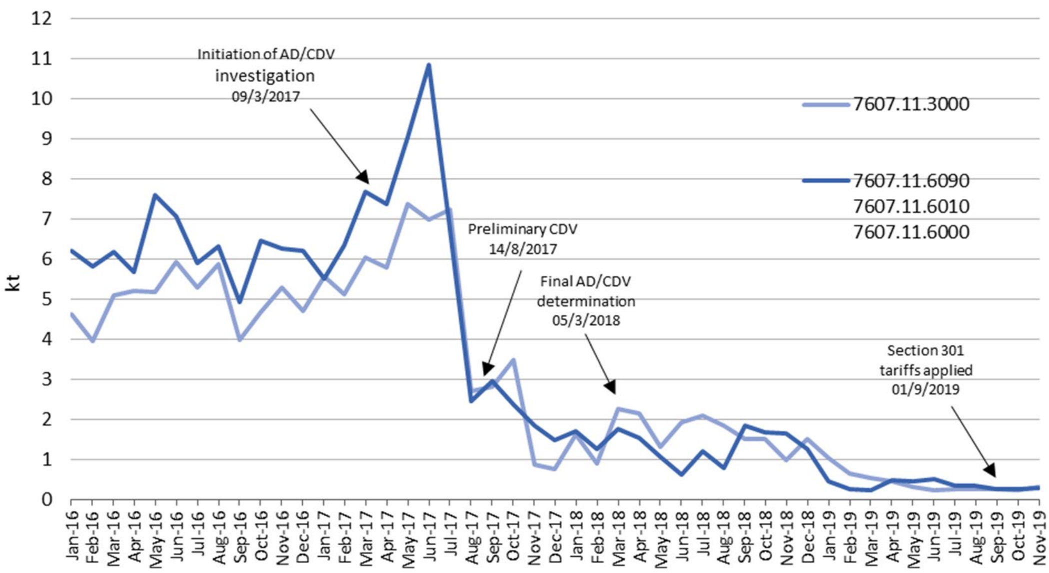
Source: Calculations based on background data in (USITC Dataweb, 2020)

HTS 7607.11.3000 comprises thin gouge aluminium foil with a thickness less than 10 microns. Such products originating from China are subject to US anti-dumping and countervailing duties. Besides, anti-dumping, and countervailing duties also apply for Chinese foil stock products belonging to HTS 7607.11.6090 with thickness

([149]) The products classified under HTS 7607.11.6000 were split into the subheadings HTS 7607.11.6090 and HTS 7607.11.6010 in 2019. For the latter, no AD/CVD duties apply for Chinese products. HTS 7607.11.6090 accounted for about 85% by volume in the US imports of 7607.11.60 in 2019.

ranging from 10 to 150 microns (see Section 3.8.1). Figure 163 demonstrates the steep decline in Chinese exports to the US of HS 760711 following the initiation of AD/CDV investigation by US authorities.

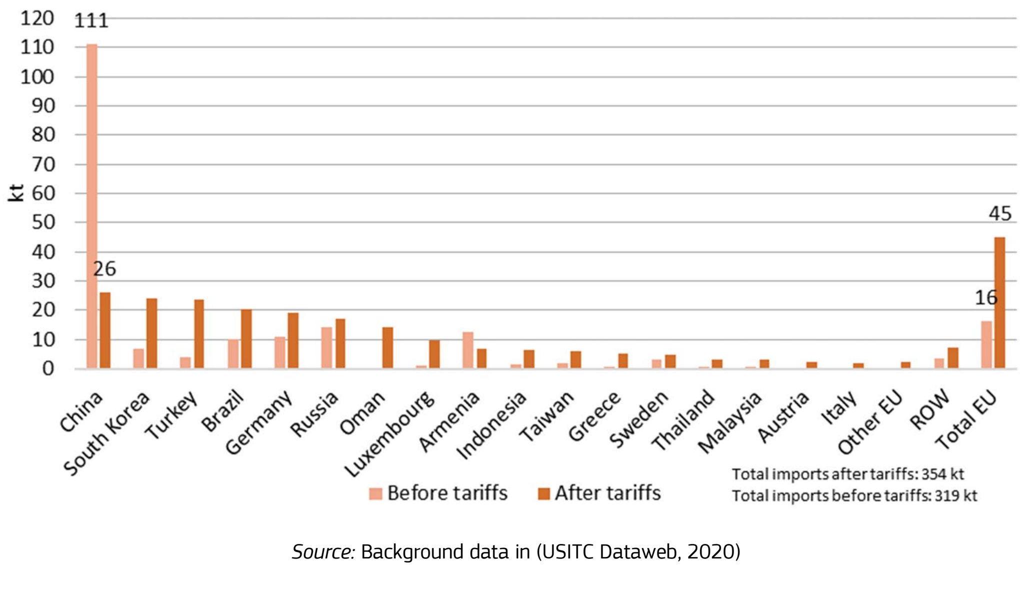
Figure 163. Trade measures applied by the US and monthly US imports from China for HTS 7607.11.3000, HTS 7607.11.6000, HTS 7607.11.6010, HTS 7607.11.6090 ([150])



Source: Background data in (USITC, 2018b)(USITC, 2018a)(USITC Dataweb, 2020)

Chinese exports to the US of the above foil products slumped by 85 kt on an annualised basis. EU countries managed to capture a share of 24% previously held by imports from China, as well as of the new demand (35 kt) for aluminium foil imports (Figure 164).

Figure 164. Comparison of annualised ([151]) US imports for HTS subheadings 7607.11.3000, 7607.11.6000, 7607.11.6090, 7607.11.6010 before and after the enforcement of Section 232 tariffs, by exporting country



Source: Background data in (USITC Dataweb, 2020)

([150]) HTS codes 7607.11.6010, 7607.11.6090 introduced in 2019. HTS code 7606.92.6000 "*Aluminium foil not backed, rolled but not further worked over 0.01 mm but not over 0.15 mm thickness"* discontinued in 2019.

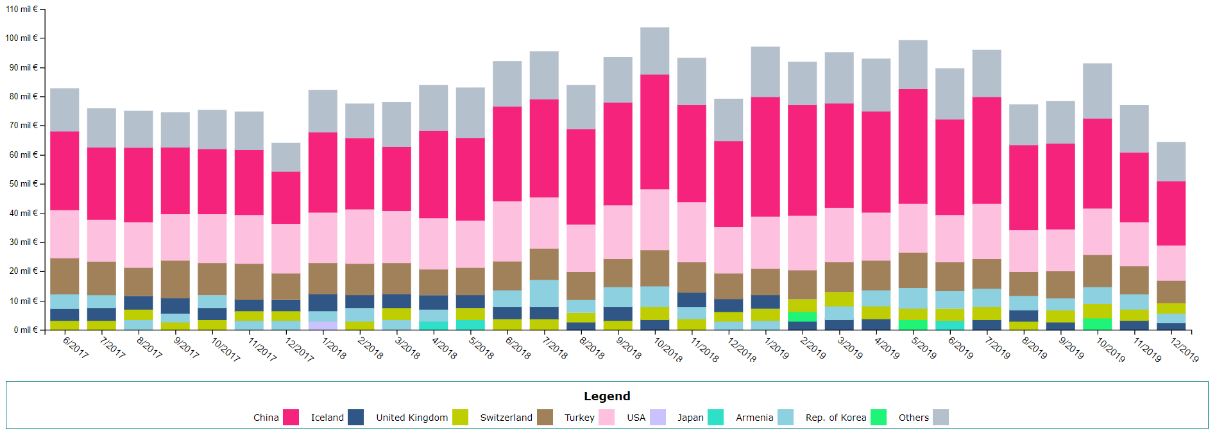
([151]) Imports are annualised over 21 months before (July 2016 – March 2018), and after (April 2018 – December 2019) the imposition of Section 232 tariffs.

9.5.2 EU-directed trade reorientation for aluminium foil

The main sources of monthly imports of EU over the period 06/2017-12/2019 were China and Turkey, together accounting for more than half of EU's monthly imports of aluminium foil.

As compared to the period June 2017-December 2017, EU half-year average monthly imports from China increased from 31% to 37% in June 2018-December 2018 (i.e. the period immediately after the US' imposition of extra-tariffs on the aluminium products for the EU) and 35% in the second half of 2019.

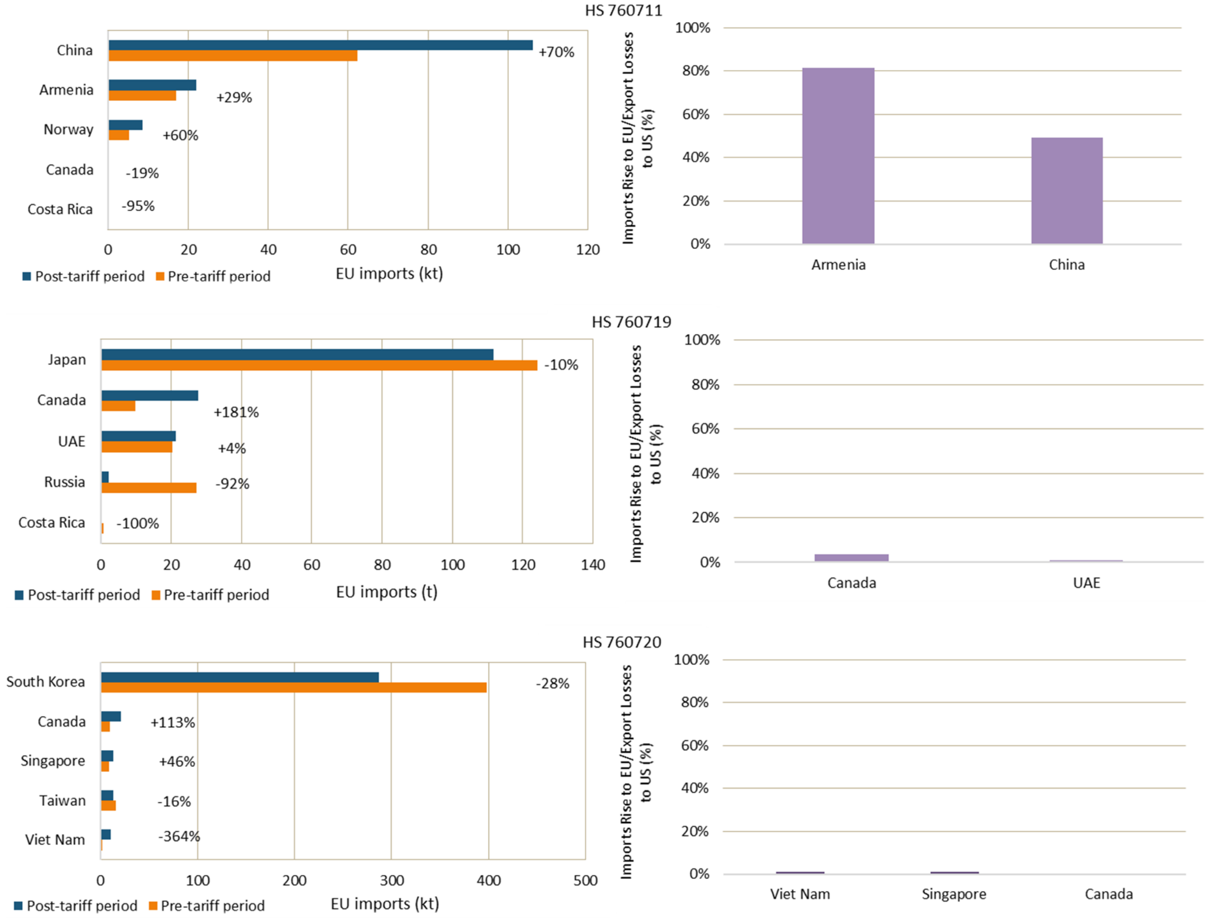
Figure 165. Evolution of the EU monthly imports of aluminium foil (HS 7607) by main country supplier plus China over the period June 2017-December 2019



Source: Data from (Eurostat Comext, 2020)

The following figure provides a summary of the EU imports of aluminium foil from countries that had the top losses in the US after the imposition of tariffs. The most prominent observation is the crushing increase by 70% for imports of not backed and not further worked foil (HS 760711) from China, corresponding to about half of the Chinese export loss in the US. Imports from Armenia, also for HS 760711, had a considerable increase amounting to 80% of Armenia's export loss in the US. Canadian exports to the EU of not backed and further worked foil (HS 760719) had an almost two-fold increase, while for backed foil (HS 760720) doubled; for both products, the volumes directed to the EU are negligible compared to the export decrease in the US. Finally, EU imports from Norway increased in the post-tariff period by 60% for HS 760711; the rise is many times higher than Norway's losses in the US (almost 40 times). Yet, the volumes of EU imports from Canada and Norway are much lower than imports of foil products from China.

Figure 166. EU annualised imports ([152]) of aluminium foil (HS 7607) by HS6 product group (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

([152]) Source countries that had the highest losses in the US after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length, i.e. 20 months before the tariffs took effect (August 2016 – March 2018).

10 Aluminium tubes and pipes

10.1 Overview

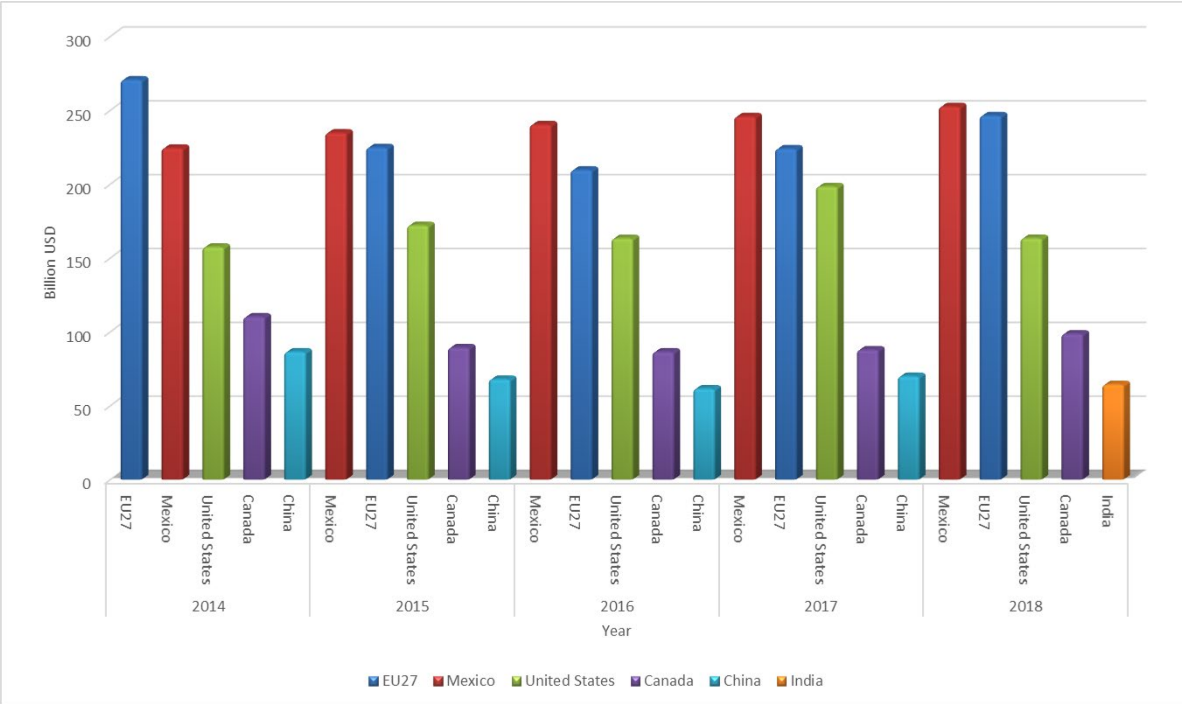
10.1.1 World production

There are no publicly available statistical data for tube and pipe global production. Aggregated production data for extrusion products are presented in Figure 92.

10.1.2 Main suppliers and importers

Mexico, EU (taking only into account the extra-EU imports) and the US were the main global importers of aluminium tubes and pipes over 2014-2018.

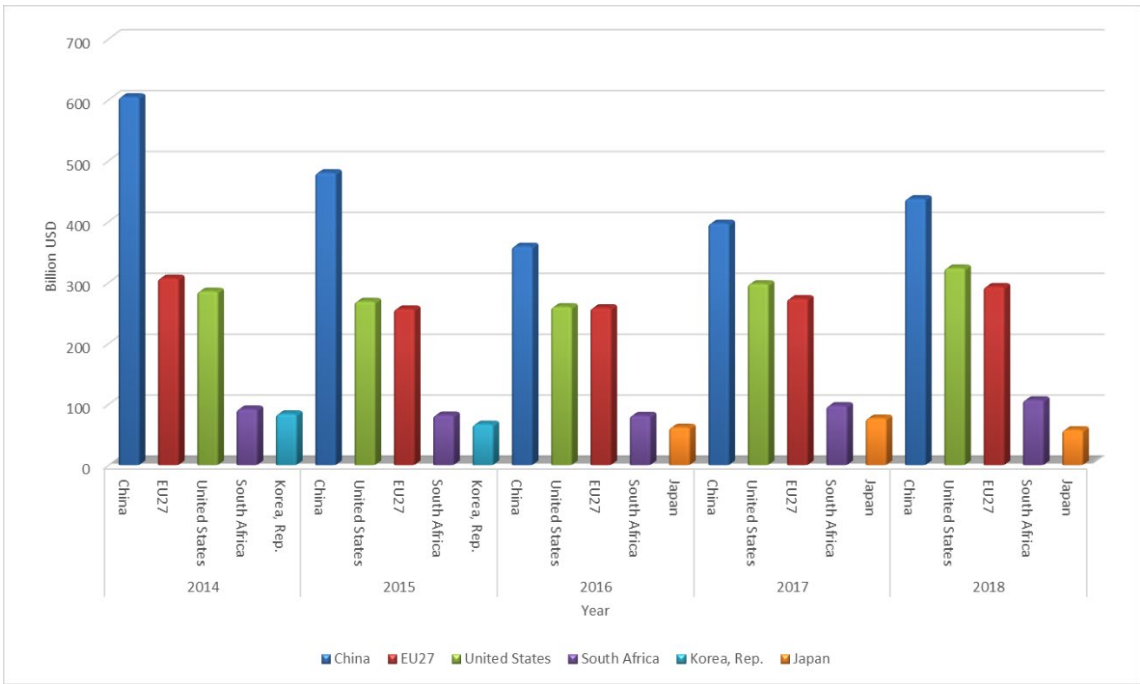
Figure 167. Main five global importers of aluminium tubes and pipes (HS 7608) over the period 2014-2018 (total import value; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

China, the EU (taking only into account the extra-EU imports), and the US were the main global exporters of aluminium tubes and pipes over 2014-2018. China's share (the leading global exporter over the entire period) in global exports declined, from almost a quarter of the world's total exports in 2014 to 18 per cent in 2018.

Figure 168. Main five global exporters of aluminium tubes and pipes (HS 7608) over the period 2014-2018 (total export value; EU as a trading bloc; million USD)

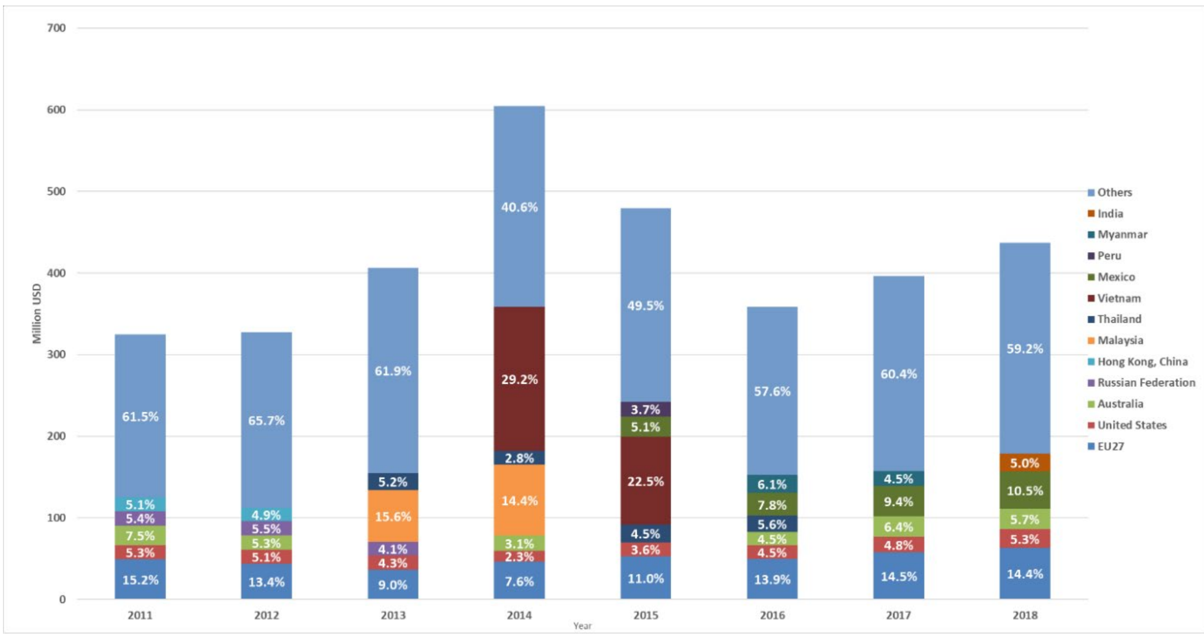


Source: UN Comtrade data, accessed via (WITS, 2020)

10.1.3 Chinese exports of aluminium tubes and pipes

As compared to their 2016 shares, the annual share of Chinese exports of aluminium tubes and pipes going to the EU increased from 13.9% to 14.5% in 2017 and 14.4% in 2018; US' share of Chinese exports also rose, from 4.5% to 4.8% in 2017 and 5.3% in 2018.

Figure 169. China's exports of aluminium tubes and pipes (HS 7608) to its main destinations, EU and US over the period 2011-2018 (EU as a trading bloc; million USD)



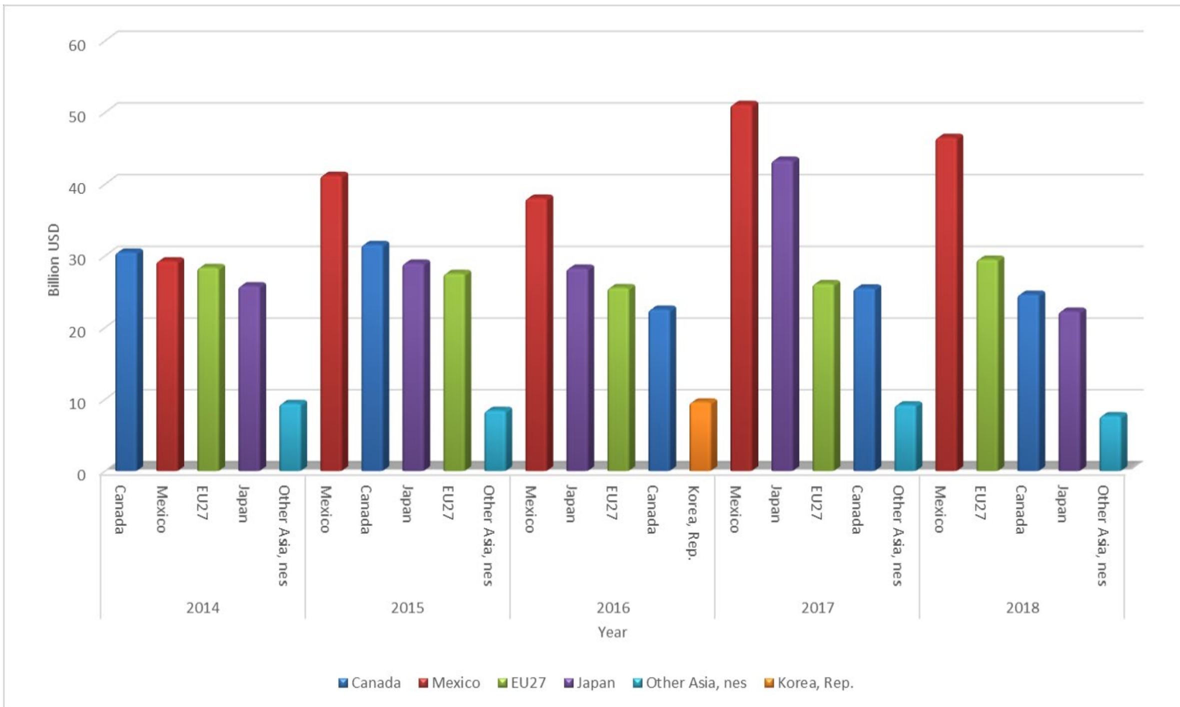
Source: UN Comtrade data, accessed via (WITS, 2020)

10.2 US

10.2.1 Imports

Since 2015, Mexico was the leading supplier of aluminium tubes and pipes to the US. The EU became the second US' supplier in 2018, with 18% of total US imports.

Figure 170. US imports of aluminium tubes and pipes (HS 7608): the leading five supplier countries over the period 2014-2018 (import value; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

10.2.2 Capacity

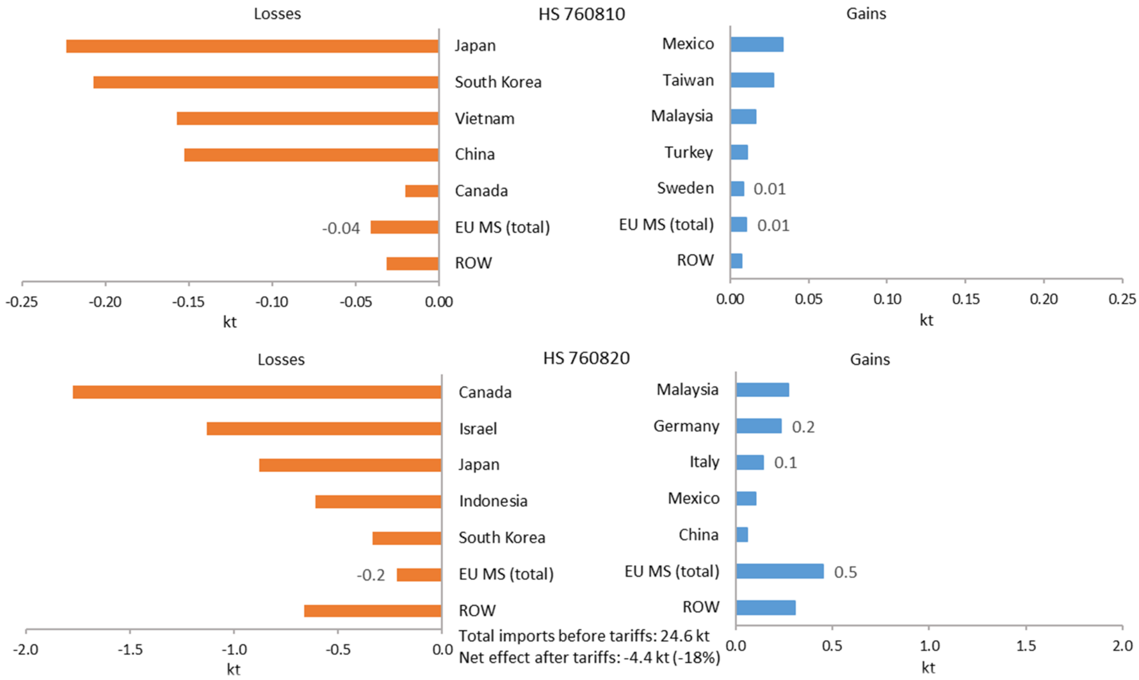
Section 6.2.2 provides the capacity of the US extrusion industry, including tubes and pipes.

10.3 Impact of the tariffs in the US

10.3.1 US imports of aluminium tubes and pipes

US imports of aluminium tubes and pipes (HS 7608) dropped by 20% in total. Japan registered the top export losses for non-alloy tubes and pipes (HS 760810) and Canada for aluminium alloy tubes and pipes (HS 760820).

Figure 171. Effect of tariffs on annualised imports ([153]) of aluminium tubes and pipes (HS 7608) by top-5 affected countries



Source: Background data in (USITC Dataweb, 2020)

10.3.2 Production and employment

Tube and pipe production in the US is not available from open sources. Figure 98 includes employment data for companies producing tubes and pipes by extrusion and/or rolling.

10.4 EU

10.4.1 Tubes and pipes segment of the EU aluminium industry

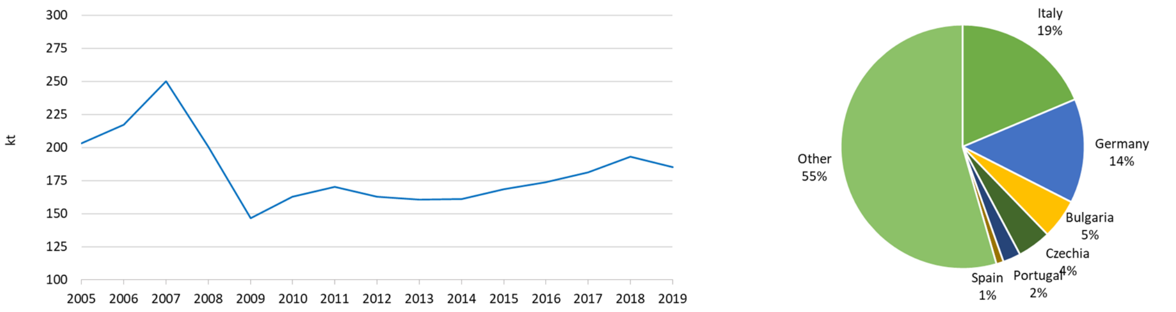
Tubes and pipes can be produced by extrusion or by forming and welding rolled products. Companies producing tubes and pipes are considered together with the industrial extrusion segment (see Section 6.4.1).

10.4.2 Supply and demand for aluminium tubes and pipes in the EU

The EU production of tubes and pipes rose by a CAGR rate of 2.3% in the last decade (2010-2019), with the rise identified from the latest low point of 2014 to 2018. However, the EU output has not recovered to the levels achieved prior to the recession of 2008-2009 (see Figure 172). In 2019, deliveries from EU producers of tubes and pipes were lower by 2.3% year-over-year, while 16% of them was exported.

([153]) Data are analysed for a period of 20 months after the tariffs (April 2018 – November 2019) in comparison to a period of 20 months before the imposition of tariffs (August 2016 – March 2018).

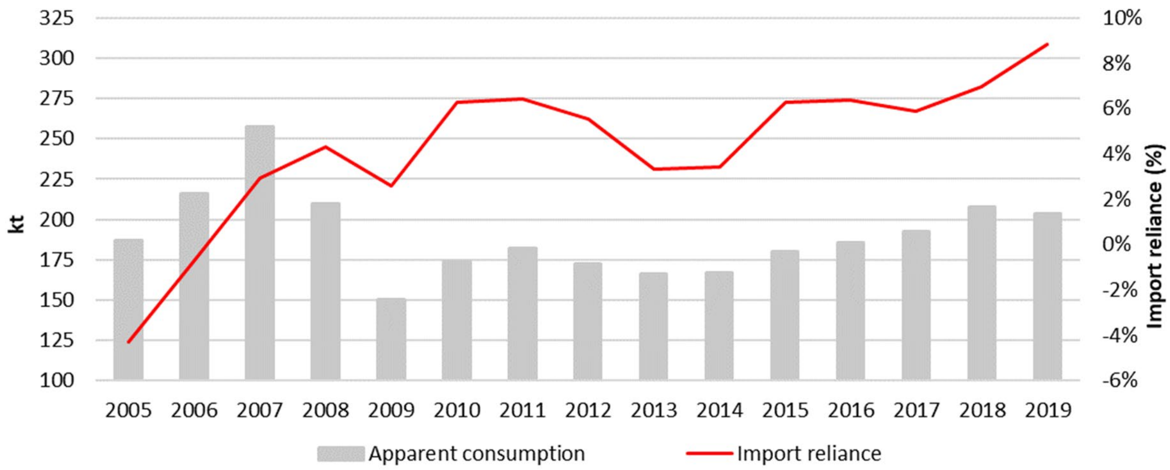
Figure 172. Evolution of EU production ([154]) (volume sold) of tubes and pipes from 2005 to 2019 (left) and EU producing countries ([155]) in 2019 (right)



Source: Background data in (Eurostat Prodcom, 2020)

The CAGR of the apparent consumption of aluminium tubes and pipes in the last decade (2009-2019) was 3.0%. Apparent consumption increased in total by 24% in 2015-2018, whereas in 2019, a small decrease of 2% is observed.

Figure 173. EU apparent consumption (left axis) and import reliance (right axis) for tubes and pipes, 2005-2019



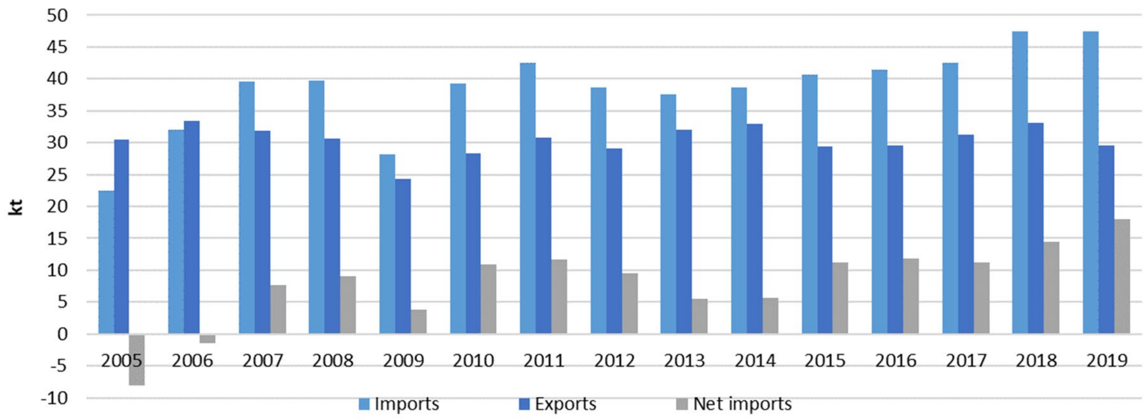
Source: Background data in (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

The EU is a net importer of aluminium tubes and pipes since 2007. Imports had an incremental growth after 2013 and rose to their highest level for two consecutive years in 2018 and 2019. In 2019, net imports climbed to a multi-year record (Figure 174).

([154]) PRC codes 24422630 'Aluminium tubes and pipes (excluding hollow profiles, tube or pipe fittings, flexible tubing, tubes and pipes prepared for use in structures, machinery or vehicle parts, or the like)' and 24422650 'Aluminium alloy tubes and pipes (excluding hollow profiles, tubes or pipe fittings, flexible tubing, tubes and pipes prepared for use in structures, machinery or vehicle parts, or the like)'.

([155]) The production shares in 2018 do not show data for certain EU countries and product categories due to confidentiality. For PRC code 24422630 production figures for Belgium, Germany, Ireland, Greece, Hungary, and Poland. For PRC code 24422650 the shares do not include the production from Austria, Belgium, Denmark, France, Hungary, Ireland, Poland, Romania, Slovakia, and Slovenia. Production from these EU countries is included in the category "Other".

Figure 174. EU trade flows for tubes and pipes, 2005-2019

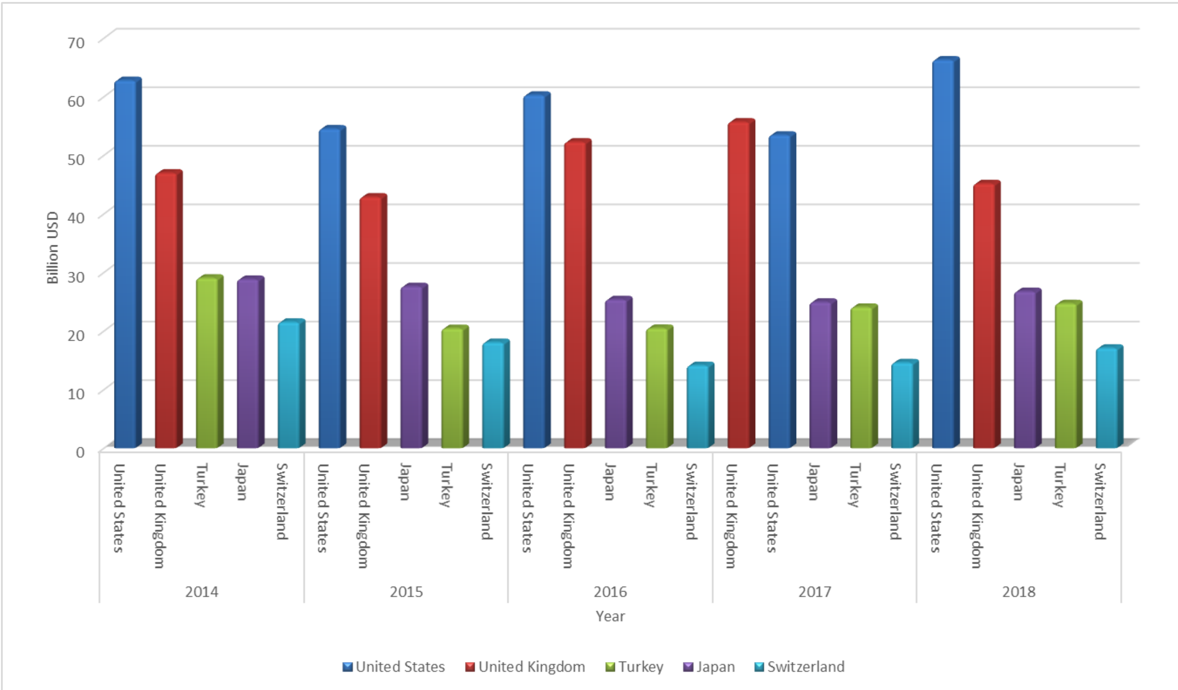


Source: Background data from (Eurostat Comext, 2020)

10.4.3 EU exports of aluminium tubes and pipes

Except in 2017, the United States was the leading destination of the extra-EU exports of aluminium tubes and pipes over 2014-2018, with an annual share of 23% in 2018; the United Kingdom was the second one (15% in 2018).

Figure 175. EU exports of aluminium tubes and pipes (HS 7608) to its main destinations over the period 2014-2018 (EU as a trading bloc; million USD)



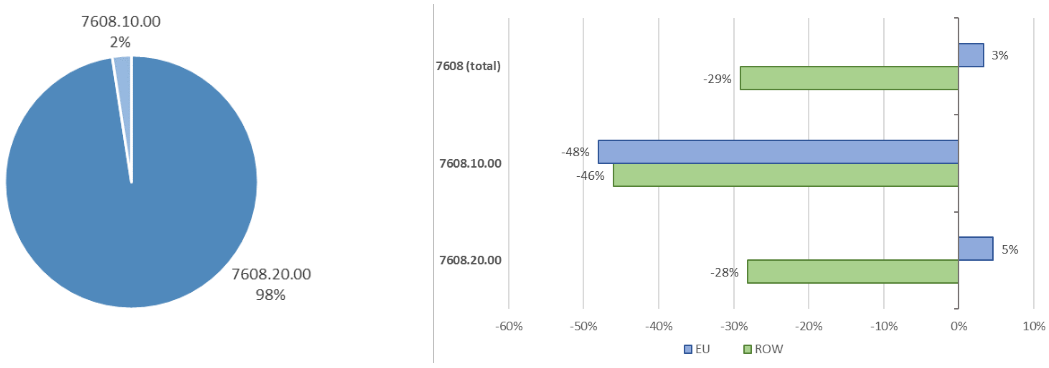
Source: UN Comtrade data, accessed via (WITS, 2020)

10.5 Impact of the tariffs on the EU

10.5.1 EU exports of aluminium tubes and pipes to the US

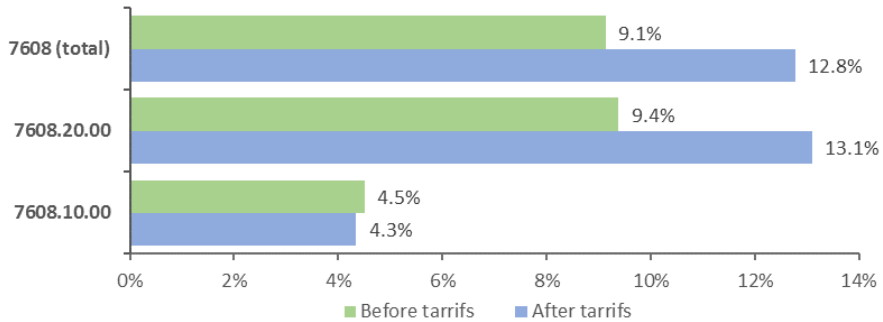
EU exports of aluminium tubes and pipes to the US increased on average by 3% during April 2018 – November 2019 following the imposition of tariffs (Figure 176). The EU share in US imports rose from 9.1% to 12.8% (Figure 177). Exports of alloyed tubes and pipes (HTS 7608.20.00) originating from Germany and Italy were the rise drivers (see Figure 171).

Figure 176. Breakdown of EU exports to the US per product before tariffs' imposition (left), and relative change (%) in EU exports to the US after tariffs' enforcement (right), by HTS 8-digit codes of aluminium tube and pipe products (HS 7608) [156]



Source: Background data in (USITC, 2019b)

Figure 177. EU share in the US imports before and after tariffs' enforcement (down), by HTS 8-digit codes of aluminium tube and pipe products (HS 7608)



Source: Background data in (USITC, 2019b)

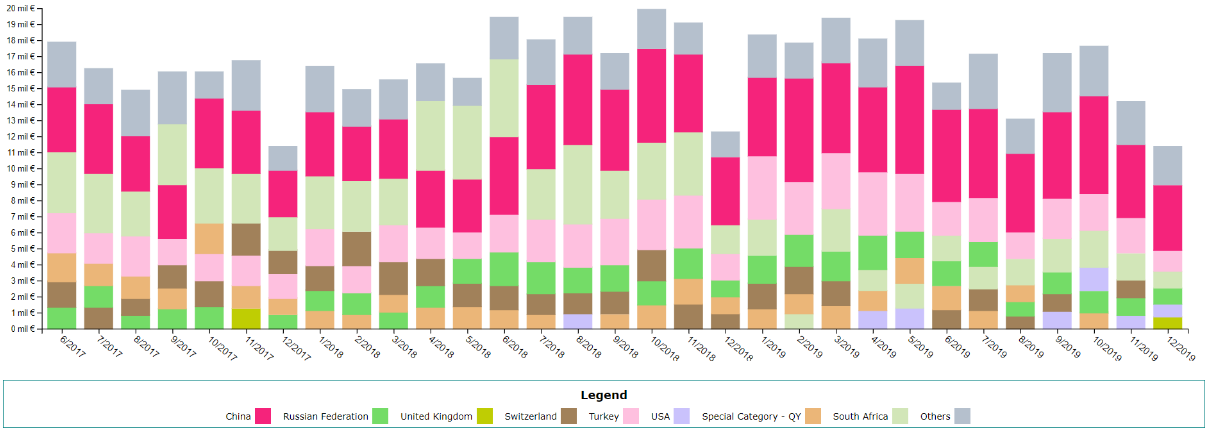
10.5.2 EU-directed trade reorientation for aluminium tubes and pipes

China, South Africa, and Turkey were the leading suppliers of aluminium tubes and pipes to the EU over June 2017-December 2019.

While the Chinese imports represented 24% of the EU's average monthly imports in the second half of 2017, their share rose to 29% in June 2018-December 2018 (i.e. the period immediately after the US imposed extra-tariffs on the aluminium products from the EU), and to 34% in the second half of 2019.

(156) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) before tariffs were activated against the EU.

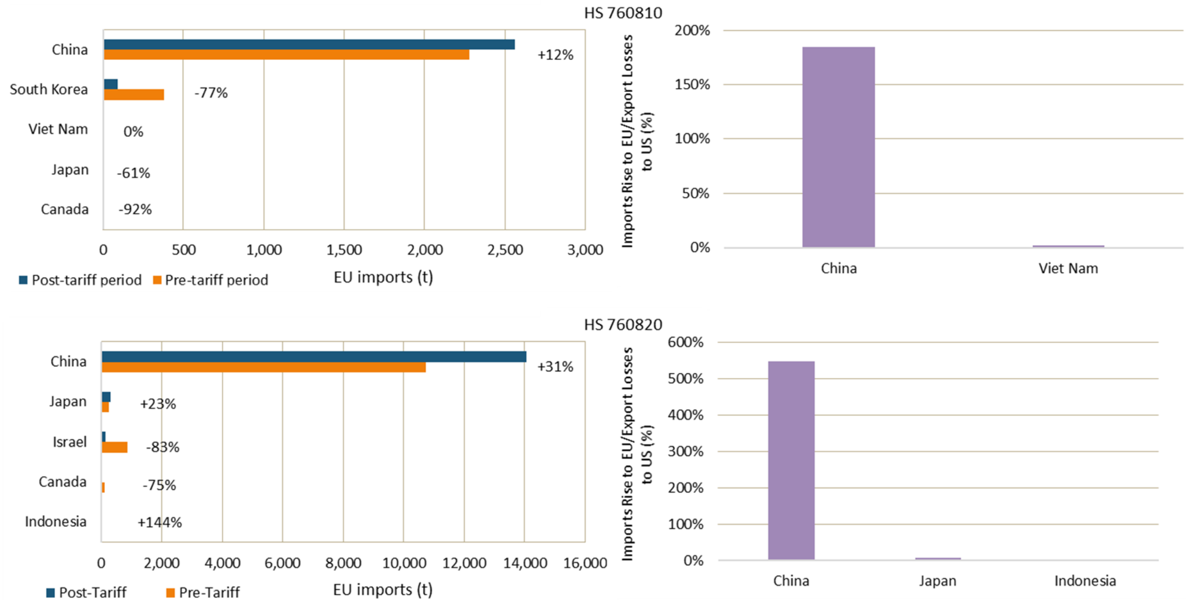
Figure 178. Evolution of the EU monthly imports of aluminium tubes and pipes (HS 7608) by main country supplier plus China over the period June 2017-December 2019



Source: Data in (Eurostat Comext, 2020)

Looking specifically at the countries that had the most considerable export losses in the US after the implementation of tariffs, the substantial increase of Chinese exports for aluminium tubes and pipes is noticed. Trade flows from China to the EU recorded a rise of 12% for non-alloy tubes and pipes (HS 760810) and 31% for tubes and pipes made from aluminium alloys (HS 760820). The increase in the EU's volumes from China exceeds China's export losses in the US 1.8 times for HS 760810 and 5.5 times for HS 760820.

Figure 179. EU annualised imports ([157]) of aluminium tubes and pipes (HS 7608) by HS6 product group (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

([157]) Source countries that had the highest losses in the US after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length, i.e. 20 months before the tariffs took effect (August 2016 – March 2018).

11 Aluminium tube or pipe fittings

11.1 Overview

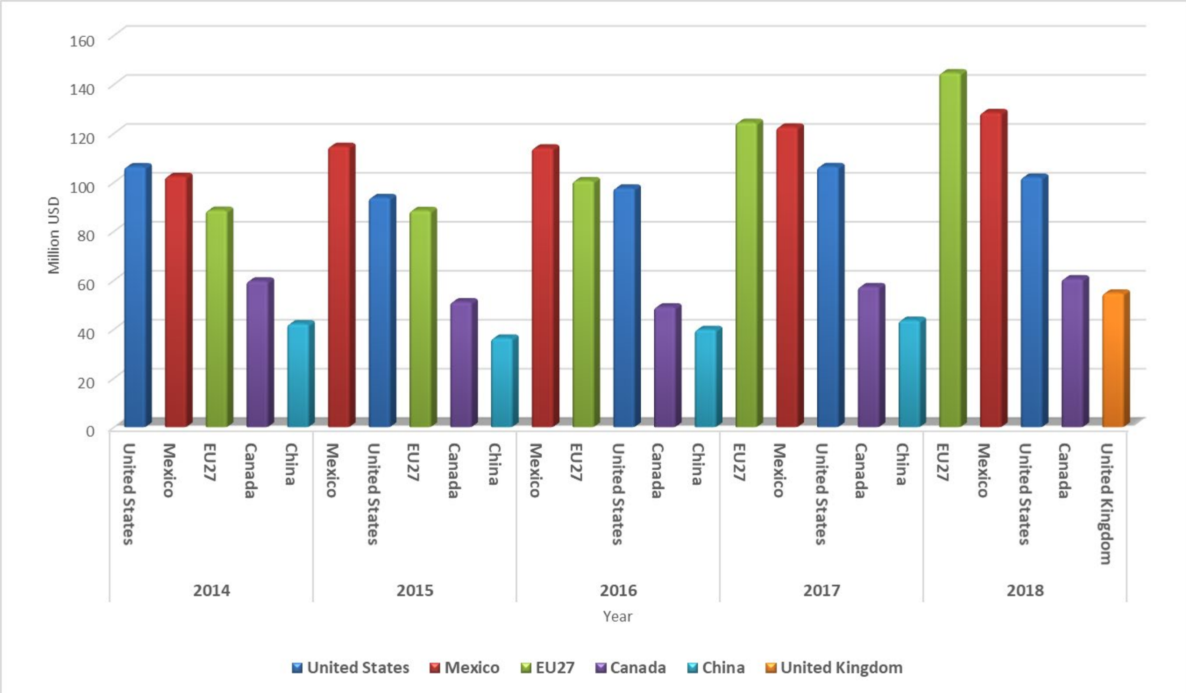
11.1.1 World production

There are no data publicly available data for the global production of aluminium tube or pipe fittings.

11.1.2 Main suppliers and importers

The EU, Mexico, and the US were the main global importers of aluminium tube and pipe fittings over 2014-2018. EU imports increased significantly, by 63 per cent in 2018 as compared to the 2014 level, becoming the leading world's importer since 2017.

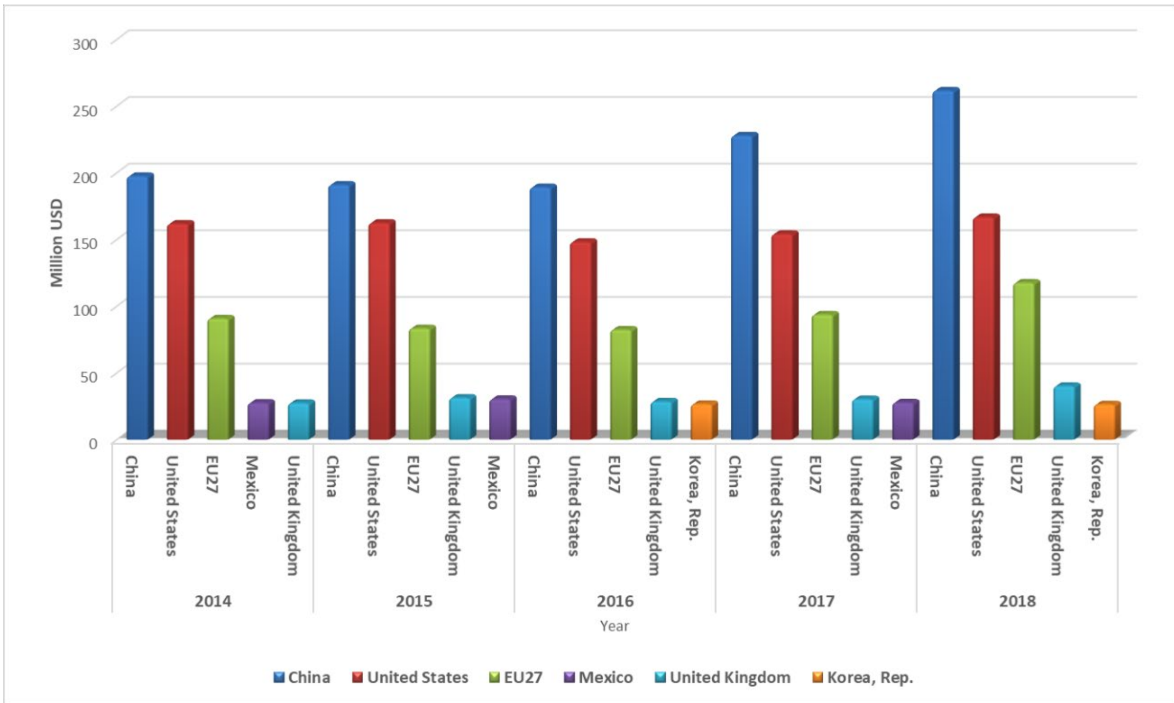
Figure 180. Main five global importers of aluminium tube and pipe fittings (HS 7609) over the period 2014-2018 (total import value; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

China, the US, and the EU were the main global exporters of aluminium tube and pipe fittings over the period 2014-2018. While the value of US imports did not change significantly, extra-EU exports and China's rose significantly in 2018, as compared to 2014 value, by 29.5% and 32.5%, respectively.

Figure 181. Main five global exporters of aluminium tube and pipe fittings (HS 7609) over the period 2014-2018 (total export value; EU as a trading bloc; million USD)

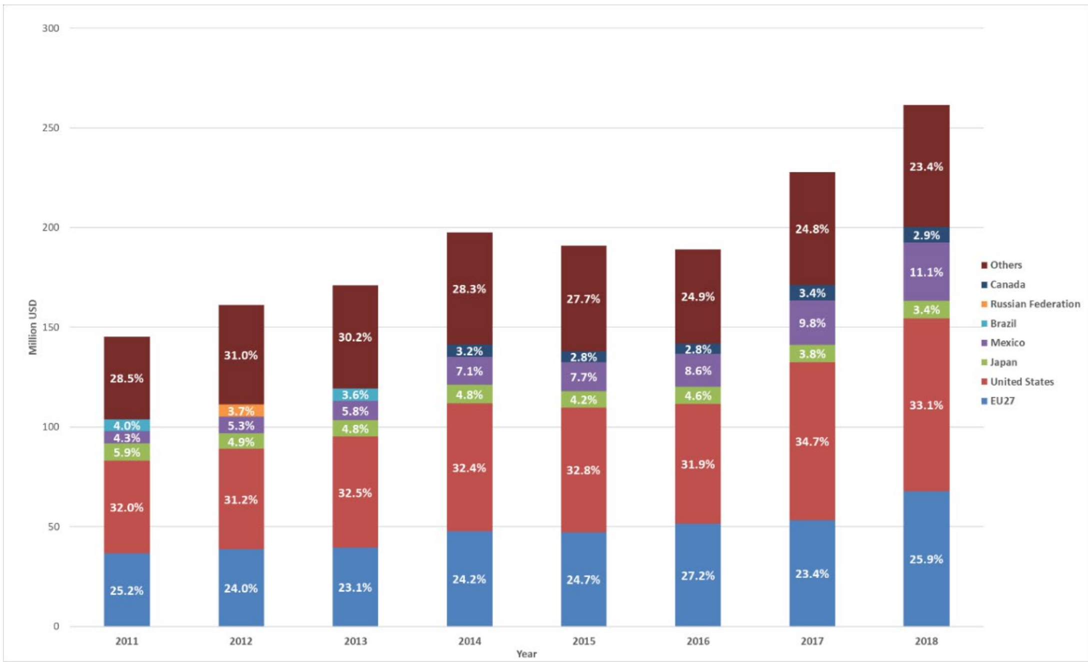


Source: UN Comtrade data, accessed via (WITS, 2020)

11.1.3 Chinese exports of aluminium tube or pipe fittings

The US and the EU were the main destinations of the Chinese exports over the period 2014-2018 (together, between 40% and 50% of the annual share of Chinese exports). As compared to 2016, the annual share of Chinese exports of aluminium tubes and pipes going to the EU increased from 18.8% to 20.3% in 2017 and 19.9% in 2018; the US' share of Chinese exports also rose, from 22.9% to 26% in 2017 and 25.8% in 2018.

Figure 182. China's exports of aluminium tube and pipe fittings (HS 7609) to its main destinations, EU and US, over the period 2011-2018 (EU as a trading bloc; million USD)



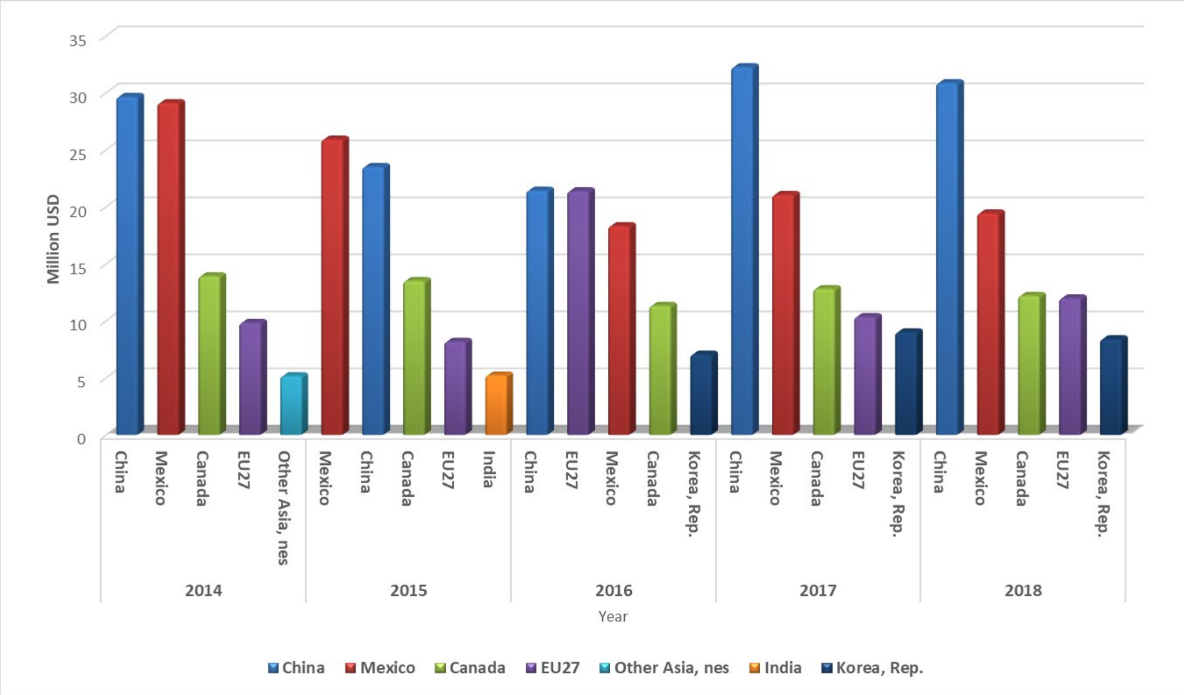
Source: UN Comtrade data, accessed via (WITS, 2020)

11.2 US

11.2.1 Imports

China and Mexico were by far the main suppliers to the US (both accounting for half of the US total imports of aluminium tube and pipe fittings in 2018). Except in 2016, EU was the fourth supplier.

Figure 183. US imports of aluminium tube and pipe fittings (HS 7609): the leading five suppliers over the period 2014-2018 (import value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

11.2.2 Capacity

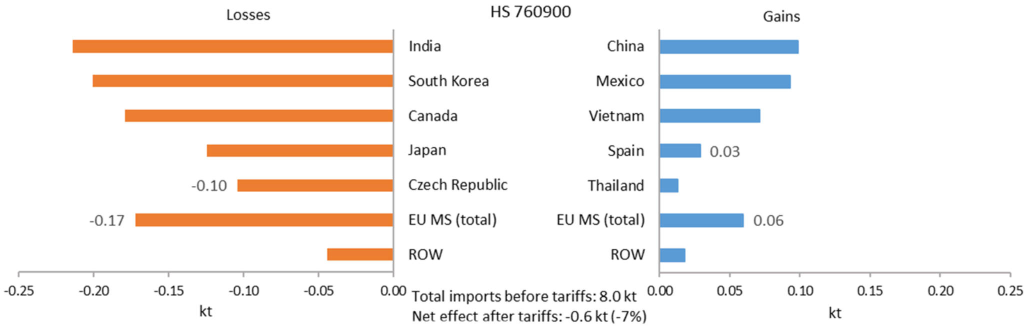
There are no publicly available data for production or capacity for aluminium tube or pipe fittings in the US.

11.3 Impact of the tariffs in the US

11.3.1 US imports of aluminium tube or pipe fittings

US imports of aluminium tube or pipe fittings showed an overall drop of 7% after tariffs' implementation. India, South Korea, and Canada recorded the highest export losses in the US, whereas China, Mexico, and Vietnam increased their exports to the US (see Figure 184).

Figure 184. Effect of tariffs on annualised imports ([158]) of fittings for aluminium tubes or pipes (HS 7609) by top-5 affected countries



Source: Background data in (USITC Dataweb, 2020)

11.3.2 Production and employment

Tube or pipe fittings production in the US is not available from publicly available sources. Employment figures for extrusion industries are included in Figure 98.

11.4 EU

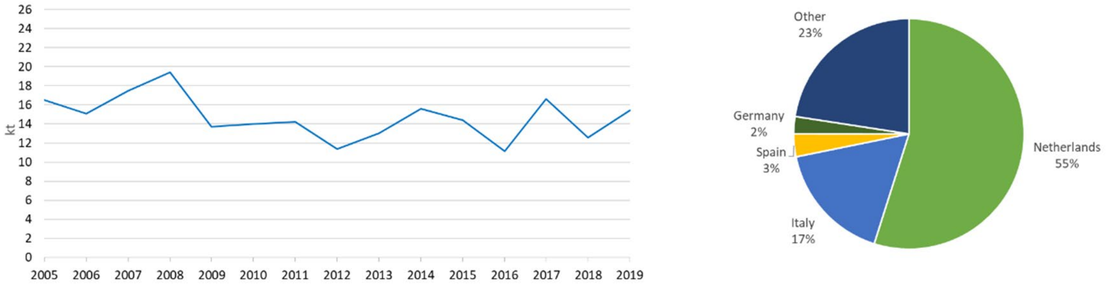
11.4.1 Tube or pipe fittings segment of the EU aluminium industry

There is no individual industrial segment for tube or pipe fittings. The extrusion segment presented in Section 6.4.1 is considered to correspond closer to companies producing tube or pipe fittings.

11.4.2 Supply and demand or aluminium tube or pipe fittings in the EU

The output of tubes or pipe fittings is small in terms of volume in comparison to other aluminium product groups, but they have by far the highest unit value. Shipments by domestic producers fluctuated between 11 kt and 17 kt per year following the global financial crisis in 2009, and the EU apparent consumption ranged from 12 kt to 19 kt in the same period. Netherlands is the dominant EU producer. Import reliance rose to a new highest level each year from 2016 to 2018. About 36% of the EU output was shipped to external sales destinations in 2019.

Figure 185. Evolution of EU production (volume sold) of tubes or pipe fittings ([159]) from 2005 to 2019 (left), and EU producing countries ([160]) in 2019 (right)



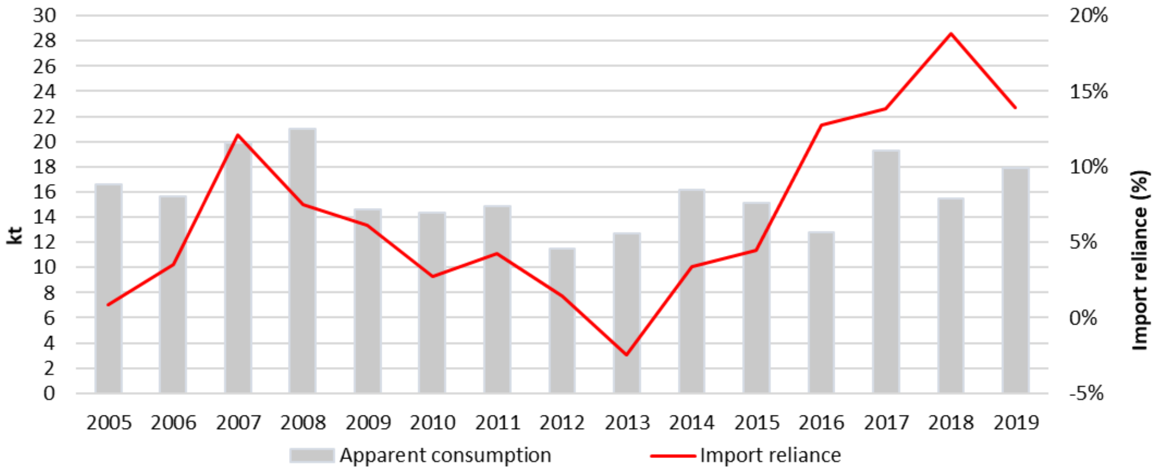
Source: Background data in (Eurostat Prodcom, 2020)

([158]) Data are analysed for a period of 20 months after the tariffs (April 2018 – November 2019) in comparison to a period of 20 months before the imposition of tariffs (August 2016 – March 2018).

([159]) PRC code 24422670 'Aluminium tube or pipe fittings (including couplings, elbows and sleeves) (excluding fittings with taps, cocks and valves, tube supports, bolts and nuts, clamps)'.

([160]) The production shares in 2018 do not show production data for Austria, Bulgaria, Ireland, Hungary, France, Poland, Slovakia, and Sweden. Production from these EU countries is included in the category "Other".

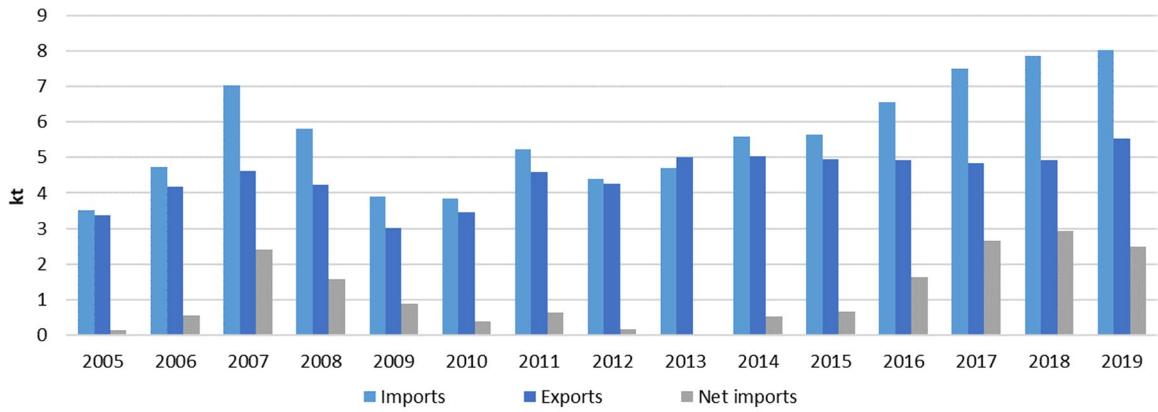
Figure 186. EU apparent consumption (left axis) and import reliance (right axis) for aluminium tube or pipe fittings, 2005-2018



Source: Derived from background data in (Eurostat Prodcom, 2020) (Eurostat Comext, 2020)

The EU is a net importer of aluminium tube or pipe fittings. Imports have increased substantially since 2009 at a CAGR of 7.5%, with historic highs attained each year since 2016. Similarly, exports have grown at a rate of 6.3% in the same period. In 2019, exports of aluminium tube or pipe fittings demonstrated a significant of 12%, after six years of being relatively flat.

Figure 187. EU trade flows for tube or pipe fittings, 2005-2019

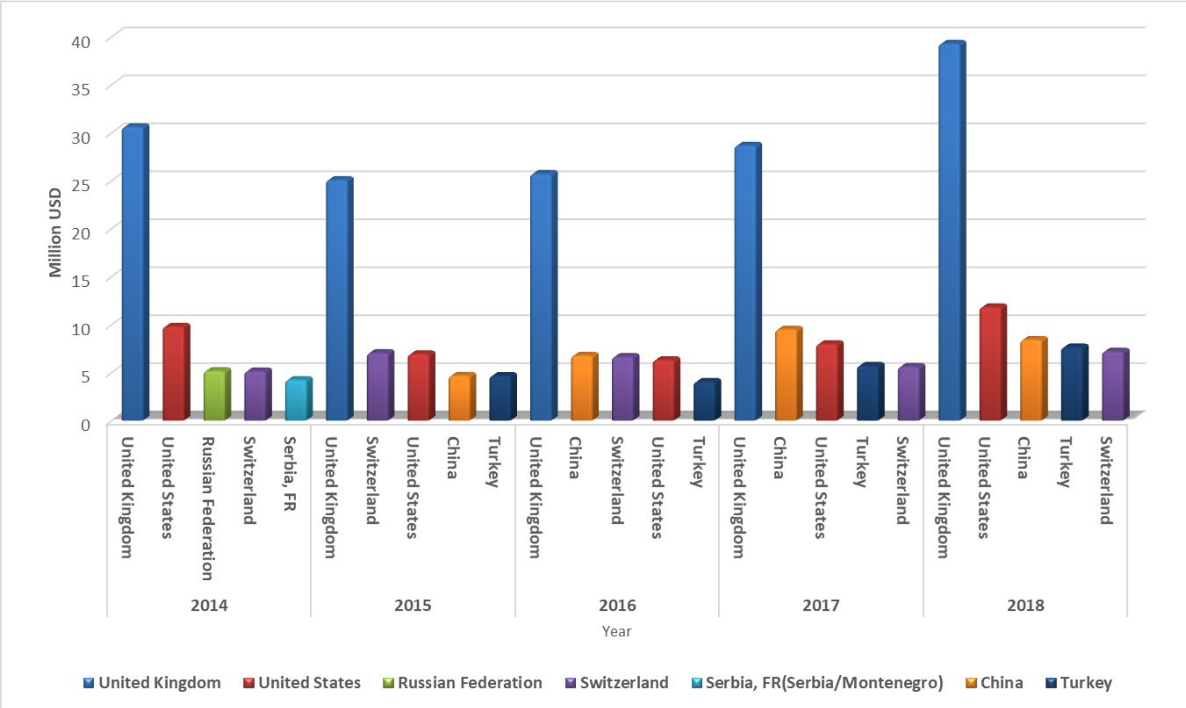


Source: Derived from background data in (Eurostat Comext, 2020)

11.4.3 EU exports of aluminium tube or pipe fittings

The United Kingdom was the destination of more than 30% of the annual extra-EU exports over 2014-2018 (34% in both 2014 and 2018). Extra-EU exports to the US accounted for 10% in 2018.

Figure 188. EU exports of aluminium tube and pipe fittings (HS 7609) to its main destinations over the period 2014-2018 (EU as a trading bloc; million USD)



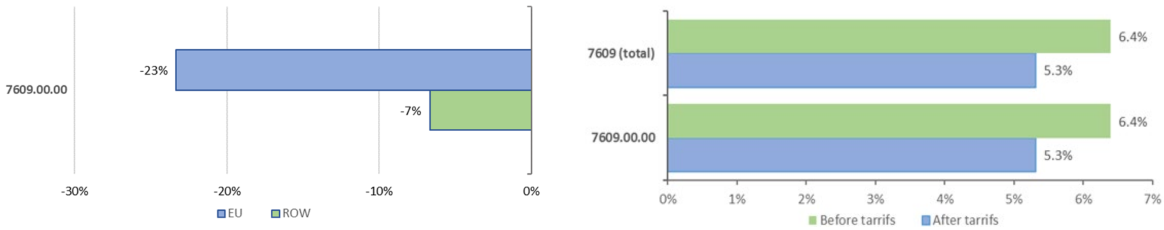
Source: UN Comtrade data, accessed via (WITS, 2020)

11.5 Impact of the tariffs on the EU

11.5.1 EU exports of aluminium tube or pipe fittings to the US

EU exports to the US for aluminium tube or pipe fittings registered a decline of 23% during April 2019 – November 2020, a higher rate than the overall decrease of US imports (7%). Hence, the previously low share the EU countries had in the US imports for HS 7609 decreased marginally (see Figure 189). Exports from Czechia were the most negatively affected (see Figure 184).

Figure 189. Breakdown of EU share in the US imports of aluminium tube or pipe fittings (HS 7609) before and after the tariffs, by HTS 8-digit codes ([161])



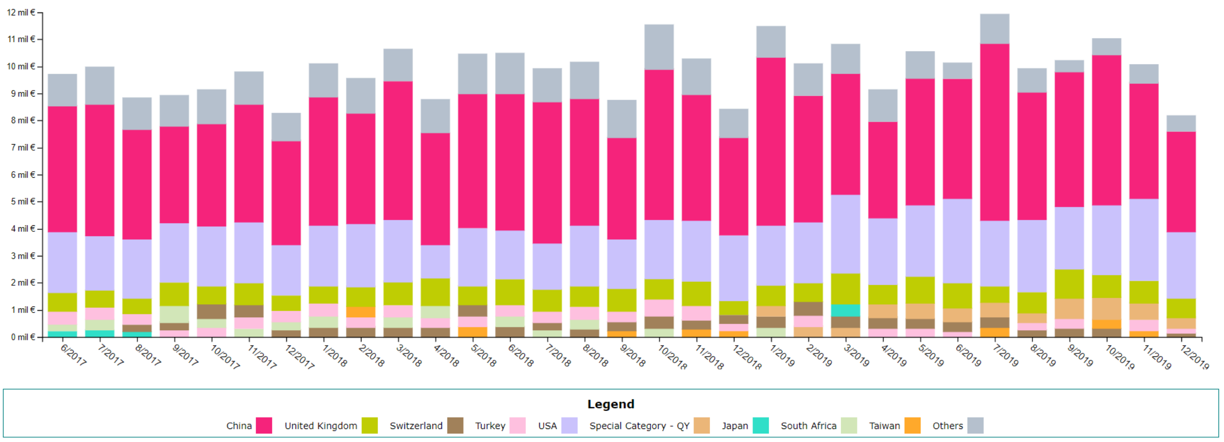
Source: Calculations based on background data in (USITC, 2019b)

11.5.2 EU-directed trade reorientation for aluminium tube or pipe fittings

China's average monthly contribution to the EU imports rose from 44% in the second half of 2017 to 46% in June 2018-December 2018 (i.e. the period immediately after the US imposed extra-tariffs on the aluminium products for the EU), and to 48% in the second half of 2019. In the second half of 2019, China and the US provided together more than 70% of the monthly extra-EU imports.

([161]) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) before tariffs were activated against the EU.

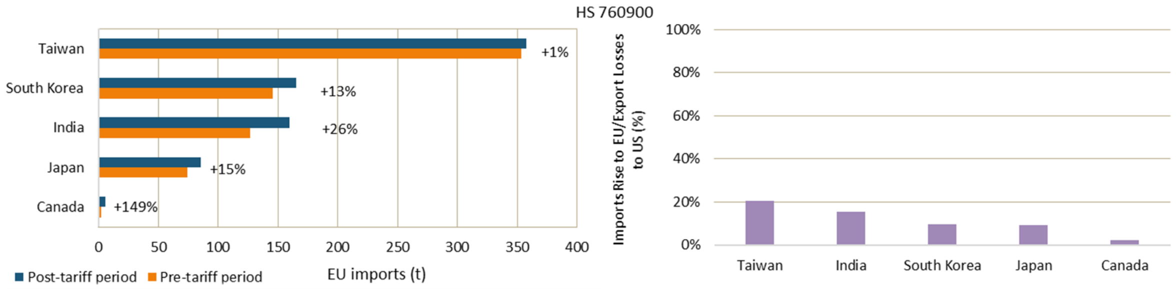
Figure 190. Evolution of the EU monthly imports of aluminium tube and pipe fittings (HS 7609) by main country supplier plus China over the period June 2017-December 2019



Source: (Eurostat Comext, 2020)

As shown in the following figure, countries with the top export losses to the US in the post-tariff period diverted small volumes of tube or pipe fitting to the EU.

Figure 191. EU annualised imports ([162]) of aluminium tube or pipe fittings (HS 7609) (left), and imports rise to the EU in the post-tariff period as a share of export losses in the US (right)



Source: Background data in (Eurostat Comext, 2020)(USITC Dataweb, 2020)

([162]) Source countries that had the highest losses in the US after tariffs. Data refer to a period of 20 months (April 2018 – November 2019) following tariffs' imposition in comparison to a period of the same length, i.e. 20 months before the tariffs took effect (August 2016 – March 2018).

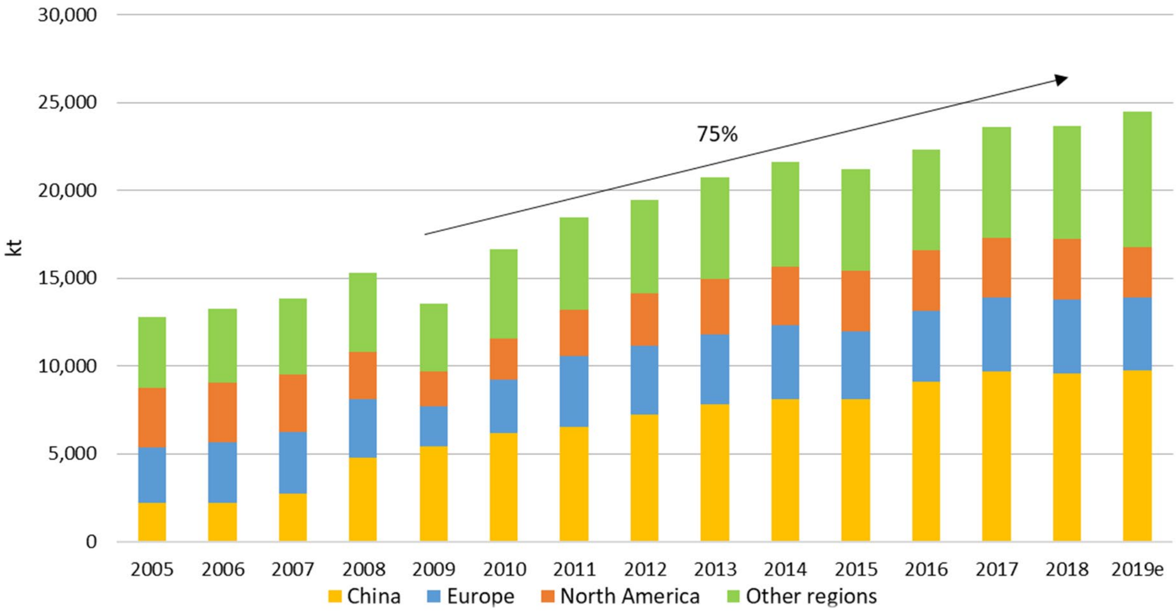
12 Aluminium castings and forgings

12.1 Overview

12.1.1 World production

In 2009-2018, world production of aluminium castings increased by 75% at a CAGR of 6.5%. The total growth in production by regions in the period under consideration ranged from 66% in rest-of-world to 84% in Europe. The global production for aluminium castings in 2018 reached 23.8 Mt, 1.1% higher than in 2017. China's output in 2018 was lower by 1.4% compared to 2017, while production in Europe, North America, and the rest-of-the-world in 2018 rose by 1.3, 1.0% and 1.7%, respectively. Data for aluminium forgings production are not available.

Figure 192. World production of aluminium castings products by regions, 2005-2019 ([163])



Source: Background data in (IAI, 2020a)

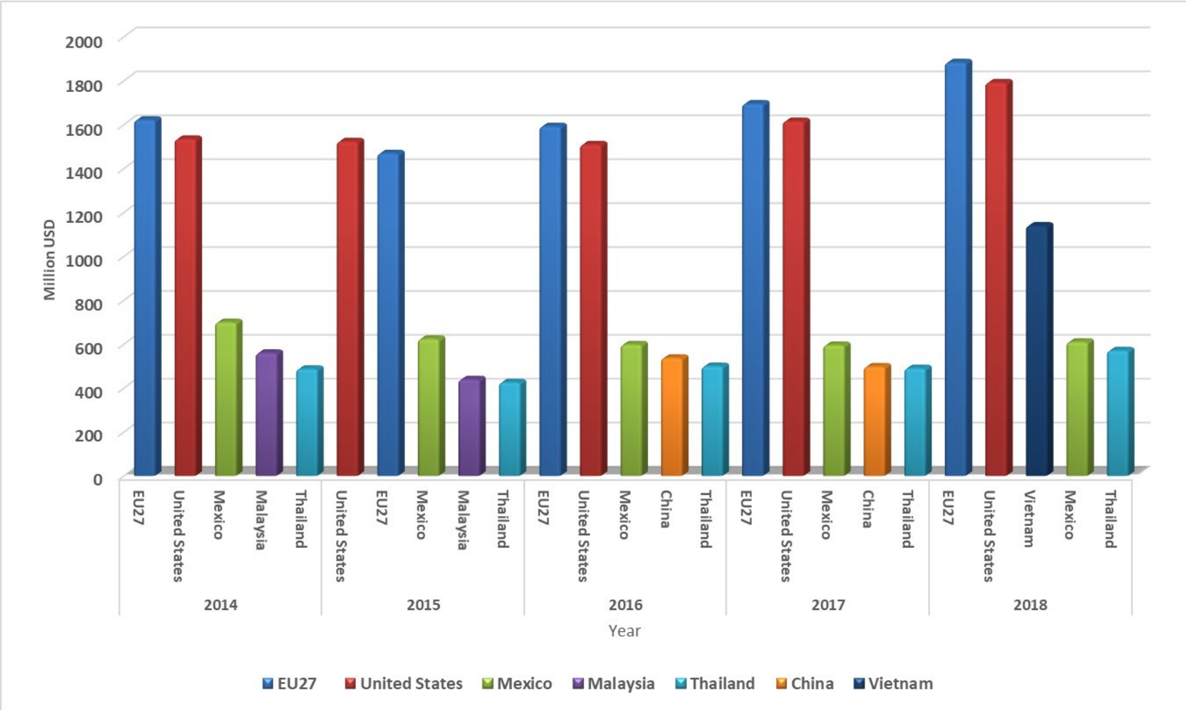
12.1.2 Main suppliers and importers

The HS subheading '*Other articles of aluminium*' (HS 761699) include aluminium castings and forgings, so it will be used as a proxy to identify trends in global trade for aluminium castings and forgings.

The EU and the US were by far the main importers of other aluminium articles (HS 761699) over the period 2014-2018. Their imports rose significantly in 2018, as compared to 2014, by 16% each.

([163]) Data shown for 2019 are projected.

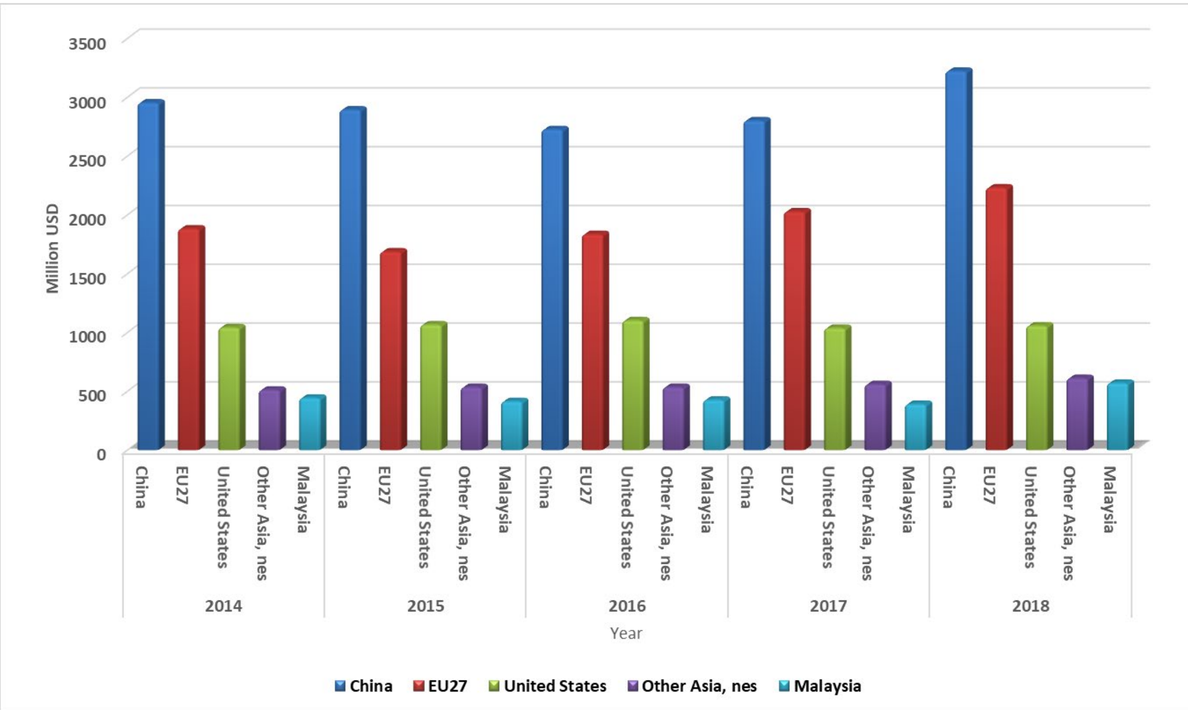
Figure 193. Main five global importers of other articles of aluminium (HS 761699) over the period 2014-2018 (total import value; million USD; EU as a trading bloc)



Source: UN Comtrade data, accessed via (WITS, 2020)

China was by far the leading exporter of other articles of aluminium (HS 761699) over the period 2014-2018. As compared to 2014, extra-EU exports of EU, the second world's exporter, rose by 19 per cent in 2018.

Figure 194. Main five global exporters of other articles of aluminium (HS 761699) over the period 2014-2018 (total export value; million USD; EU as a trading bloc)



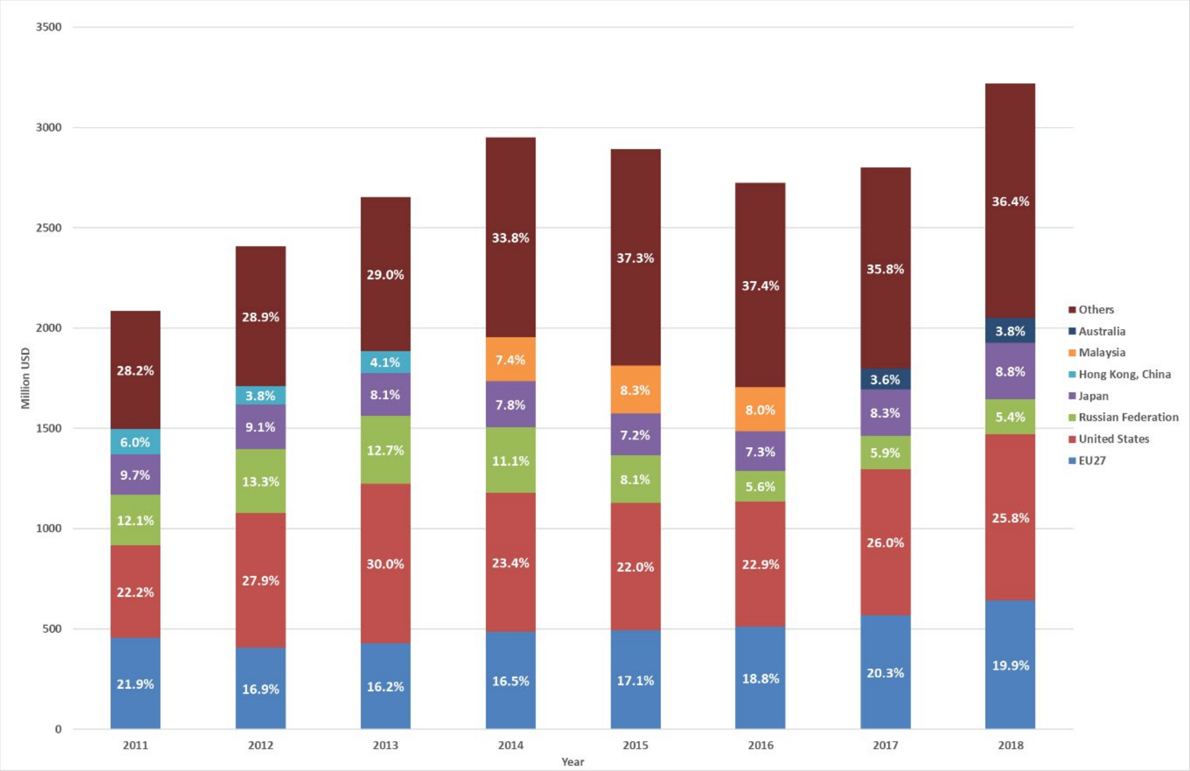
Source: UN Comtrade data, accessed via (WITS, 2020)

12.1.3 Chinese exports of other articles of aluminium

The HS subheading '*Other articles of aluminium*' (HS 761699) include aluminium castings and forgings, among other products.

US and EU were the most important destinations of Chinese exports of other articles of aluminium (HS 761699) over the period 2011-2018, with an average annual share of 25% and 18.5%, respectively.

Figure 195. China's exports of other articles of aluminium (HS 761699) to its main destinations, EU and US over the period 2011-2018 (EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

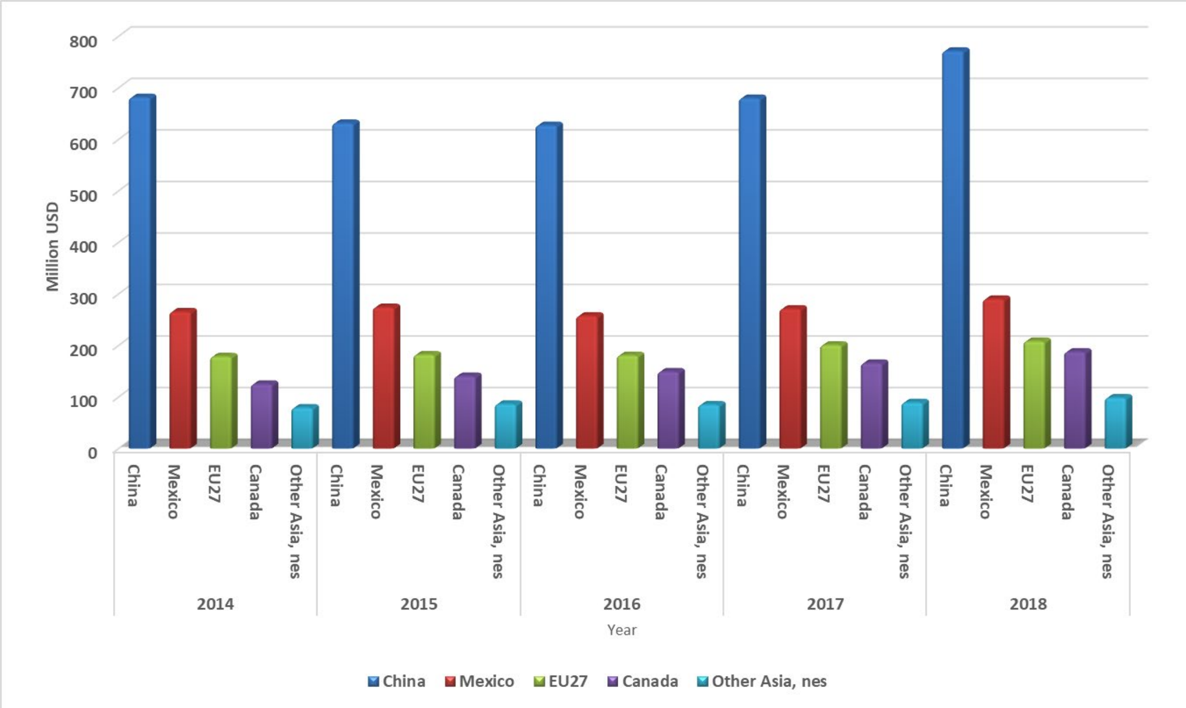
12.2 US

12.2.1 Imports

The HS subheading 'Other articles of aluminium' (HS 761699) include aluminium castings and forgings.

China was undoubtedly the leading supplier to the US over 2014-2018, with an average annual share of 42.5%. Compared to 2014, US imports of other aluminium articles (HS 761699) from China rose by 13.2%. Mexico and the EU were also significant suppliers with an average annual share of 17% and 16%, respectively.

Figure 196. US imports of other articles of aluminium (HS 761699): the leading five supplier countries over the period 2014-2018 (import value; EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

12.2.2 Capacity

Significant investments of USD 290 million creating nearly 300 new job positions were completed by the end of 2018 for aluminium forgings, destined for the aerospace (a 60,000-tonne forging press is installed, the world's most significant private investment in aerospace metal forging) and auto industries (capacity increased by 330,000 pieces per month).

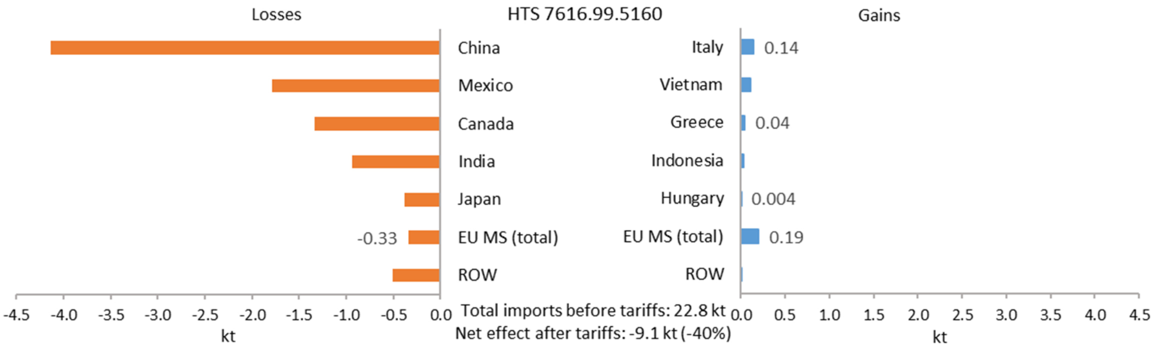
In the castings sector, an expansion project of 15 USD million in announced by a foundry producing high-pressure die-casting of components for the automotive industry.

12.3 Impact of the tariffs in the US

12.3.1 US imports of aluminium castings and forgings

US imports of aluminium castings plunged by 40% after tariffs. Chinese exports of aluminium castings accounted for almost half of the decline (see Figure 197).

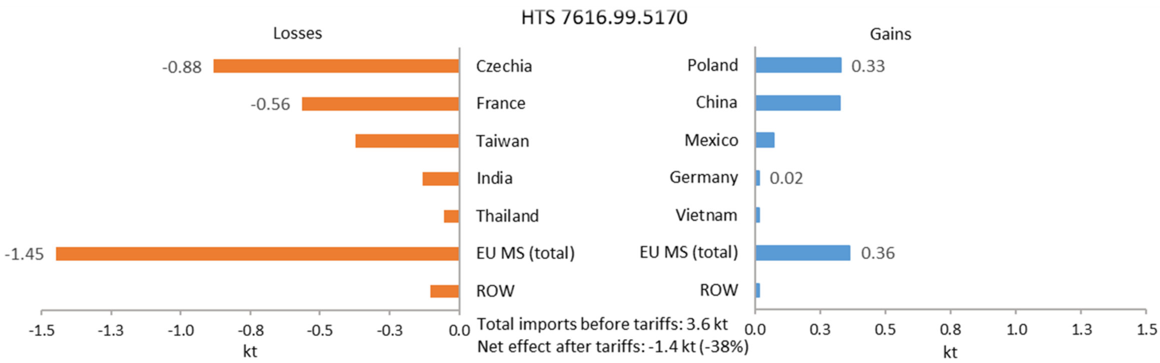
Figure 197. Effect of tariffs on annualised imports ([164]) of aluminium castings by top-5 affected countries.



Source: Data in (USITC Dataweb, 2020)

US imports of aluminium forgings also registered a considerable decrease of 38%. The most affected US trade partners were Czechia and France, whereas Poland and China increased their exports to the US (see Figure 198).

Figure 198. Effect of tariffs on annualised imports ([165]) of aluminium forgings by top-5 affected countries



Source: Data in (USITC Dataweb, 2020)

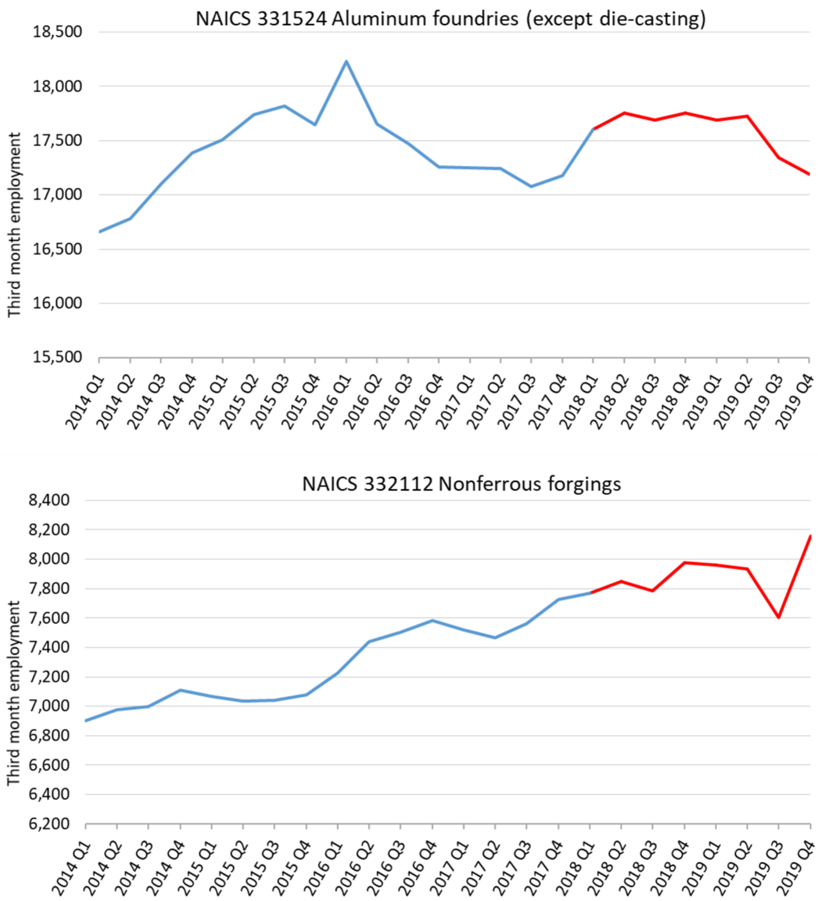
12.3.2 Production and employment

In the period 2017-2019, aluminium demand for aluminium castings in North America fell by 3.4% (data in Figure 18), mainly due to a profound decline in 2019 (-8%). Production data for aluminium castings production reveal that the US output by volume increased in 2018 by 4% compared to 2017 (USGS, 2020b). No data are available for aluminium forgings.

In the post-tariff period, employment in the industrial segment of aluminium foundries — excluding die-casting ([166]) — declined to lower levels (-2%) compared to the pre-tariff period. In contrast, in the segment of non-ferrous forgings, employment rose by a rate of 5%.

([164]) Data are analysed for a period of 20 months after the tariffs (April 2018 – November 2019) in comparison to a period of 20 months before the imposition of tariffs (August 2016 – March 2018).
([165]) Data are analysed for a period of 20 months after the tariffs (April 2018 – November 2019) in comparison to a period of 20 months before the imposition of tariffs (August 2016 – March 2018).
([166]) Die castings represented about 63% of the total aluminium castings production in the US in 2018 (USGS, 2020b).

Figure 199. Direct employment in the segments of US industry producing aluminium castings (except die-casting), and non-ferrous forgings, in number of employees, Q1 2014 – Q4 2019



NB: In red the period after the implementation of tariffs

Source: Data from (US Department of Labor, 2020)

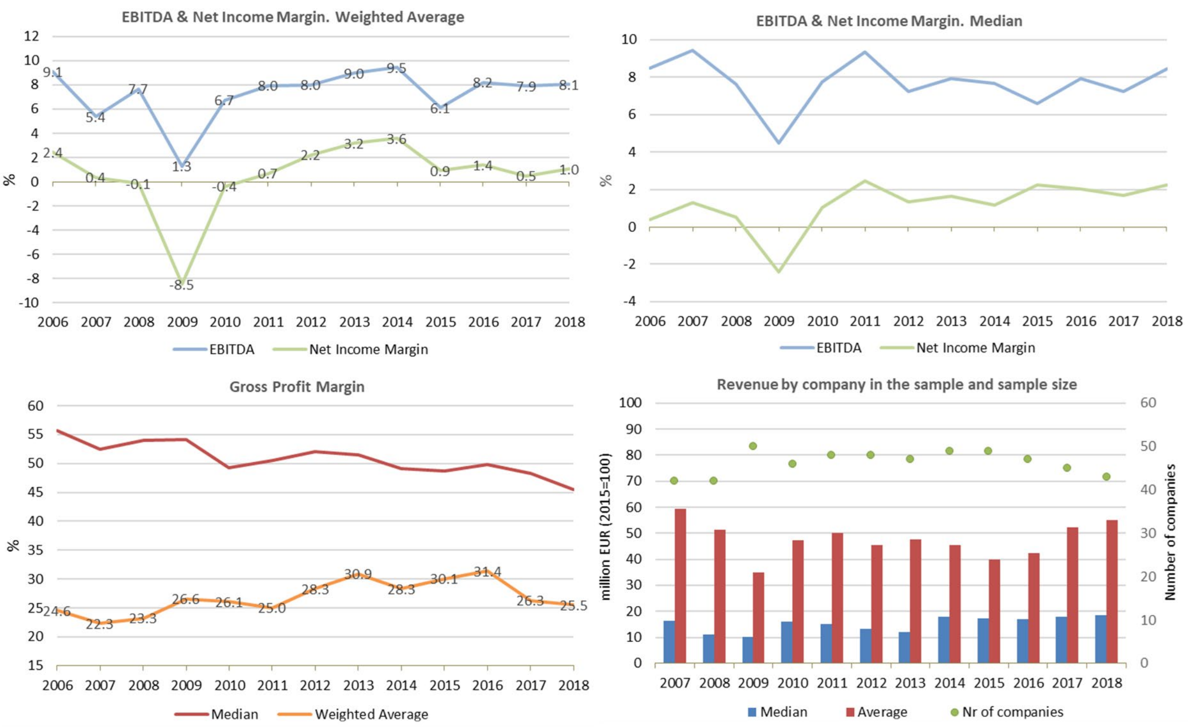
12.4 EU

12.4.1 The castings segment of the EU aluminium industry

No figures are available for the number of production facilities of aluminium castings in the EU. The segment of aluminium castings is classified within light-metals castings of the foundry industry, which further belongs to the broader group of non-ferrous metals castings. Eurostat reports that 1,700 companies are registered in NACE 24.53 “Casting of light metals” (see Section 2.3.1).

Income statement data from 73 enterprises (see Annex 13) was used to assess the evolution of corporate profitability indicators for the aluminium castings segment (Figure 200). The average total revenue of the companies in the sample amounted to EUR 2.1 billion per year. In 2018, the companies' total income in the sample represented approximately 15% of the production value reported by Eurostat for NACE 24.53 “Casting of light metals” (see Table 2).

Figure 200. Profitability indicators for EU companies producing aluminium castings, 2006-2018



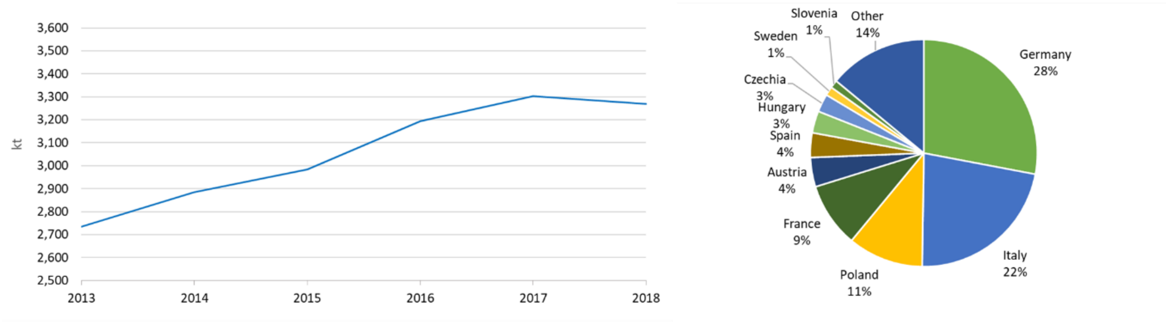
Source: Background data from (S&P Global, 2020d)

Aggregate data shown in Figure 200 reveal that the impact the 2009 financial crisis had on the financial performance (EBITDA and net profitability) of companies producing aluminium castings was the most severe among the aluminium industry's segments. The transport industry is the predominant sales outlet for aluminium castings (see Figure 9), and the production of motor vehicles (passenger cars plus commercial vehicles) fell by 17% in 2009 in the EU (ACEA, 2020). The figure above shows a stable increase in the weighted average profitability until 2014. Since 2015, the weighted average net profit margins of the sample companies were considerably lower compared to the period 2012-2014, even though the Union's production had an increasing pattern for five successive years (2013-2017) (see Figure 201).

12.4.2 Supply and demand for aluminium castings and forgings in the EU

In the period 2013-2018, aluminium castings' production grew with a CAGR of 3%. In 2018, the output of aluminium castings amounted to about 3,300 kt, slightly decreased by 1% compared to 2017. Germany and Italy together, the two major producers, accounted for half of the EU production of aluminium castings in 2018, as shown in Figure 201. It is estimated that producers of aluminium castings in the EU shipped 94% of their products to sales destinations within the EU and only 6% to external sales destinations in 2018; together with unwrought aluminium, the production of aluminium castings appear to be the least export-orientated segment of the aluminium industry.

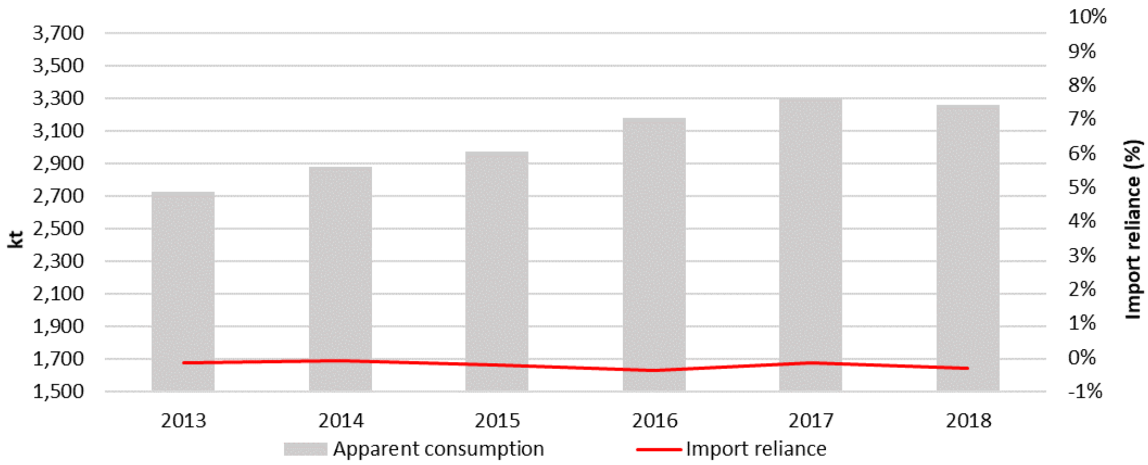
Figure 201. Evolution of aluminium castings production from 2013 to 2018 (left), and top-10 EU producing countries in 2018 (right)



Source: Background data in (CAEF, 2018) (CAEF, 2019)

The apparent consumption of aluminium castings increased swiftly from 2013 to 2017, decreasing slightly by 1% in 2018. The compound annual growth rate (CAGR) of apparent consumption was 4% in 2013-2018.

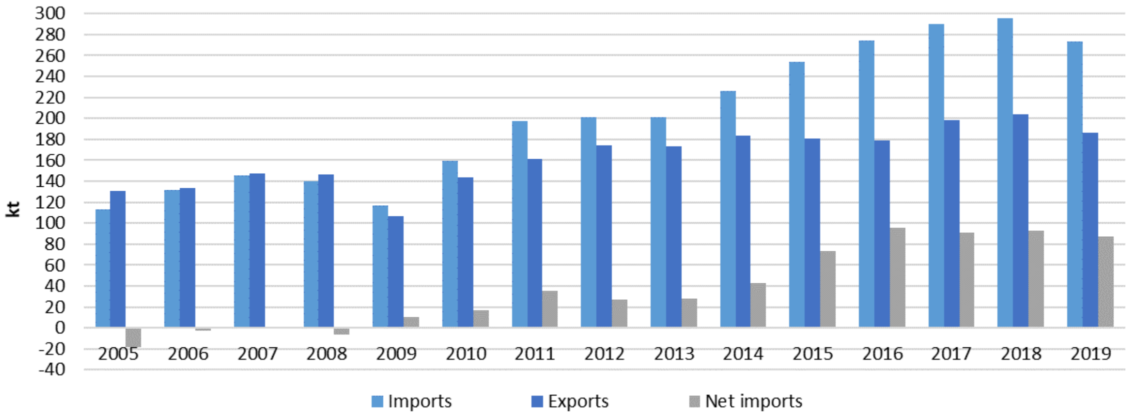
Figure 202. EU apparent consumption of aluminium castings (left axis) and import reliance (right axis)



Source: Background data in (CAEF, 2018)(CAEF, 2019), (Eurostat Comext, 2020)

The EU is a net importer for aluminium castings classified under CN codes 76169910, 76151010, and 87087050. Import reliance is small, ranging from 1% to 3% between 2013 and 2018. From 2009 to 2019, imports increased at a higher rate (CAGR of 8.8%) than exports (CAGR of 5.7%). Both trade flows attained their highest level in 2018 (Figure 203), but the increasing trend was reversed in 2019.

Figure 203. EU trade flows for aluminium castings ([167]), 2005-2019



Source: Background data from (Eurostat Comext, 2020)

No production data are published for aluminium forgings. EU-specific trade data are neither available as there is no precise code in the Combined Nomenclature (CN).

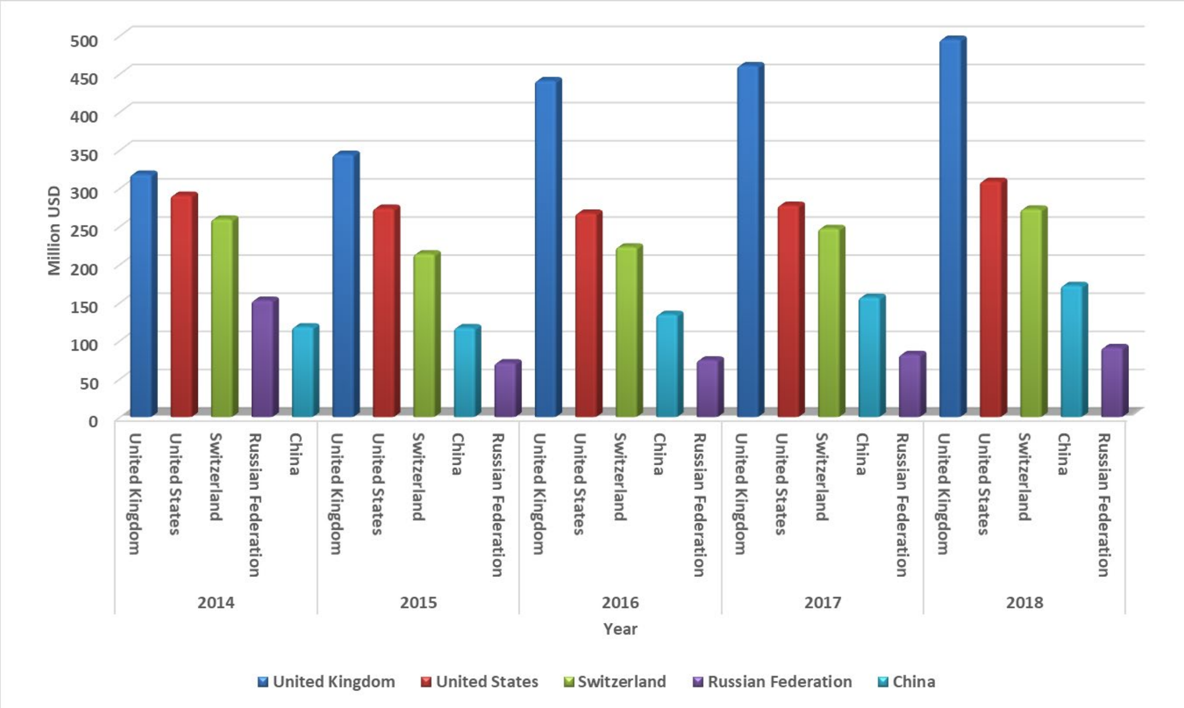
12.4.3 EU exports of other articles of aluminium

The HS subheading '*Other articles of aluminium'* (HS 761699) include aluminium castings and forgings, among other products.

UK was by far the main destination of extra-EU exports of other articles of aluminium (HS 761699) to its main destinations over the period 2014-2018, with an increasing annual share, from 17% in 2014 to 22% in 2018. US was the second destination over the entire period, with a decreasing annual share in extra-EU exports, from 15.5% in 2014 to 14% in 2018.

([167]) There is no specific code in the Combined Nomenclature for aluminium castings. The trade codes used are: CN 76169910 "*Articles of aluminium, cast, n.e.s.*"; CN 76151010 "*Table, kitchen or other household articles and parts thereof, and pot scourers and scouring or polishing pads, gloves and the like, of cast aluminium (excl. cans, boxes and similar containers of heading 7612, articles of the nature of a work implement, spoons, ladles, forks and other articles of heading 8211 to 8215, ornamental articles, fittings and sanitary ware)*"; CN 87087050 "*Aluminium road wheels, aluminium parts and accessories thereof, for tractors, motor vehicles for the transport of ten or more persons, motor cars and other motor vehicles principally designed for the transport of persons, motor vehicles for the transport of goods and special purpose motor vehicles (excl. those for the industrial assembly of certain motor vehicles of subheading 8708.70.10)*".

Figure 204. EU exports of other articles of aluminium (HS 761699) to its main destinations over the period 2014-2018 (EU as a trading bloc; million USD)



Source: UN Comtrade data, accessed via (WITS, 2020)

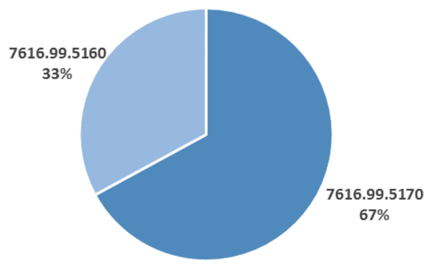
12.5 Impact of the tariffs on the EU

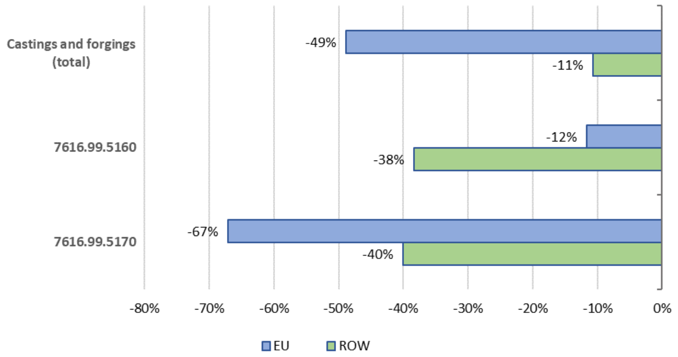
12.5.1 EU exports of aluminium castings and forgings to the US

The drop of EU exports for aluminium castings (HTS 7616.99.51.60) was moderate at 12% in the post-tariff period April 2018 – November 2019. However, due to the overall significant decline of US imports from rest-of-the-world countries, the EU share in the US rose marginally from 5.5% to 8% (Figure 205 and Figure 206). Exports of aluminium castings from Italy to the US recorded the highest gains among all US trade partners, while exports from Denmark and Poland had the uppermost losses among EU countries (see Figure 197).

The EU is the main source of US imports of aluminium forgings (HTS 7616.99.51.70). The EU's exports to the US for aluminium forgings declined substantially by 67% after tariffs' implementation, and its share dropped from about 65% to 41% (Figure 205 and Figure 206). Exports from Czechia and France had the greatest losses among global exporters to the US of aluminium forgings (see Figure 198).

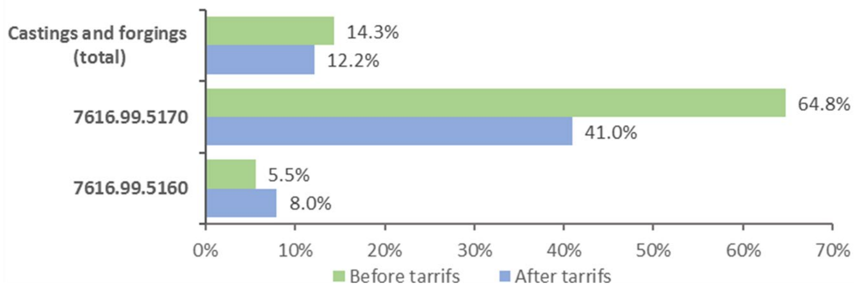
Figure 205. Breakdown of EU exports to the US prior tariffs' enforcement (left), and relative change (%) in EU exports to the US after the imposition of tariffs (right), for aluminium castings (HTS 7616.99.51.60) and forgings (HTS 7616.99.51.70) ([168])





Source: Background data in (USITC, 2019b)

Figure 206. EU share in the US imports before and after the tariffs (down), for aluminium castings (HS 7616.99.51.60) and forgings (HS 7616.99.51.70)



Source: Background data in (USITC, 2019b)

12.5.2 EU-directed trade reorientation for aluminium castings and forgings

No data are available for trade flows for aluminium castings and forgings in the Harmonised System (HS).

([168]) Data are analysed for the period June 2018 – December 2019 (19 months) after the tariffs applied to EU imports, and compared with data from the period November 2016 – May 2018 (19 months) prior to tariffs' enforcement for the EU.

13 Downstream aluminium products

13.1 US trade of downstream products

A remarkable growth of net import volumes is registered for all categories (except HS 761100) of downstream aluminium products classified in chapter 76, *Aluminium and articles thereof* that are fabricated using semi-finished aluminium for which tariffs did not apply (see Table 23). This trend is not surprising as it reflects the loss of competitiveness for downstream manufacturers that use semi-finished aluminium, such as profiles, aluminium wire, and sheet, to make aluminium-intensive products, like windows, stranded wire, and tanks, respectively. Section 232 tariffs have increased aluminium's price as input by downstream industries to their manufacturing processes (see Section 4.3.3).

Table 23. Annualised US net imports for downstream aluminium products not subject to Section 232 tariffs

Product description	HS code	Unit	Post-tariffs net imports (1) (2)	Pre-tariffs net imports (1) (2)
Aluminium doors, windows and their frames and thresholds for doors	761010	kt	107	21
Aluminium structures and parts of structures, nesoi	761090	kt	154	-4
Aluminium tanks, vats and similar plain, unfitted containers, of capacity over 300 litres (79.30 gal.)	761100	number '000	-1,234	-97
Aluminium collapsible tubular containers, of a capacity not over 300 litres (79.30 gal.)	761210	number '000000	201	39
Aluminium casks, drums, cans, boxes and similar plain, unfitted containers, of a capacity not over 300 litres (79.30 gal.)	761290	number '000000	-1,680	-3,369
Aluminium containers for compressed or liquefied gas	761300	number '000	4,766	569
Stranded wire, cables, plaited bands and similar articles of Aluminium, not electrically insulated, with a steel core	761410	kt	25	8
Stranded wire, cables, plaited bands and similar articles of Aluminium, not electrically insulated, nesoi	761490	kt	10	-1
Aluminium table, kitchen or other household articles and parts thereof; pot scourers, scouring or polishing pads, gloves and the like, of Aluminium etc.	761510	kt	12	-2
Aluminium table, kitchen or other household articles and parts thereof; pot scourers, scouring or polishing pads, gloves and the like, of Aluminium etc.	761510	number '000000	758	225
Aluminium sanitary ware and parts thereof	761520	t	2,392	655
Nails, tacks, staples (other than in strips), screws, bolts, nuts, screw hooks, rivets and similar articles, of Aluminium	761610	t	-3,088	-5,296
Cloth, grill, netting and fencing of Aluminium wire	761691	t	1,396	-1,445

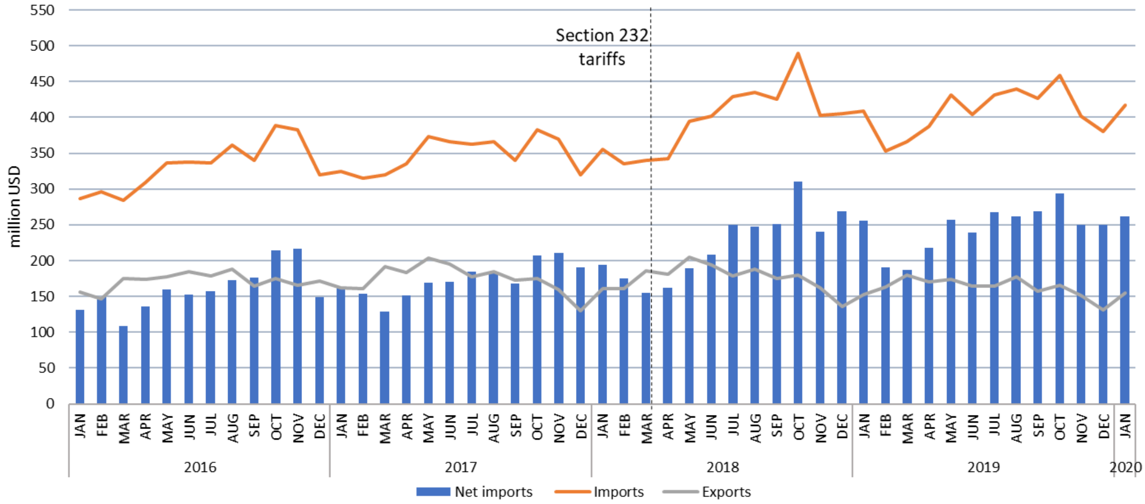
Articles of Aluminium, nesoi	761699	kt	65	-59

(1) Negative net imports indicate that the US is a net exporter.
(2) It refers to Section 232 tariffs applied to upstream aluminium products. Post-tariff period is April 2018 – November 2019 (20 months), and pre-tariff period August 2016 – March 2018 (20 months).

Source: Background data in (USITC Dataweb, 2020)

The US trade balance of downstream aluminium derivative products classified under HS 7616 deteriorated after Section 232 tariffs' enforcement in March 2018. In the post-tariff period April 2019 – January 2020, the monthly average imports value rose by 16% in comparison to 12 months in advance of tariffs' implementation, while the exports value of these products decreased by 3% compared to the 12-month period before tariffs' enforcement (see Figure 207).

Figure 207. US trade value of downstream aluminium products belonging to HS 7616, not subject to tariffs ([169]) until January 2020



Source: Background data in (USITC Dataweb, 2020)

13.2 Tariffs on downstream products

In January 2020, in less than two years since steel and aluminium 'national security' tariffs went into effect in March 2018, the President of the US widened their coverage to include certain products that derive from steel and aluminium; the extra-tariffs were effective in 8 of February 2020. The arguments cited for the justification of the tariffs were that foreign producers had increased shipments of such articles to the United States to circumvent Section 232 tariffs placed on steel and aluminium, that imports of products made with those metals had significantly increased, and that the net effect had been "*to erode the customer base for US producers of aluminium and steel and undermine the effect of original tariffs*"(Federal Register, 2020).

For aluminium, the 10% tariffs were implemented for stranded wire and cable products belonging to HTS subheadings 7614.10.50 7614.90.20, 7614.90.40, 7614.90.50, aside bumper stampings for motor vehicles, and body stampings for tractors suitable for agricultural use, which are classified under HS subheadings 870810 and 870829 (see Table 24).

([169]) The value of trade flows for aluminium castings and forgings is subtracted, which are subject to tariffs and classified within HS 761699.

Table 24. Aluminium derivative products subject to an extra-tariff of 10 per cent, and their corresponding HTS codes

Derivative aluminium products	**HTS subheading**
Stranded wire, cables, plaited bands and the like, including slings and similar articles, of aluminium:	
- with steel core, not electrically insulated; the foregoing fitted with fittings or made up into articles;	7614.10.50
- not with steel core, not electrically insulated; the foregoing comprising electrical conductors, not fitted with fittings or made up into articles;	7614.90.20
- not with steel core, not electrically insulated; the foregoing not comprising electrical conductors, not fitted with fittings or made up into articles;	7614.90.40
- not with steel core, not electrically insulated; the foregoing fitted with fittings or made up into articles.	7614.90.50
Bumper stampings of aluminium, the foregoing comprising parts and accessories of the motor vehicles of headings 8701 to 8705	8708.10.30
Body stampings of aluminium, for tractors suitable for agricultural use	8708.29.21

Source: Data from (Federal Register, 2020)

In value terms, this new round of tariffs on derivative products is much smaller compared to the value of the tariffs enforced in March 2018 for unwrought aluminium and aluminium semi-finished products. New tariffs on downstream products cover only USD 55 million (Table 25) in comparison to USD 9.3 billion of imports already targeted by Section 232 tariffs (see Table 4). It is noteworthy that the value of US imports of bumper stampings from countries exempted (i.e. Canada and Mexico) is higher than the value of imports originating from targeted countries, which represents only 29% of the total.

Table 25. Customs value of US imports for derivative articles subject to the Section 232 tariffs in February 2020, and exceptions granted (reference year 2019)

HTS code	**Total US imports value**	**Imports value from excluded countries** (1)				**Total affected imports value**	
		ARG	**AUS**	**CAN**	**MEX**		
	Million USD					Million USD	Share of the US imports value (%)
7614.10.50 7614.90.20 7614.90.40 7614.90.50	47	0	0	10	8	29	64%
8708.10.3010 (2) 8708.29.21 (3)	90	0	0	17	47	26	29%
Total	**137**	**0**	**0**	**27**	**55**	**55**	**41%**

(1) Argentina, Australia, Canada, and Mexico were exempted from the additional duties.

(2) Bumper stampings of aluminium can be classified under the 10-digit HTS subheading 8708.10.3010 'Stampings of bumpers for motor vehicles of headings 8701 to 8705'; bumper stampings made of steel are also included under this subheading. The 10-digit HTS subheading 8708.10.3050 comprises 'Bumpers for motor vehicles other than work trucks, other than stampings'. Nevertheless, in the Annex of the Presidential Proclamation 9980 of January 24, 2020, bumper stampings of aluminium are associated with HTS 8708.10.30. In the table, the value of HTS 8708.10.3010 is only considered.

(3) Body stampings of aluminium for tractors suitable for agricultural use are classified under the 8-digit HTS subheading 8708.29.21 '*Body stampings for tractors suitable for agricultural use*'; body stampings of steel are also covered by this subheading.

Source: Background data in (USITC Dataweb, 2020)

The following table displays the value and the share of EU exports to the US for the derivative aluminium articles subject to the additional 10% duty rate. The value of EU exports accounts for 5% of the total US imports value of these products (Table 26) and 13% of the total affected imports value for this new action of tariffs protection.

Table 26. Customs value of US imports from the EU for derivative products subject to Section 232 tariffs effective on February 2020 (reference year 2019)

HTS codes	**Product group**	**US imports from the EU**	
		Million USD	Share of the total (%)
7614.10.50, 7614.90.20, 7614.90.40, 7614.90.50	Aluminium stranded wire and cables	4	8%
8708.10.3010, 8708.29.21	Bumper stampings for motor vehicles, body stampings for tractors suitable for agriculture	3	4%
Total		**7**	**5%**

Source: Background data in (USITC Dataweb, 2020)

What is notable is that the tariff protection on aluminium inputs has escalated by extending to downstream products that use a high amount of metal, instead of being removed. Stranded wire and cable are products manufactured from aluminium wire, and bumper and body stampings are made from automotive aluminium sheet. Both inputs for the fabrication of the derivative aluminium products are subject to tariffs since March 2018; therefore, US producers of these downstream products were hurt by the original tariffs as their raw materials became more expensive.

Data compiled by (Bown, 2020) show that several producers of steel and aluminium derivative products got protection from the recent extension of coverage of Section 232 tariffs and also asked for protection by antidumping duties. The study reveals that the petitions for new trade infraction investigations by manufacturers using steel and aluminium amount to USD 5 billion of imports value (mainly targeting a variety of steel derivative products). The recent developments and the above evidence provided by (Bown, 2020) may suggest that US trade protectionism for the downstream manufacturing industries harmed by the original tariffs may unfold in a hybrid way, i.e. Section 232 tariffs combined with anti-dumping duties.

14 Covid-19 crisis effects on the aluminium industry

14.1 Economic outlook

The Covid-19 pandemic had a profound negative impact on global economic activity in 2020, unparalleled in its speed and synchronised nature. According to IMF's latest estimates released in the World Economic Outlook of April 2021 (IMF, 2021), the contraction of the global economy reached 3.3% in 2020, smaller than the projection (-4.4%) in the previous IMF's World Economic Outlook in October 2020 (IMF, 2020b). The Eurozone's and the European Union's downturn was deeper at 6.6% and 6.1%, respectively. Similarly, the decline of the economic output in Europe was less severe than the forecast in October 2020 (8.1% for the Eurozone and 7.6% for the EU). In comparison, the United States' growth was -3.5% in 2020.

Looking forward to 2021-2022, the IMF forecasts a strong rebound of the world's GDP of 6.0%, which exceeds its 2019 level by 2.5%, moderating to 4.4% in 2022. The year-over-year GDP recovery in 2021 in the Eurozone and the EU is projected at 4.4% for each, whereas growth in the US is forecast at 6.4%. In absolute terms, the Eurozone and EU GDP in 2021 are projected to be lower by 2.5% and 2.0% correspondingly, compared to the 2019 level. In contrast, the US GDP in 2021 to grow is expected to grow by 2.6% compared to its 2019 level.

Similar projections are presented in the latest Economic Forecast report published in winter 2021 by the European Commission. Overall, GDP is now forecast to grow by 3.7% in 2021 and 3.9% in 2022 in the EU, and by 3.8% in both years in the euro area. The growth bounce-back comes after GDP declined by 6.8% in the Euro area and 6.3% in the EU in 2020 (European Commission, 2021b).

The intensity of the pandemic impact is revealed by the flash estimates for the second quarter of 2020 published by Eurostat in August 2020 (Eurostat, 2020b), which showed that the seasonally adjusted GDP decreased by 12.1% in the Euro area and by 11.7% in the EU compared with the previous quarter. In the first quarter of 2020, GDP had been reduced by 3.6% in the euro area and by 3.2% in the EU over the previous quarter. Compared with the same quarter of the previous year, seasonally adjusted GDP decreased by 15.0% in the euro area and by 14.1% in the EU in the second quarter of 2020, after -3.1% and -2.5%, respectively, in the previous quarter. All these were by far the sharpest declines since the time series started in 1995, much higher even than the financial crisis in 2008/2009.

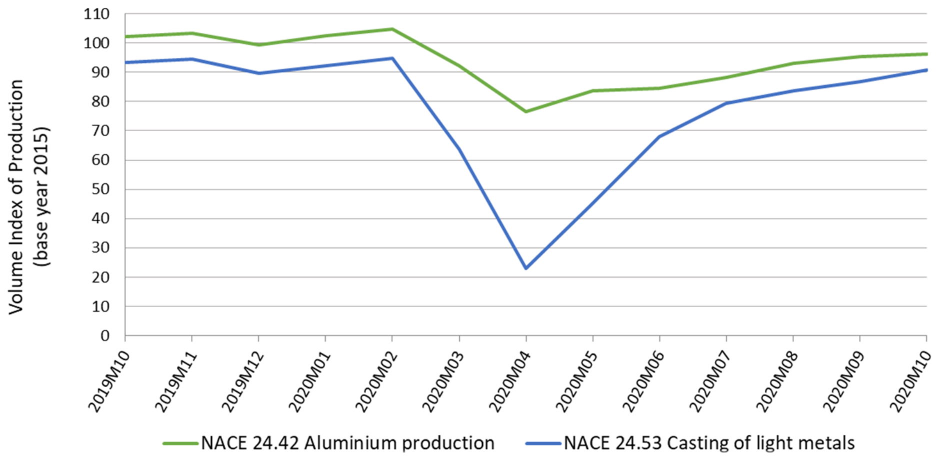
Compared to the 2008/2009 global financial crisis, the recession due to the Covid-19 crisis is more profound. During the global financial crisis, the world economy only contracted by 0.1% in 2009, while the size of the contraction in the Eurozone, EU and US GDP was 4.5%, 4.2% and 2.5% correspondingly (IMF, 2020b). Though, the economic outlook worldwide remains clouded as the pandemic is still evolving over the first semester of 2021.

14.2 Impacts in the aluminium industry

14.2.1 Industrial output

The following figure provides an overview of the massive impact the containment measures had in the output of industrial aluminium sectors in the EU (NACE 24.52 'Aluminium production' and 'NACE 24.53 'Casting of Light metals'). Within only two months between February 2020 and April 2020, the index for industrial production of NACE 24.42 declined severely by 27 percentage points. In comparison, the impact on NACE 24.53 was much more drastic as its output plunged by 76 percentage points in April 2020 compared to its February 2020 level. In the subsequent months, industrial production has been partly recovered. In October 2020, the index was 8% and 4% lower for NACE 24.42 and NACE 24.53, respectively, than its level in February before the outbreak of the pandemic.

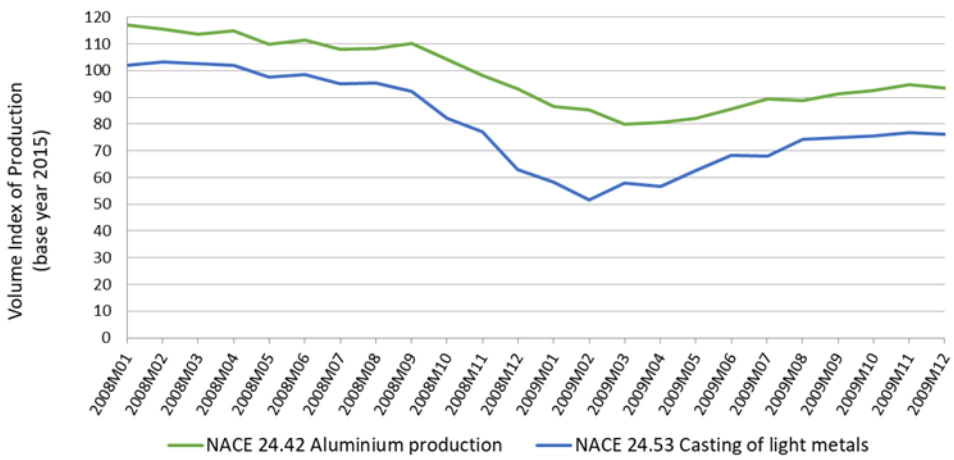
Figure 208. Industrial Production Index (170) of NACE 24.42 and NACE 24.53, seasonally and calendar adjusted data, October 2019 – October 2020, 2015=100



Source: Background data from (Eurostat, 2020c)

During the global financial crisis in 2008-2009, the production of NACE 24.42 fell by 30% and the production of NACE 24.53 by 44% within one year, between April 2008 and April 2009 (Figure 209). In comparison, the Covid-19 crisis affected the aluminium industrial sectors more rapidly, while the observed declines during the Covid-19 crisis for NACE 24.53 are significantly deeper than the losses seen during the 2008-2009 financial crisis. Nevertheless, the recovery from the lowest point is much faster for both sectors in the recent crisis.

Figure 209. Industrial Production Index of NACE 24.42 and NACE 24.53, seasonally and calendar adjusted data, January 2008 – January 2009, 2015=100



Source: Background data from (Eurostat, 2020c)

14.2.2 Supply and demand

Lockdowns and stoppages in manufacturing activity due to the pandemic containment measures caused the collapse of demand and prices worldwide for most base metals (World Bank, 2020). However, the impact on metal consumption will vary according to their specific pattern of end uses as some sectors are being disproportionally hit by the pandemic, e.g. automotive and other transport, while other sectors that are severely impacted are not metal-intensive, e.g. the cultural and creative industries(De Vet *et al.*, 2021). In the case of aluminium, a sharp decline in demand in 2020 is expected from almost all end-use sectors. The particularly

(170) The Industrial Production Index measures monthly changes in the price-adjusted output of industry.

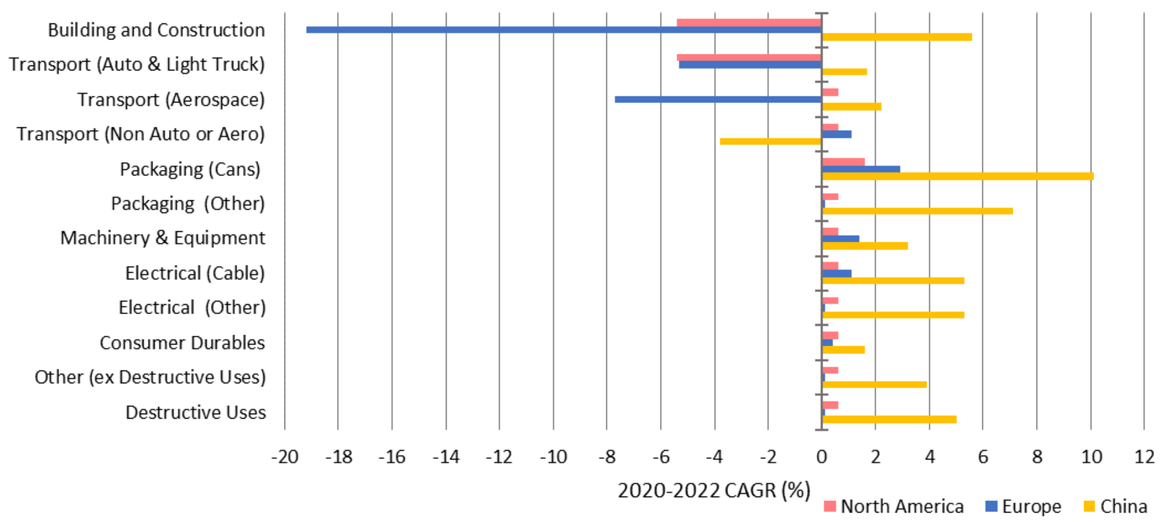
severe effects of the COVID-19 pandemic on the automotive and construction sectors have affected most of aluminium´s demand (CM Group, 2020) (CRU, 2020).

A recent study (data refer to mid-May 2020) on behalf of the International Aluminium Institute assessed the impact of Covid-19 on aluminium demand by regions and key end-use sectors (CM Group, 2020). The analysis was based on macro-economic forecasts ([171]) and industry-related data combined with survey responses from industry, market experts, researchers, governments etc. According to the study´s assessment, global aluminium demand will contract severely by 5.4% in 2020 from 2019 levels before rebounding in 2021 to 6.0%. Major aluminium sales destinations and sectors will be affected differently worldwide. A prolonged period of slow and staircase-shaped recovery is most likely to follow demand's evaporation in 2020, and recovery rates will vary between regions and sectors. However, despite the significant impact of Covid-19 on aluminium sales, notable optimism remains in the medium to long-term as the outlook for aluminium demand remains robust over the next couple of decades. Global aluminium demand is expected to reach almost 300 million tonnes per year by 2050 at an estimated CAGR of 3.8% (CM Group, 2020).

Figure 210 below shows the study's predictions for aluminium demand over the short term (2020-2022) in major world regions by end-use sectors. While some sectors experienced a small contraction of demand, 'transport' and 'building and construction' are projected to be hit hardest. Looking at the major regions, the decline in Chinese domestic demand is likely to be severe in 2020, but a strong recovery is projected for 2021. China, which has a fundamental role in the world aluminium market due to its enormous production capacity and consumption, will lead the post-Covid recovery worldwide.

In contrast, recovery in Europe and North America is projected to be slower, and the 2019 levels of demand are not anticipated to be attained even within 2022. Regarding Europe, the European Commission proposed a massive Recovery plan ([172]) at the end of May 2020 to support the recovery and resilience of Member States' economies from 2021 to 2027. Therefore, the initial forecasts shown in Figure 210 for the impact Covid-19 will have on aluminium demand do not consider the anticipated stimulus to aluminium-intensive sectors of the EU economy. In addition, the full impact of the pandemic is yet to be fully quantified.

Figure 210. Forecast CAGR for aluminium demand per end-use sector in the three-year period 2020-2022 in Europe ([173]), China, and North America ([174])

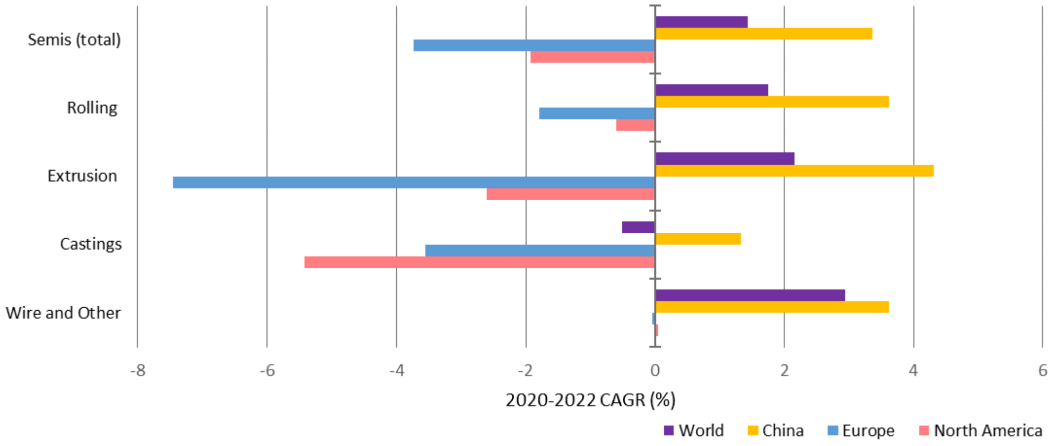


Source: Background data in (CM Group, 2020)

Detailed data related to the study's scenario are published by the International Aluminium Institute's Alucycle tool (IAI, 2020a). Figure 211 below shows the short-term demand forecast per aluminium product group in major regions.

([171]) The study considered a baseline scenario with 3% drop in global GDP in 2020 according to the world economic forecast made by the IMF in April 2020. In June 2020, the IMF revised its projection for global growth at -4.9%, 1.9 percentage points below April 2020.
([172]) COM (2020) 456 final.
([173]) European Union, United Kingdom, Iceland, Moldova, Montenegro, North Macedonia, Norway, Serbia, Switzerland, Turkey, Ukraine.
([174]) Canada, Mexico, United States.

Figure 211. Forecast CAGR for aluminium demand per aluminium product group in the three-year period 2020-2022 in Europe ([175]), China, and North America ([176])



Source: Background data in (IAI, 2020a)

Data indicate that demand for aluminium semis worldwide is expected to recover to net growth of 1.9% in the period 2020-2022. In China, the post-covid growth of semis demand is projected to 3.4% in 2020-2022, while a net contraction of 1.9% is forecasted in North America. Concerning Europe, data show a considerable downturn of 3.7% in demand for semis in Europe in 2020-2022, as the recovery in 2021-2022 will likely not counterbalance the drastic drop of 2020. In particular:

- The extrusion industry is expected to face the most challenging commercial conditions, mostly due to the demand shock in the construction and transport sectors;
- The negative impact for rolled products is likely to be lower as losses in the transport (automotive and aerospace) and construction sectors are partially offset by a growth in demand for aluminium cans;
- The short-term outlook for aluminium castings is also negative. The demand diversification for aluminium castings is low due to the high share of the automotive sector in demand. The European automotive industry was severely affected by the pandemic due to an almost total production shutdown(De Vet *et al.*, 2021);
- In contrast to the other segments, demand for aluminium wire in Europe will almost regain its losses by 2022.

On the supply side, given that aluminium smelting is a continuous process (i.e. 24 hours a day, seven days a week), an adjustment to the demand shock cannot be achieved unless smelters are temporarily curtailed or permanently closed. However, production growth continued against weak demand unabated in 2020. According to the International Aluminium Institute, the global production of primary aluminium rose by 2.6% year-over-year from January to November 2020, driven by record levels of China's primary aluminium output (+4.3% year-over-year) (IAI, 2020d). Market analysts expect the market surplus in 2020 from 3 Mt (Fitch Solutions, 2020) to 6 Mt without smelter closures (CRU, 2020). According to the scenarios developed by the International Aluminium Institute (IAI, 2020a), inventories are estimated to build up in 2020 by 3 to 5 Mt in comparison to 2019. Consequently, stocks are likely to grow in the same way as during the global financial crisis during 2008-2009 (see Figure 5).

The dented aluminium consumption by the Covid-19 pandemic will increase the aluminium market surplus of 2019, which could further weigh on prices. World Bank foresaw a decline of approximately 11% in 2020 in the annual average aluminium price (World Bank, 2020). CRU group forecasted that the aluminium price is only expected to return to 2019 levels in 2023 under the precondition of smelter closures and drawdown of inventories over the next few years (CRU, 2020). However, prices of industrial metals rose strongly at the end of 2020, driven by strong Chinese demand and euphoria buoyed by the Covid-19 vaccine rollout. The annual average aluminium price was finally lower only by 5% in 2020 compared to 2019. Furthermore, the market optimism for a stronger global economic recovery in 2021 with positive implications for metals demand triggered sharp upgrades for commodity price forecasts at the start of 2021. According to the February 2021

([175]) European, United Kingdom, Iceland, Moldova, North Macedonia, Norway, Serbia, Montenegro, Switzerland, Turkey, Ukraine.
([176]) Canada, Mexico, United States.

consensus price forecasts prepared by S&P Global on the basis of various estimates, the yearly average aluminium price is expected to recover to the pre-Covid level of 2019 as fast as in 2021 (S&P Global, 2021), while three months earlier the consensus forecast expected a slow and gradual recovery to the pre-Covid level of 2019 in 2023 (S&P Global, 2020b). However, intermediate products' prices using aluminium may have different evolution than primary processed aluminium, depending on specific demand coming from various economic sectors.

The scenario of lower price levels could lead to the elimination of the most inefficient primary smelting capacity worldwide, having less favourable cost structures. CRU Group reported in May 2020 that 16% of smelters outside China at the prevailing price levels were loss-making (CRU, 2020). Decisions for smelters' idling to alleviate global excess supply will rest on a complex mix of factors, including:

- the duration of demand disruption and price outlook at global/regional level;
- the production costs of specific installations and elements that might affect their profit margins, such as volatility in alumina and energy costs;
- the cost of operating a loss-making smelter during the period of low prices versus the associated costs of curtailing capacity and then restarting the idle smelter;
- the outlook for policy measures to support the aluminium industry.

As regards supply from secondary sources, Covid-19 undoubtedly caused a disruption in old scrap collection networks and a shortage of new scrap due to stoppages of manufacturing facilities. In combination with plunging aluminium demand and prices, the secondary aluminium companies are hit by the pandemic as well.

15 Findings, conclusions, and recommendations

A synthesis of the main findings is presented below:

15.1 Main actors in the global trade of aluminium products

15.1.1 Aluminium product aggregate

As far as the composition of the EU total exports of extra-tariffed aluminium product aggregate in the period 2014-2018 is concerned, four components – HS 7604 (annual average of 12%), HS 7606 (annual average of 31%), HS 7607 (annual average of 15%) and HS 761699 (annual average of 13%) - stand out, accounting together for more than 70 per cent of EU total exports of the extra-tariffed aluminium product aggregate.

Considering its share in the US, the EU was the 3rd largest supplier of extra-tariffed aluminium product group to the US. Its share rose slightly by 0.16% in 2018, as compared to 2014.

Table 27: Import shares of the EU and main suppliers of the extra-tariffed aluminium product group to the US over the period 2014-2018

Supplier country	US import value (2014) (billion USD)	Share of US imports (2014) (%)	US import value (2018) (billion USD)	Share of US imports (2018) (%)	Change (share of US imports 2018/ share in US imports 2014) (%)
Total US imports	13.96		19.71		+41.2
Canada	6.31	45.2	6.94	35.2	-9.9
China	1.92	13.7	1.87	9.5	-4.2
Russian Federation	0.83	5.9	0.99	5.0	-0.9
United Arab Emirates	0.66	4.7	1.60	8.1	+3.4
Bahrain	0.25	1.8	0.68	3.5	+1.6
India	0.12	0.9	0.66	3.3	+2.5
Mexico	0.49	3.5	0.53	2.7	-0.8
South Africa	0.27	1.9	0.51	2.6	+0.7
EU	1.23	8.8	1.77	9.0	+0.2

Source: Background data from (WITS, 2020)

In 2018, the EU had high US import shares for HS 7606, HS 7607, HS 7608, and HS 7609; the last three product groups (especially HS 7607 and HS 7609) gained additional share in the US relative to 2014.

Table 28: EU shares in the US imports of the extra-tariffed product aggregate by product group over the period 2014-2018

Product group	**Total US imports, 2014 (billion USD)**	**US imports from EU, 2014 (billion USD)**	**EU share in US imports, 2014 (%)**	**Product group share in US imports of EU-sourced product aggregate, 2014 (%)**	**Total US imports, 2018 (billion USD)**	**US import from EU, 2018 (billion USD)**	**EU share in US imports, 2018 (%)**	**Product group share in US imports of EU-sourced product aggregate, 2018 (%)**	**Change of EU share in US imports, 2014-2018 (%)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(7)-(3)**
Product aggregate	13.96	1.23	8.8	100	19.71	1.77	9.0	100	+ 0.2
HS 7601	7.30	0.13	1.8	10.7	10.36	0.08	0.7	4.23	- 1.1
HS 7604	0.75	0.13	16.6	10.1	1.18	0.16	13.4	8.92	- 3.2
HS 7605	0.60	0.02	2.6	1.3	0.73	0.02	2.2	0.91	- 0.4
HS 7606	2.45	0.53	21.7	43.1	3.96	0.88	22.2	49.61	+0.5
HS 7607	1.06	0.21	20.0	17.3	1.42	0.39	27.8	22.27	+7.7
HS 7608	0.16	0.03	18.0	2.3	0.16	0.03	18.1	1.66	+0.1
HS 7609	0.11	0.01	9.2	0.8	0.10	0.01	11.7	0.68	+2.5
HS 761699	1.53	0.18	11.6	14.4	1.79	0.21	11.6	11.72	0.00

Source: Background data from (WITS, 2020)

15.1.2 Aluminium product categories – geographic distribution of trade

15.1.2.1 Unwrought aluminium (HS 7601)

EU and United States were the leading world's importers of unwrought aluminium (HS 7601) over the period 2014-2018. In 2018, the leading country destinations of the EU imports were Germany, Netherlands and Italy, accounting for together more than half of the extra-EU imports. EU is a minor global exporter of unwrought aluminium. For this category of products, Canada held a share of over 50% for US imports of unwrought aluminium during the period 2014-2018.

15.1.2.2 Aluminium bars, rods, and profiles (HS 7604)

China and the EU are the leading exporters of aluminium bars, rods, and profiles (HS 7604) over the period 2014-2018, together supplying a quarter of the total world's exports in 2018. Together, Germany (32%), Spain (11%) and Italy (10%) accounted for more than half of the extra-EU exports in 2018.

Over the period 2014-2018, Canada (annual average share of 40%) and EU (annual average share of 15%) were the leading two US' suppliers of the aluminium bars, rods, and profiles. In 2018, Germany (25% of US imports from the EU), Italy (23%) and Spain (10%) were the main sources of US imports from the EU.

15.1.2.3 Aluminium wire (HS 7605)

EU was a significant exporter of aluminium wire (HS 7605) over the period 2014-2018, with an annual average of 5 per cent of the world's total exports.

Turkey, the United Kingdom, and the United States were constant destinations of extra-EU exports of aluminium wire, accounting together for an annual share of more than 20%.

EU has become one of the US' top five suppliers since 2015, but with a small annual share of 2-3 per cent.

15.1.2.4 Aluminium plates, sheets and strip (HS 7606)

China, the EU, and the US were the largest global world's exporter of aluminium plates, sheets, and strip (HS 7606) over 2014-2018, accounting for together around 45% of total world exports in 2018.

The United Kingdom was the leading destination of EU exports of aluminium plates, sheets, and strip – 35% of total annual extra-EU exports over the period 2014-2018. Germany contributed to more than half of the total yearly extra-EU exports.

EU, China, and Canada supplied more than half of the US' total annual imports. As compared with 2014, the US imports coming from the EU increased by 66% in 2018. In the same year, the EU became the US' leading supplier, overtaking China.

15.1.2.5 Aluminium foil (HS 7607)

China and the EU were by far the biggest global exporters of aluminium foil (HS 7607), accounting together for more than 45% of total annual global exports over the period 2014-2018. As compared to their 2014 export value, while EU exports fell by 22%, China's rose by 36% in 2018.

China was the US's larger supplier over the period 2014-2017, but its import share decreased abruptly, from more than half of US total imports in 2016 to 18% in 2018. Meanwhile, the share of the US' EU-sourced imports (the second supplier up to 2017 and the leading one in 2018) increased from 20% in 2016 to 28% in 2018. While having been the fourth destination of the extra-EU exports over the period 2014-2017, the US became the leading destination of the total extra-EU 27 exports of aluminium foil, with an export share of 19%.

15.1.2.6 Aluminium tubes and pipes (HS 7608)

China, the EU, and the US were the main global exporters of aluminium tubes and pipes (HS 7608) over the period 2014-2018. China (the leading global exporter over the entire period) in the world's global exports declined, from almost a quarter of the world's total exports in 2014 to 18 per cent in 2018.

Since 2015, Mexico is the leading supplier of aluminium tubes and pipes to the US.

Except in 2017, United States was the leading destination of the extra-EU exports of aluminium tubes and pipes over 2014-2018, with an annual share of 23% in 2018; the United Kingdom was the second one (15% in 2018). EU become the second US' supplier in 2018, with a share of 18% of total US imports.

15.1.2.7 Aluminium tube or pipe fittings (HS 7609)

China, the US, and the EU were the leading global exporters of aluminium tube and pipe fittings (HS 7609) over the period 2014-2018. While the value of US imports did not change significantly, extra-EU exports and China's rose substantially in 2018 relative to 2014, by 29.5% and 32.5%, respectively.

The United Kingdom was the destination of more than 30% of the annual extra-EU exports over 2014-2018 (34% in both 2014 and 2018). Extra-EU exports to the US accounted for 10% in 2018. Except in 2016, the EU was the fourth supplier to the US.

15.1.2.8 Aluminium castings and forgings

China was the leading exporter of other articles of aluminium (HS 761699) over the period 2014-2018. EU was the second world's exporter; as compared to 2014, extra-EU exports rose by 19 per cent in 2018.

UK was the main destination of extra-EU exports of other articles of aluminium (HS 7616.99) to its main destinations over the period 2014-2018, with an increasing annual share, from 17% in 2014 to 22% in 2018. The US was the second destination over the entire period, with a decreasing yearly share in extra-EU exports, from 15.5% in 2014 to 14% in 2018.

China was the leading supplier to the US over 2014-2018, with an average annual share of 42.5%. Mexico and the EU were also important suppliers with an average annual share of 17% and 16%.

15.2 Key trends for the EU aluminium industry

Total aluminium supply in the EU amounted to 15.4 Mt in 2018, with more than half (56%) sourced from imports. Imports into the EU of aluminium products rose strongly by 34% in total between 2012 and 2018 at a CAGR of 4.9%, from 6.5 million tonnes to 8.7 million tonnes.

Consumption of aluminium metal in the EU increased substantially by 16% in 2016-2018, to reach 13 Mt in 2018. The EU's overall import reliance on aluminium metal is high. In 2018, net imports accounted for 48% of total aluminium metal consumption, the highest ever level observed in 2005-2018. The EU's trade balance with foreign countries has been gradually deteriorating in most segments of aluminium semi-finished products.

The main trends concerning the individual industrial segments are summarised below.

15.2.1 Unwrought aluminium

The primary aluminium production in the EU decreased significantly by one-third over the period 2005-2013, causing an overall decline in unwrought aluminium output. According to Eurostat data, after a staggering recovery between 2014 and 2017 driven by secondary aluminium, the total annual aluminium ingot output remained flat in 2018 but declined considerably in 2019 by 7%. Currently, unwrought aluminium produced from secondary sources accounts for two-thirds of the total aluminium output of the EU.

The EU aluminium industry relies significantly on imports of unwrought aluminium. In 2018, imports of aluminium ingots represented almost half (49%) of consumption, up from 45% in 2017. Secondary aluminium represents about one-third of EU consumption (34%), and the remainder is covered by primary aluminium produced domestically. Considering only primary aluminium needs, imports accounted for three-quarters of consumption in 2018 (74%), the highest rate observed after 2015.

The financial crisis of 2008/2009 and the drop in prices in 2012-2013 took a substantial toll on the EU primary aluminium capacity. Smelters' economic sustainability measured through profitability was severely undermined, and primary aluminium plants closed permanently with no capacity added up to date. EU smelters achieved a robust profitability performance in 2017. The primary aluminium segment has had the most volatile returns among the aluminium industry's segments in the last years.

15.2.2 Extrusion

The output of extruded products in the EU increased significantly in the last years. For the most significant product group by volume of bars, rods, and profiles, EU producers' shipments increased with a compound annual growth rate (CAGR) of 4.6% from 2013 to 2018, reaching in 2018 their highest ever level. The growth rate for tubes and pipes shipments from the latest low point in 2014 was similarly strong, but production levels have still not recovered to the levels seen before the global financial crisis of 2009.

The EU is a net importer of extruded products. Import reliance expressed as a percentage of apparent consumption is low for bars, rods, and profiles (3% in 2018) and tubes and pipes (7% in 2018), whereas it had increased for tube or pipe fittings from 4% in 2015 to 18% in 2018. For all three product groups considered under the industry's extrusion segment, the EU saw record imports in 2018. Exports for bars, rods and profiles have constantly been increasing since 2009, reaching a record high in 2018.

Apart from the global financial crisis in 2008-2009, the extrusion segment of the EU aluminium industry suffered a long period of feeble profitability margins from 2011 to 2015; notably, after-tax losses were recorded in the period 2012-2014. The decline of construction activity in the EU has impacted extrusion companies strongly. Nevertheless, profitability performance improved substantially in 2016. The positive trend was maintained in 2017-2018, but the EBITDA and net profit returns have not managed to recover to the pre-crisis level.

15.2.3 Rolling

Deliveries of flat-rolled products (plates, sheets, strips) from EU rolling mills rose for six years in a row from 2012 to 2018 at a CAGR of 3%, reaching a record level in 2018. In contrast, the output of EU foil rollers has remained moderately steady since 2011.

The EU is a net exporter of flat-rolled aluminium products and aluminium foil. Exports of plates, sheets and strip grew strongly for nine consecutive years from 2010 to 2018 with a CAGR of 5.3%, whereas import volumes reflected an even stronger rising trend at a higher rate (CAGR 9.2% in the same period 2010-2018). In 2018, EU imports surged to a record level. As regards trade flows for aluminium foil, net exports are declining in the last decade as imports increased at a CAGR of 9.3% over 2009-2018, and exports rose at a CAGR of 2.4% in the period 2009-2018.

Corporate profitability for companies producing aluminium rolled products rebounded immediately after the financial crisis of 2008/2009, but it never recovered to the pre-crisis levels. Year-over-year fluctuations were small, except for 2015, when performance was significantly weak. In the last two years of the analysis (2017-2018), profit margins were lower than 2016 and not aligned with record production, suggesting unfavourable conditions of global competition.

15.2.4 Wire

EU production of aluminium wire declined considerably from 2006 to 2014, showing signs of recovery only in 2017-2018. The EU is much dependent on imports for its consumption of aluminium wire. Import reliance as a share of apparent consumption ranged between 45% and 50% in 2010-2018, remaining relatively steady despite lower apparent consumption.

The profitability of enterprises producing aluminium wire in the EU is aligned with the production trend. Corporate profits were very weak even after the financial crisis of 2008/2009. Following the long period of distress for the segment, which lasted from 2006 to 2014, companies producing aluminium wire improved their profitability performance in 2015-2017 significantly. However, corporate profits fell in 2018.

15.2.5 Castings

The output of aluminium castings in the EU increased from 2013 to 2018 at a CAGR of 3%, showing a marginal decrease of 1% only in 2018.

The EU is a net importer of aluminium castings since 2009. Import reliance is low, at 3%. Also, for aluminium castings imports reached a record level in 2018. In the last decade, EU exports are growing, but at a slower rate compared to the growing trend for imports.

The negative impact of the 2008/2009 financial crisis had on corporate profitability was the most severe for companies producing aluminium castings compared to other segments of the aluminium industry. Later, profitability margins were improved gradually until 2014. However, from 2015 to 2018, the net profitability of the segment remained weak despite a robust growth of production until 2017.

15.3 Tariff impacts on the EU aluminium exports to the US ([177])

The EU aluminium exporters to the US weathered the extra-tariffs mostly unharmed until the end of 2019 and generally better than other exporters to the US. Contrary to ex-ante forecasts, EU exports of the aggregate group of products subject to tariffs increased by 37% in terms of volume and by 30% in terms of value in June 2018 – December 2019 compared with the pre-tariff period. In contrast, the volume of US imports from rest-of-world countries declined by 11% during the same period. The EU's share in US imports for the aggregate product group extended from 4.2% to 6.7%.

Looking specifically at the trade balance after the implementation of tariffs, the annualised EU trade surplus rose from USD 770 million to USD 1,250 million, 62% higher compared to 12 months (June 2017 – May 2018) prior to tariffs. Germany remained the top EU exporter to the US and had the most substantial gains in exports value as it surged by 43%. Italy, Greece, and Luxemburg had considerable increases in exports value as well.

For most products subject to tariffs, European producers did not lower their prices, compressing their margins to absorb a proportion of the tariff to maintain their share in the US. A statistically significant decrease in export prices after tariffs' implementation was identified only for 15% of the total EU export value to the US, in particular for hollow profiles of aluminium alloys (HTS 7604.21.00), plates, sheets and strip (clad) of aluminium alloys (HTS 7606.12.60), and backed aluminium foil (HTS 7607.20.50).

US importers of specific aluminium products have submitted thousands of exclusion requests from paying the 10% tariff. In accordance with the rules set for Section 232 tariff implementation, tariff exclusions are granted when there is a lack of sufficient US production capacity for comparable products or there is no US production. Data on submissions of tariff exclusion requests show that European suppliers were granted tariff exclusions at a higher rate in comparison to rest-of-world exporters. This implies that EU exports to the US comprise mainly highly specific products that respond to the US manufacturing industry's demand.

Approved applications for tariff exclusion are mostly granted for flat-rolled products (HS 7606) and foil products (HS 7607). According to data referring to the period June 2019-September 2021, i.e. without Canada and Mexico in the scope of Section 232 tariffs, it is estimated that 89% of the approved tariff exclusions for HS 7606 were associated with insufficient US availability and 11% with an absence of US production; the respective figures for HS 7607 are 62% (not enough US capacity), and 36% (no US production). The US rolling industry operated close to its nameplate capacity at the end of 2015, and the potential for expanding production was low. However, recent announcements for expansion of US rolling capacity or recent commissioning of new rolling capacity will alleviate the production limitations for certain group of HS 7606 products, mainly automotive sheet but also common alloy sheet. For aluminium foil, the constraints in US production capacity are not foreseen to ease.

With respect to the individual products groups subject to tariffs, the main findings are presented below by each industrial segment:

15.3.1 Unwrought aluminium

EU exports of unwrought aluminium (HS 7601) declined substantially by 78%. Nevertheless, before the implementation of tariffs, EU exporters held a minimal (1%) share of the US imports. Exports originating from Spain experienced the most considerable losses that could be associated with the curtailment of two of Alcoa's smelters in 2019.

([177]) The period under consideration is November 2016 – May 2018 (19 months pre-tariff) versus June 2018 – December 2019 (19 months post-tariff); thus, the analysis predates the Covid crisis.

15.3.2 Extrusion

EU exports of bars, rods and profiles decreased in total 7% by volume. However, EU exporters of bars, rods, and profiles (HS 7604) managed to preserve their considerable share in the US as the decline in US imports from rest-of-world countries was higher. For the most important products exported to the US by volume, EU exports rose for alloyed, not hollow profiles (HTS 7604.29.10). In contrast, they declined for alloyed bars and rods with a round cross-section (HTS 7604.29.30) and alloyed hollow profiles (HTS 7604.21.00). Among the most impacted countries were Slovenia for aluminium alloy bars, rods, and non-hollow profiles (HS 760429) and Belgium for alloyed hollow profiles (HS 760421). In contrast, exports from Greece had a slight increase for non-alloy bars, rods, and profiles (HS 760410).

Regarding tubes and pipes (HS 7608), EU exports surged 3% by volume and expanded their share in US imports from 9% to 13%. Exporters from Germany and Italy of alloyed tubes and pipes (HTS 760820) had the most significant gains in the post-tariff period among the EU countries.

15.3.3 Rolling

EU exports of rolled products were the best performing product group in the post-tariff US landscape in every aspect. Exports of plates, sheets, and strip (HS 7606) rose sharply by 74% and exports of foil (HS 7607) by 66%, widening the EU share in US imports for these products significantly from about 14% and 15%, respectively, to 23% for each.

Exports' growth for HS 7606 was driven by the overwhelming surge of exports for the common alloy sheet (not clad) products classified under HTS subheading 7606.12.30.90. This product's exports almost doubled and accounted for 85% of the total EU exports for HS 7606 in the post-tariff period. Other products for which exports of plates, sheets and strip from the EU registered a noticeable growth in terms of volume comprise common alloy sheet clad products (HTS subheading 7606.12.6000, alloy plates (HTS 7606.12.3035), and can (body) stock (HTS 7606.12.3045). A drop in EU exports was recorded for subheadings HTS 7606.11.3060 that comprises lithographic sheets, HTS 7606.12.3015, which refers to high-strength heat-treatable plates alloys, and HTS subheading 7606.91.3090 that includes embossed and composite panels of aluminium sheet and strip.

Concerning foil products belonging to HS 7607, the rise of EU exports to the US was led by the strong growth of exports of thin-gouge foil with thickness of less than 10 μm (HTS 7607.11.30), which were more than tripled in the period following the implementation of tariffs and captured over one-third of the US exports of this product. EU exports of general, not backed foil stock with thickness 10-150 μm (HTS 7607.11.6090) also demonstrated a marked increase in volume and share in the US.

EU exporters of rolled products, as well as exporters from other regions, benefited from US trade actions against imports of common alloy sheet and aluminium foil from China. A network of anti-dumping and countervailing duties (AD/CVD), along with Section 232 and Section 301 tariffs, led to a sharp decline in Chinese imports of common alloy aluminium sheet and aluminium foil into the United States.

15.3.4 Wire

EU exports of aluminium wire products (HS 7605), which hold an overall low share in the US, were not hampered by tariffs. In total, exports of wire products from the EU increased by 12%. Growth of exports was registered for alloyed wire over 7 mm (HS 760521), including speciality grain refiner products for aluminium casting, and for other than alloy wire of less than 7 mm (HS 760521), originating mainly from Spain and Hungary, respectively.

15.3.5 Aluminium tube or pipe fittings, aluminium castings and forgings

EU exports of aluminium tube or pipe fittings (HS 7609) were lower and had a minor loss in their share compared to the pre-tariff period. Exports from Czechia were the most negatively impacted, whereas Spanish producers managed to increase the exported quantities.

Negative impacts occurred for EU exports of aluminium castings and forgings (classified under HTS subheadings 7616.99.51.60 and 7616.99.51.70, respectively) that were halved by volume after tariffs' imposition. The rate is higher than the total drop in US imports of aluminium castings and forgings (40% and 38%, respectively). Exports of aluminium forgings from Czechia and France were heavily affected, and these countries recorded the top losses among all exporters to the US. On the other hand, Poland recorded the top gains in exports of aluminium forgings to the US. Italian exports of aluminium castings also distinguished in post-tariff trade patterns having the top gains in the US.

15.4 Tariffs impact on EU aluminium imports

As concerns the EU imports surge originating from source countries that had their US exports decreased in the post-tariff period ([178]), China directed/redirected to the EU the greatest amount of export volumes (135 kt) from the US. These volumes are almost half of the total rise of annualised EU imports from China (280 kt) in the same period. The most significant export redirection by volume among tariffed product categories is identified for flat-rolled products (HS 7606) (86 kt) and aluminium foil (HS 7607) (52 kt). Import diversion in the EU from the US for aluminium foil accounted for the highest proportion of the EU imports increase in the post-tariff period.

15.4.1 Unwrought aluminium

For unwrought aluminium, a rise of 14% is recorded for EU imports of unalloyed aluminium (HS 760110) from the United Arab Emirates (UAE), and about 16% of this rise equals UAE's losses in the US.

15.4.2 Extrusion

For aluminium alloy hollow profiles (HS 760421), and aluminium alloy bars, rods, and non-hollow profiles (HS 760429) originating from China, EU imports soared by 41% and 45%, correspondingly, in the post-tariff period. The spectacular growth of EU imports is by far higher than the losses China had in the US, i.e. by twelve and nine times, respectively. Increased penetration in the EU — but at much lower levels than imports from China — after the tariffs is also observed for aluminium alloy hollow profiles (HS 760421) imported from South Korea; the rise of EU imports (324%) was about 8 times by volume the losses South Korea had in the US. As concerns tubes and pipes (HS 7608), EU imports from China increased by 12% for non-alloy tubes and pipes (HS 760810), and 31% for aluminium alloy tubes and pipes (HS 760820). The rise in the EU's volumes from China is much higher than China's losses in the US (1.8 times for HS 760810 and 5.5 times for HS 760820).

15.4.3 Rolling

EU imports from China of plates, sheets and strips rose sharply since the imposition of tariffs. In particular, the import growth for non-alloyed products (HS 760611) was about 3.5 times, while Chinese exports to the EU for alloyed products (HS 760612 and HS 760692) doubled. The rise in Chinese exports for HS 760611 was about 22 times the drop of Chinese exports to the US, whereas for HS 760612 and HS 760692, the volumes directed to the EU were 25% and 120% respectively of the Chinese losses for these products in the US. Without a doubt, the combination of Section 232 tariffs with other trade measures imposed by the US against China, such as anti-dumping duties, contributed to the surge of imports of flat-rolled aluminium products in the EU.

Concerning foil products, EU imports from China for not backed, not further worked foil (HS 760711) rose considerably by 70% after the imposition of tariffs. The EU imports increase corresponds to about half of the export decrease in the US of Chinese exports. Imports from Armenia, also for HS 760711, had a considerable increase amounting to 80% of Armenia's export loss in the US. Canadian exports to the EU of not backed and further worked foil (HS 760719) had an almost two-fold increase, while for backed foil (HS 760720) doubled; for both products, the volumes directed to the EU are negligible compared to the export decrease in the US. Finally, EU imports from Norway increased in the post-tariff period by 60% for HS 760711; the rise is many times higher than Norway's losses in the US. However, volumes of EU imports from Canada and Norway are much lower than imports of foil products from China.

15.4.4 Wire

A rise in EU imports, approximately identical by volume to the drop in exports to the US in the post-tariff period, occurred from Japan (44%) for aluminium alloy wire with a maximum cross-sectional dimension of over 7 mm (HS 760521), as well as from China (66%) and Switzerland (3%) for aluminium alloy wire with a maximum cross-sectional dimension of 7 mm or less (HS 760529). Also, EU imports from Canada rose by 20% for HS 760511, a negligible rise compared to Canada's export losses in the US.

([178]) The period under consideration is November 2016 – May 2018 (19 months pre-tariff) versus June 2018 – December 2019 (19 months post-tariff).

15.4.5 Aluminium tube or pipe fittings, aluminium castings and forgings

Countries that had the most substantial losses of export volumes in the US in the post-tariff period diverted small volumes of tube or pipe fittings to the EU. No data are available for trade flows for aluminium castings and forgings in the Harmonised System (HS).

15.5 Tariff impacts on the US aluminium sector

15.5.1 Overall assessment

President D. Trump's policy to protect the aluminium industry with Section 232 tariffs has an ambiguous 'national security' justification. Tariffs do not target products employed by the defence industry. Despite their broad coverage under the 'mantle' of national security, the principal aim of the protectionist trade measure was to revive the US latent capacity for primary aluminium after a period of severe decline in production and capacity. Unlike the primary aluminium segment, the US aluminium industry of semis was not distressed in the period prior to the tariff's implementation. Quite the opposite, it had an upward trend in terms of production and employment. However, the tariffs' scope encompassed downstream semis to protect the US industry from foreign competition as these would have higher costs for input unwrought aluminium. Indeed, tariffs raised the physical premium sharply, pushing US aluminium prices above those in every other region, making imports of unwrought aluminium more expensive relative to domestically produced goods. A cross-media effect was that US buyers of unwrought aluminium faced much higher costs. The tariff-induced extra cost increased the price paid by US aluminium users and consumers across the value chain. As a final remark, it can be argued that the tariff policy aimed at increasing US leverage in trade negotiations, such as the new United States-Canada-Mexico Free Trade agreement.

The overall import volume reduction in the post-tariff period ([179]) was 11% lower than the reduction anticipated by the US authorities that tariffs could deliver (13.3%). US imports of all product groups declined except rolled products (plates, sheets, strips, and foil), which increased strongly by 10%. In terms of volume, tariffs had the largest impact on imports of unwrought aluminium that decreased by -17% (almost 800 kt) on an annualised basis in relation to the pre-tariff period. Castings and forgings had the sharpest import decline in percentage terms (-40%) among aluminium product groups. The overall US production of unwrought and semi-finished aluminium products increased by 4.4% on average in the period after the imposition of tariffs as measured by the Industrial Production Index, a higher rate than the demand growth for aluminium in North America of 2.2% from 2017 to 2019.

15.5.2 Primary aluminium

The US administration could claim a limited degree of success on the target to protect the US industry's primary aluminium segment. The remaining high-cost US smelters were able to survive with tariff support, and the output of primary aluminium recorded a steep rise in 2018, but the growth stagnated in 2019. The segment had the most substantial growth among the US industry in the post-tariff period as its output increased by about 23%, as measured by the Industrial Production Index.

US smelters achieved a 63% utilisation rate of their nameplate capacity in 2019, whereas before, tariffs operated at only 41%. However, not all restarts of idled capacity can be attributed to tariffs, as they had been announced before their imposition. Moreover, after almost three years since tariff enforcement, the capacity utilisation rate did not reach the target of 80% set by the US administration in order to sustain a profitable operation, meaning that the tariffs fell short of their intended effect in the short term. The overall effectiveness of tariffs to further lift domestic production in the long run of primary aluminium upwards remains questionable. As a final remark, any positive impact of the tariffs on the US primary aluminium industry will be limited and short-lived as the tariff policy does not fix structural mega-trends in the global market, such as Chinese overcapacity, i.e. the root cause for weak aluminium prices in recent years according to industrial associations.

The tariffs delivered a competitive advantage to the US primary aluminium industry against foreign supply as the US Midwest premium, which overlays the London Metal Exchange (LME) benchmark price, soared. After the US imposed duties on imports of aluminium, the US Midwest premium surged from 9% in January 2018 to 20% in May 2019 as a percentage of the LME cash price. The tariff-driven gains for each tonne of aluminium produced in the US ranged from USD 200 to USD 290 in March 2018-October 2019.

([179]) April 2018 – November 2019 as compared to a period of same duration (20 months) preceding the implementation of tariffs (August 2016 to March 2018).

After Canada's exclusion from the tariff regime in June 2019, the tariffs did not apply to a significant portion of unwrought aluminium imports, as Canada holds a substantial share of over 50% in the US; only 41% by volume of the total US imports of unwrought aluminium in 2018 were subject to tariffs since May 2019. Meanwhile, demand for aluminium in North America was sluggish in 2019 as it declined by 2.9%. So, the desired price effect for US producers was gradually undermined. From November 2019 to March 2020, the supply-demand balance forced the US Midwest premium to ease to about 15-16% as a percentage of the LME cash price, yet much higher than its level before the imposition of the tariffs. The estimated tariff component more than halved to levels of USD 100-110 per tonne in November 2019 – March 2020. Furthermore, since April 2020, the coronavirus outbreak has nullified almost the entire tariff effect in the US aluminium premium. The US regional premium plummeted to levels seen before the imposition of tariffs in terms of USD per tonne of aluminium sold in the US.

Equally important for the assessment of tariffs' efficiency in the recovery of the primary aluminium industry in the US is the decline in the world's aluminium price since June 2018. The gradual deterioration of LME's aluminium price offset partially the benefit created for US producers by the rise of the US premium. In February 2020, the monthly average all-in aluminium price in the US was nearly USD 2,000 per tonne, down by USD 450 per tonne compared with January 2018, just before the US premium had started to climb in anticipation of the tariffs. Production costs may have declined too in this period, but given the high fixed costs of primary aluminium production, a decrease in prices of critical inputs such as alumina cannot counterbalance a lower global aluminium price fully. Not surprisingly, the US administration's tariff strategy for defending upstream production cannot offer any tangible result in this perspective; it does not impact Chinese overcapacity, the root cause for weak aluminium prices in recent years, according to industrial associations. Tariffs were unable to dissuade Chinese exports worldwide.

Also, the collapse in global aluminium prices with the Covid-19 outbreak is an additional risk for the remaining US smelters' viability. The significant supply-demand misbalance in 2020 will pressure global aluminium prices in the short term, threatening smelters' survival worldwide with no favourable cost structures. The shutdown of one Alcoa's smelter is the first US smelter curtailment in the challenging conditions of the eroded tariff benefit for US smelters plus low global aluminium prices. The closure of the smelter will remove 19% of the US operational capacity and 13% of the total capacity for primary aluminium; thus, making highly doubtful the target's attainment to achieve a capacity utilisation rate of 80% for the US smelters during the next two to three years.

15.5.3 Other segments

In a different way from the US primary industry, the secondary US aluminium industry's performance was enhanced in economic terms after tariffs implementation as measured by the Industrial Production Index (+6.9% after tariffs), taking advantage of lower scrap prices and the higher aluminium regional premium. Of note is that imports of aluminium scrap are not subject to Section 232 tariffs.

Concerning US production of semi-finished products, their output in economic terms in the post-tariff period was weaker than primary and secondary aluminium output, i.e. growth of 3.1% for extruded products and 2.9% for rolled and drawn aluminium products, respectively. The US continued to import growing volumes of rolled aluminium despite the tariffs, and the decrease in imports of extruded products was low (-2.7%), driven mostly by a drop in imports of tubes and pipes (-20%), while imports of bars, rods and profiles decreased marginally by 1%.

For aluminium rolled products, in particular, the US demand could not be satisfied by US capacity expansions, which mainly aimed at the automotive aluminium sheet. Even though the real production output (IPI) increased by 2.9% for rolled and drawn products, the US continued to import growing volumes of rolled aluminium from Europe and other regions despite the tariffs; US imports of flat-rolled products (plates, sheets, and strip) and foil increased by 10% respectively in the post-tariff period.

As regards employment, data demonstrate improved rates for the sectors of the US aluminium industry protected by the tariffs. The overall employment rose by 2.4% from Q2 2019 to Q4 2020, a rate which is slightly higher than the growth rate in the rest of the US metals industry (1.1%), and the overall employment growth rate (1.8%) in the US manufacturing sector. The rolling and extrusion industries contributed the most to the total employment growth (62%). Secondary production of aluminium was the most benefited sector in terms of relative change as employment rose by 15%. In contrast, the alumina refining/primary aluminium segment did not improve its employment rates.

A side effect of the increase of the regional US premium was the decline of exports of finished aluminium products made by industries dependent on tariffed aluminium inputs.

15.6 Future challenges and recommendations

15.6.1 Short-term outlook for EU exports to the US

Considering the significant uncertainty caused by the coronavirus crisis and the grim short-term outlook for aluminium prices in the next 1-2 years, the unilateral lift of aluminium tariffs is deemed unlikely. The survival of the remaining US smelters might be compromised if they are deprived of the tariffs' price benefit. However, the tariff policy could end if the tariffs' effect is misbalanced with the negative impacts brought about to the US economy by raised costs for imported inputs and harmed competitiveness of US products overseas due to countermeasures applied by the affected trade partners. European aluminium exports consist massively of products not destined for the defence industry, such as common aluminium sheet and foil, that do not pose a threat to US national security, even under the broad interpretation on 'national security' made under Section 232 law.

The new trilateral Trade Agreement between the US, Canada, and Mexico will support the aluminium industry in North America due to the sourcing requirements for domestically produced aluminium (at least 70%) and automotive components for vehicles (at least 75%). The orientation of US supply chains to North America will increase competition for EU exporters of aluminium products to the US for automotive applications.

As concerns bilateral trade with the US, EU exports of aluminium products are expected to decline during the ongoing Covid-19 pandemic due to demand suppression and disruption in supply chains. Once trade flows adjust after the Covid-crisis, European producers are expected to maintain their low to medium shares in the US for extrusions (HS 7604 and HS 7608), wire (HS 7605), and foil (HS 7607) despite the tariffs. The exception could be flat-rolled products (HS 7606), the main product group of EU exports to the US.

The US' anti-dumping and countervailing probe launched for imports of common alloy sheet had massive coverage in volume and number of investigated countries. The imposition of anti-dumping duties against six EU Member States will impact severely a significant amount of EU exports of about 160 kt and USD 530 million by value. The new US rolling capacity could potentially cover a part of the supply gap, as well as European and rest-of-the-world rollers not subject to anti-dumping duties. The compound impact depends on the magnitude of duties to producers from the six Member States and the eleven rest-of-world countries subject to AD duties.

Germany's exports to the US of common alloy sheet, which are the largest by volume among the EU countries against which the US has recently imposed anti-dumping duties (April 2021), are expected to collapse due to the enormous duty rates. Though, German producers have the least exposure to the US and the most diversified export base to EU-extra destinations. Producers from Romania are subject to high anti-dumping rates, have the highest trade exposure to the US for common alloy sheet among the six EU Member States but a diversified export base. Furthermore, exports from Italy, Spain and Slovenia are also likely to suffer considerable losses as the final duty rates range from low to relatively high and high levels. By contrast, the low duty rates for common alloy sheet products originating from Croatia suggest that aluminium rollers would be much less impacted.

An additional risk for EU producers that should not be understated is the potential export redirection of common alloy sheet into the EU originating from extra-EU countries subject to US anti-dumping and countervailing duties. The volumes involved are significant, i.e. about 480 kt (2019) of common alloy sheet exports to the US may seek other destinations. The risk is amplified by the Chinese export volumes already removed from the US in 2019, e.g. 310 kt of common alloy sheet in 2019, due to the US's net of tariffs and duties against them.

Chinese exports to the EU of certain rolled (including foil) and extruded products recorded a substantial increase after the imposition of US tariffs in 2018. Commission's decisions to launch a series of investigations within 2020 over alleged unfair trade practices for imports of extrusion and rolled products from China have come at proper timing to encounter the import flood from China in the post-tariff period, but also to prevent a further surge when the demand recovers fully in the post-pandemic period.

15.6.2 Short-term outlook for the EU aluminium industry and recommendations

In the landscape of the Covid-19 crisis, the EU aluminium industry is going to face challenges on top of trade conflicts and market distortions. The pandemic's impacts on the economic activity caused a demand shock for aluminium that the full recovery of demand in Europe might not be completed even within 2022. Furthermore, aluminium prices are not expected to rebound to pre-covid crisis levels earlier than 2023. Primary aluminium smelters in the EU will be under pressure. Their viability is at risk if their production cost structures cannot sustain low prices for an extended period. The curtailment of two smelters in Spain in 2019 and the imminent threat of closure for Alcoa's last smelter in Spain in 2020 are early and clear signs of the EU primary aluminium industry's challenges. Concerning producers of semis, export competition will become fiercer due to surplus production globally. Simultaneously, the potential diversion of export flows from oversupplied third countries to the EU is an additional threat for domestic producers' share of sales. Finally, the slowdown in economic activity is going to impact domestic aluminium demand in the EU.

The Covid-19 crisis is a chance to enhance the resilience of the EU's aluminium industry. Potential strategies should rely on the comparative strengths of the European industry and opportunities in the post-Covid future. In this perspective, the following non-exhaustive actions are suggested, taking into consideration the identified challenges plus aluminium's importance in the European industrial landscape, the anticipated strong demand in the mid- and long-term, and aluminium's prominent role in the transition to a climate-neutral economy:

— Consider aluminium as a candidate among base metals and critical raw materials to be addressed by the European Raw Materials Alliance foreseen by the new Action Plan on Critical Raw Materials ([180]), in order to build resilience and open strategic autonomy for the sector;

— The monitoring mechanism established by the European Commission and triggered from the US tariffs for measuring import flows of aluminium products into the EU should remain in place for as long as Covid-19 impacts and trade turbulence are affecting the aluminium sector worldwide. For flat-rolled products, trade diversion beyond traditional import flows will be more likely after the definitive AD/CVD determination of the US investigation on common alloy sheet products. The shares of exporting countries per products should also be closely monitored to account for the drop in demand that the Covid-19 pandemic brought about. The application of safeguard measures, similar to the measures currently in place for steel, to defend the domestic aluminium industry from a potential redirection of deflected common alloy sheet export flows from the US is an option to be investigated;

— The European aluminium production has a lower carbon footprint versus imports. The Carbon Border Adjustment Mechanism initiative (CBAM) of the European's Green Deal ([181]), examines ways of penalising high-carbon imports to prevent carbon leakage. The CBAM is an opportunity for a detailed investigation of WTO-compliant trade measures covering the entire aluminium's value chain (primary aluminium and downstream). An adequately designed mechanism for imports of aluminium products could decrease the carbon footprint of the aluminium consumed in the EU and capitalise European producers' competitive advantage against carbon-intensive imports, without undermining the smooth supply of essential aluminium products for EU consumers;

— The European Green Deal's Circular Economy Action Plan aims to reduce resource consumption footprint and increase its circular material use rate. Even though aluminium produced from secondary sources accounts for two-thirds of the total output of the EU, the EU is a historical net exporter of aluminium scrap ([182]). This means leakage of a highly recyclable raw material, which is an energy-carrier and of low carbon footprint. An increase of secondary producers' output will facilitate a lower carbon footprint for the aluminium produced and used in the EU. Also, given that in the medium- and longer-term demand for aluminium will continue to increase, secondary production is a means to prevent that the EU becomes more dependent on imports. The full exploitation of the domestic potential for secondary production of aluminium is considered strategic for the security of supply and lowering the carbon footprint of the EU's aluminium production.

([180]) COM(2020) 474 final.
([181]) COM(2019) 640 final.
([182]) JRC (2021) *'Sustainability aspects of Bauxite and Aluminium — Climate change, Environmental, Socio-Economic and Circular Economy considerations''*. https://publications.jrc.ec.europa.eu/repository/handle/JRC125390

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List of abbreviations

AA	Aluminium Association
AD	Anti-dumping
CAAS	Common aluminium alloy sheet
CVD	Countervailing duty
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EU	European Union
JRC	Joint Research Centre
HS	Harmonized System
HTS	Harmonized Tariff Schedule of the United States
IAI	International Aluminium Institute
IMF	International Monetary Fund
LME	London Metal Exchange
MFA	Material Flow Analysis
MFN	Most Favoured Nation
NACE	Nomenclature statistique des activités économiques dans la Communauté Européenne
NAICS	North American Industry Classification System
nesoi	Not elsewhere specified or indicated
SHFE	Shanghai Futures Exchange
US	United States

Glossary and Definitions

Glossary

Term	Definition
Alumina	Refined aluminium oxide extracted from bauxite for electrolytic smelting into aluminium metal.
Aluminium	Unalloyed aluminium or aluminium alloy.
Aluminium, alloyed	Aluminium which contains various alloying elements to enhance certain properties, where aluminium predominates by mass over each of the other elements and where the aluminium content is not greater than 99,00%.
Aluminium, unalloyed	Aluminium without alloying elements where the minimum aluminium content is at least 99.00% by weight.
Bar	Solid, wrought product that is long in relation to its cross-section which is circle, square or rectangular (excluding plate and flattened wire) with sharp or rounded corners or edges, or is a regular hexagon or octagon, typically supplied in straight length. In Europe, a bar is supplied in straight length; if supplied in coiled form, the product is called "wire. In North America, the minimum perpendicular distance between parallel faces of a bar is 10 mm; below this limit the product is called "wire”.
Bauxite	The mined ore source for aluminium, which must be refined into alumina before undergoing electrolytic smelting to produce aluminium metal.
Billet	An unwrought aluminium product that is the input to the extrusion process. Extrusion ingot cut to length. Billets also can be wrought from ingots or sintered from compacted aluminium powder.
Blank	Piece of metal of uniform thickness and of regular or irregular shape taken from a wrought or unwrought product
Cast products	Non-wrought products, formed by pouring molten aluminium into a mold or injecting it into a steel die, and then cooling it to solidify the aluminium.
Casting	Product at or near finished shape, formed by solidification of the metal in a mould or a die.
Casting alloy (Foundry alloy)	Alloy intended to produce aluminium castings
Circle	Circular blank fabricated from plate, sheet, or foil
Closure	Complete and permanent shutdown of a facility or a production line within a facility.
Continuously cast strip	An unwrought aluminium product, usually between 3–20 mm in thickness. It is produced using a continuous casting process during which molten aluminium is fed into casting nozzles of the casting unit, flows between water-cooled rollers, and emerges as a solid strip of aluminium. It is an input for certain flat-rolled products.
Curtailment	Taking production capacity out of active production but keeping it fully operational so it can be quickly restarted. In primary Al smelters a facility is described as having “curtailed” production if it shuts down one or more potlines.
Drawn products	Aluminium that is mechanically shaped by being pulled through the opening of a steel die. Wire is produced by drawing unwrought wire rod. Extruded bars, rods, tubes, and pipes may also subsequently be drawn to improve surface finishes or achieve final outer dimensions.

Extruded products	Aluminium profiles, bars, rods, tubes, and pipes mechanically shaped from a preheated aluminium billet by pushing it under pressure in a hydraulic extrusion press through the opening of a steel die.
Extrusion (Process)	Process in which a billet in a container is forced under pressure through an aperture of a die.
Extrusion ingot	Ingot, intended and suitable for extruding, typically with a solid, circular cross-section but sometimes with a central hollow or a flattened cross-section.
Flat-rolled products	Plates, sheets, strip, or foil produced by reducing a preheated aluminium slab via successive passes between paired, flat-surfaced steel rolls to attain the desired final thickness.
Foil	Flat rolled product with a rectangular cross-section and uniform thickness not exceeding 0.20 mm (200 microns). In the United States the maximum thickness of a foil is less than 0.006 inch.
Forged products (forgings)	Wrought product formed by hammering or pressing, typically when hot, between open dies (hand forging) or closed dies (drop or die forging).
Forging ingot	Ingot intended and suitable for forging.
High-purity aluminium	Unalloyed aluminium containing at least 99.8 per cent aluminium.
Idle capacity	The portion of a facility's production capacity that is curtailed while the remaining capacity is still actively in production.
Ingot	Cast product intended and suitable for remelting or forming by hot or cold mechanical working.
Ingot for casting	Ingot for remelting intended and suitable for the production of castings.
Ingot for remelting (Remelt ingot)	Ingot intended and suitable for remelting.
Ingot for rolling (Rolling ingot)	Ingot intended or suitable for rolling into flat-rolled products.
Mill products	An alternative term for semi-finished wrought aluminium products.
Nameplate capacity	The level of installed production capacity or output a manufacturing facility is intended to operate.
New scrap (or process scrap)	Scrap that arises during the various production stages of aluminium products, before the aluminium product is sold to the final user.
Old scrap (or post-consumer)	Scrap that arises after use of an aluminium product or component
Pig	Small ingots for remelting, weighing less than 25 kilograms.
Pipe	A tube with standardized outside diameter and wall thicknesses. “Nominal Pipe Sizes” and “ANSI Schedule Numbers” commonly designate pipe.
Plate	Flat-rolled product with a rectangular cross-section and a thickness not less than 6 mm (in the United States not less than 0,250 inch) with sheared or sawn edges (6.3 mm in the United States).
Powder and flakes	Non-mechanical (non-wrought) products formed by spraying gasified molten aluminium under high pressure through a nozzle (a process called atomization) and allowing the sprayed aluminium to solidify through contact with the air into fine particles.

Primary aluminium	Aluminium produced from the electrolytic reduction of alumina at a smelter. Aluminium alloys produced subsequently are also included.
Primary aluminium ingot	Ingot of unalloyed or alloyed aluminium cast from primary aluminium and possibly a small amount of run- around scrap.
Profile	Wrought product that is long in relation to its cross-sectional dimensions, and which is of a form other than that of sheet, plate, rod, bar, tube, wire or foil. Also referred to as “shape” or “section”.
Recycled aluminium ingot	Aluminium ingot obtained from the recycling of scrap
Refiners	Refiners produce predominantly secondary aluminium casting alloys (or ‘foundry alloys’) using mainly diverse types of old scarp, as casting alloys have much higher tolerance of impurities in comparison to wrought alloys
Remelters	Remelters produce aluminium wrought alloys from new and segregated old scrap, mostly in the form of extrusion billets and rolling ingots.
Rod	Solid, wrought product with a circular cross-section that is long in relation to its diameter, typically supplied in straight length. In Europe, a rod is supplied in straight length; if supplied in coiled form, the product is called "wire". In Europe, a rod is often called a "round bar". In North America, the minimum diameter of a rod is 10 mm; below this limit, the product is called "wire".
Rolling	Forming of solid metal in a gap between two rotating cylinders.
Scrap	Raw material, destined for trade and industry, mainly consisting of aluminium resulting from the collection and/or recovery of metal that arises as by-product at various production stages or products after use.
Semi-finished product	Product that has undergone some processing and is supplied for further processing before it is ready for use. Semi-finished products include wrought products and castings.
Semis	Semi-finished products i.e. mill products and castings
Sheet	Flat-rolled product with a rectangular cross-section and a nominal thickness less than 6 mm (in the United States less than 0.250 inches) but not less than 0.20 mm (in the United States not less than 0.006 inches) and with slit, sheared or sawed edges. A sheet can be supplied in a corrugated, embossed, coated, edge-conditioned or perforated form. In Europe, the term "sheet" is only used for rolled products supplied in straight length; for coiled sheet the term "strip" is used.
Slab	Often called a “reroll plate”, having a rectangular cross section, a thickness not less than 6 mm, and sheared or sawn edges; it is suitable for further rolling.
Slug	Piece of metal of uniform thickness and of regular or irregular shape, taken from a wrought product, typically for impact extrusion, with or without a center hole.
Sow	Large ingots for remelting, typically having a mass of about 500 kg.
Strip	Flat rolled product of rectangular cross section with uniform thickness of less than 6 mm but not less than 0.20 mm, supplied in coils usually with trimmed edges. A strip can be supplied in a corrugated, embossed, coated, edge-conditioned or perforated form.
T-bar	Ingots for remelting characterized by a t-shape cross-section, which allows this unwrought product to be lifted and transported using an industrial forklift or crane.
Tube	Hollow, wrought product with a uniform cross-section, with only one enclosed void and with a uniform wall thickness, supplied in straight lengths or in coiled form. Cross-sections are in the shape of circles, ovals, squares, rectangles, equilateral triangles or regular polygons.

Unwrought product	Product obtained by casting without further hot or cold working. Examples of unwrought products are ingots for rolling, ingots for extruding, ingots for forging, ingots for remelting, cast plate or casting. This term does not cover rolled, forged, drawn, or extruded products, tubular products, cast or sintered forms which have been machined or processed, other than by simple trimming, scalping, or descaling. Unwrought aluminium products include both primary and secondary unwrought aluminium.
Wire	Drawn, extruded, or rolled wrought product that is long in relation to its cross-section, with a section with sharp or rounded edges (square, rectangular, hexagonal, octagonal or other shapes). In Europe, wire is supplied in coiled form; if supplied in straight length, the product is called a "rod" or "bar". In North America, wire with more than ⅜ inch in diameter is called a "rod" or "bar".
Wire rod	Coiled rod suitable for drawing into wire.
Wrought alloy	Alloy primarily intended for the production of wrought products by hot and/or cold working
Wrought product	Rolled, drawn, extruded, or otherwise mechanically hot and/or cold formed products of aluminium or aluminium alloys.

Source (USITC, 2017)(Aluminum Association, 2009) (European Aluminium, 2019b)

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Annexes

Annex 1. List of products in the aluminium value chain not subject to Section 232 tariffs

Product description	HS code
Aluminium ores and concentrates	2606
Aluminium oxide, excluding artificial corundum	281820
Aluminium waste and scrap	7602
Aluminium powders & flakes	7603
Aluminium structures; aluminium plates, rods, profiles, tubes and the like, prepared for use in structures	7610
Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 l	7611
Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 l	7612
Aluminium containers for compressed or liquefied gas	7613
Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated	7614 ([1])
Table, kitchen or other household articles and parts thereof, of aluminium; pot scourers and scouring or polishing pads, gloves and the like, of aluminium; sanitary ware and parts thereof, of aluminium.	7615
Other articles of aluminium	7616 ([2])

([1]) Except HTS subheadings 7614.10.50, 7614.90.20, 7614.90.40, 7614.90.50 since February 2020 (Federal Register, 2020)
([2]) Except HTS subheadings 7616.99.51.60, 7616.99.51.70

Annex 2. List of extra-tariffed HTS codes and their actual tariffs, to which an additional duty of 10 per cent of the FOB value applies

Code	Product description	Most favoured nation (MFN) (% of FOB value)
CHAPTER 76 - ALUMINIUM AND ARTICLES THEREOF		
7601	Unwrought aluminium:	
7601.1	Aluminium, not alloyed:	
7601.10.30	- - Of uniform cross section throughout its length, the least cross-sectional dimension of which is not greater than 9.5 mm, in coils	2.6%
7601.10.60	- - Other	0%
7601.2	- Aluminium alloys:	
7601.20.30	- - Of uniform cross section throughout its length, the least cross-sectional dimension of which is not greater than 9.5 mm, in coils	2.6%
	- - Other:	
7601.20.60	- - - Containing 25% or more by weight of silicon	2.1%
7601.20.90	- - - Other:	
7601.20.90.30	- - - - Aluminium vanadium master alloy	0%
	- - - - Other:	
7601.20.90.45	- - - - - Of uniform circular cross section throughout its length, not in coils	0%
7601.20.90.60	- - - - - Other, containing 0.03% or more by weight of lead (secondary Aluminium)	0%
	- - - - - Other:	
7601.20.90.75	- - - - - - Remelt scrap ingot	0%
7601.20.90.90	- - - - - - Other	0%
7604	Aluminium bars, rods and profiles:	
7604.1	- Of aluminium, not alloyed:	
7604.10.10	- - Profiles	5%
	- - Bars and rods:	
7604.10.30	- - - Having a round cross section:	
7604.10.30.10	- - - - With an outside diameter of less than 10 mm	2.6%
7604.10.30.50	- - - - With an outside diameter of 10 mm or more	2.6%
7604.10.50	- - - Other:	

7604.10.50.30	- - - - With a maximum cross-sectional dimension of less than 10 mm	3%
7604.10.50.60	- - - - With a maximum cross-sectional dimension of 10 mm or more	3%
	- Of aluminium alloys:	
7604.21	- - Hollow profiles	1.5%
7604.29	- - Other:	
7604.29.10	- - - Other profiles	5%
	- - - Bars and rods:	
7604.29.30	- - - - Having a round cross section:	
7604.29.30.10	- - - - - With an outside diameter of less than 10 mm	2.6%
7604.29.30.50	- - - - - With an outside diameter of 10 mm or more	2.6%
7604.29.50	- - - - Other:	
7604.29.50.30	- - - - - With a maximum cross-sectional dimension of less than 10 mm	3%
7604.29.50.60	- - - - - With a maximum cross-sectional dimension of 10 mm or more	3%
7605	Aluminium wire:	
	- Of aluminium, not alloyed:	
7605.11	- - Of which the maximum cross-sectional dimension exceeds 7 mm:	
7605.11.00.30	- - - Of which the maximum cross-sectional dimension exceeds 9.5 mm	2.6%
7605.11.00.90	- - - Other	2.6%
7605.19	- - Other	4.2%
	- Of aluminium alloys:	
7605.21	- - Of which the maximum cross-sectional dimension exceeds 7 mm:	
7605.21.00.30	- - - Of which the maximum cross-sectional dimension exceeds 9.5 mm	2.6%
7605.21.00.90	- - - Other	2.6%
7605.29	- - Other	4.2%
7606	Aluminium plates, sheets and strip, of a thickness exceeding 0.2 mm:	
	- Rectangular (including square):	
7606.11	- - Of aluminium, not alloyed:	
7606.11.30	- - - Not clad:	
7606.11.30.30	- - - - With a thickness of more than 6.3 mm	3%

7606.11.30.60	- - - - With a thickness of 6.3 mm or less	3%
7606.11.60	- - - Clad	2.7%
7606.12	- - Of aluminium alloys:	
7606.12.30	- - - Not clad:	
7606.12.30.30	- - - - With a thickness of more than 6.3 mm	3%
	- - - - With a thickness of 6.3 mm or less:	
	- - - - - Aluminium can stock:	
7606.12.30.45	- - - - - - Body stock	3%
7606.12.30.55	- - - - - - Lid stock	3%
7606.12.30.90	- - - - - Other	3%
7606.12.60	- - - Clad	6.5%
	- Other:	
7606.91	- - Of aluminium, not alloyed:	
7606.91.30	- - - Not clad:	
	- - - - With a thickness of more than 6.3 mm:	
7606.91.30.30	- - - - - Circles and discs	3%
7606.91.30.60	- - - - - Other	3%
	- - - - With a thickness of 6.3 mm or less:	
7606.91.30.75	- - - - - Circles and discs	3%
7606.91.30.90	- - - - - Other	3%
7606.91.60	- - - Clad:	
	- - - - With a thickness of more than 6.3 mm:	
7606.91.60.20	- - - - - Circles and discs	2.7%
7606.91.60.40	- - - - - Other	2.7%
	- - - - With a thickness of 6.3 mm or less:	
7606.91.60.60	- - - - - Circles and discs	2.7%
7606.91.60.80	- - - - - Other	2.7%
7606.92	- - Of aluminium alloys:	
7606.92.30	- - - Not clad:	
	- - - - With a thickness of more than 6.3 mm:	
7606.92.30.30	- - - - - Circles and discs	3%

7606.92.30.60	- - - - - Other	3%
	- - - - With a thickness of 6.3 mm or less:	
7606.92.30.75	- - - - - Circles and discs	3%
7606.92.30.90	- - - - - Other	3%
7606.92.60	- - - Clad:	
	- - - - With a thickness of more than 6.3 mm:	
7606.92.60.20	- - - - - Circles and discs	6.5%
7606.92.60.40	- - - - - Other	6.5%
	- - - - With a thickness of 6.3 mm or less:	
7606.92.60.60	- - - - - Circles and discs	6.5%
7606.92.60.80	- - - - - Other	6.5%
7607	Aluminium foil of a thickness (excluding any backing) not exceeding 0.2 mm:	
	- Not backed:	
7607.11	- - Rolled but not further worked:	
	- - - Of a thickness not exceeding 0.15 mm:	
7607.11.30	- - - - Of a thickness not exceeding 0.01 mm	5.8%
7607.11.60	- - - - Of a thickness exceeding 0.01 mm:	
7607.11.60.10	- - - - - Boxed aluminium foil weighing not more than 11.3 kg	5.3%
7607.11.60.90	- - - - - Other	5.3%
7607.11.90	- - - Other:	
	- - - - Aluminium can stock:	
7607.11.90.30	- - - - - Body stock	3%
7607.11.90.60	- - - - - Lid stock	3%
7607.11.90.90	- - - - Other	3%
7607.19	- - Other:	
7607.19.10	- - - Etched capacitor foil	5.3%
	- - - Other:	
7607.19.30	- - - - Cut to shape, of a thickness not exceeding 0.15 mm	5.7%
7607.19.60	- - - - Other	3%
7607.2	- Backed:	

7607.20.10	- - Covered or decorated with a character, design, fancy effect or pattern	3.7%
7607.20.50	- - Other	0%
7608	Aluminium tubes and pipes:	
7608.1	- Of aluminium, not alloyed:	
7608.10.00.30	- - Seamless	5.7%
7608.10.00.90	- - Other	5.7%
7608.2	- Of aluminium alloys:	
7608.20.00.30	- - Seamless	5.7%
7608.20.00.90	- - Other	5.7%
7609	Aluminium tube or pipe fittings (for example, couplings, elbows, sleeves)	5.7%
7616	Other articles of aluminium:	
7616.99.51.60	- - - - - Castings	2.5%
7616.99.51.70	- - - - - Forgings	2.5%

Source: (USITC, 2020b)

Annex 3. Prodcom and Combined Nomenclature code correspondence (2018)

PRODCOM (PRC)	Description	Combined Nomenclature (CN)	Description
07291300	Aluminium ores and concentrates	2606 00 00	Aluminium ores and concentrates
24421200	Aluminium oxide (excluding artificial corundum)	2818 20 00	Aluminium oxide (excl. artificial corundum)
20132570	Aluminium hydroxide	2818 30 00	Aluminium hydroxide
23991500	Artificial corundum (excluding mechanical mixtures)	2818 10 11	Artificial corundum, whether or not chemically defined, with < 50Â% of the total weight having a particle size > 10Â mm (excl. with aluminium oxide content < 98,5% by weight)
23991500	Artificial corundum (excluding mechanical mixtures)	2818 10 19	Artificial corundum, whether or not chemically defined, with >= 50Â% of the total weight having a particle size > 10Â mm (excl. with an aluminium oxide content < 98,5% by weight)
23991500	Artificial corundum (excluding mechanical mixtures)	2818 10 91	Artificial corundum, whether or not chemically defined, with < 50Â% of the total weight having a particle size > 10Â mm (excl. with an aluminium oxide content >= 98,5% by weight "high purity")
23991500	Artificial corundum (excluding mechanical mixtures)	2818 10 99	Artificial corundum, whether or not chemically defined, with >= 50Â% of the total weight having a particle size > 10Â mm (excl. with an aluminium oxide content >= 98,5% by weight "high purity")
24421130	Unwrought non-alloy aluminium (excluding powders and flakes)	7601 10 00	Aluminium, not alloyed, unwrought
24421154	Unwrought aluminium alloys (excluding aluminium powders and flakes)	7601 20 20	Unwrought aluminium alloys in the form of slabs or billets
24421154	Unwrought aluminium alloys (excluding aluminium powders and flakes)	7601 20 80	Unwrought aluminium alloys (excl. slabs and billets)
24422100	Aluminium powders and flakes (excluding prepared powders or flakes for use as colours, paints or the like)	7603 10 00	Powders of aluminium, of non-lamellar structure (excl. pellets of aluminium)
24422100	Aluminium powders and flakes (excluding prepared powders or flakes for use as colours, paints or the like)	7603 20 00	Powders of aluminium, of lamellar structure, and flakes of aluminium (excl. pellets of aluminium, and spangles)
24422230	Aluminium bars, rods and profiles (excluding rods and profiles prepared for use in structures)	7604 10 10	Bars, rods and profiles, of non-alloy aluminium
24422230	Aluminium bars, rods and profiles (excluding rods and profiles prepared for use in structures)	7604 10 90	Profiles of non-alloy aluminium, n.e.s.
24422250	Aluminium alloy bars, rods, profiles and hollow profiles (excluding rods and profiles prepared for use in structures)	7604 21 00	Hollow profiles of aluminium alloys, n.e.s.

24422250	Aluminium alloy bars, rods, profiles and hollow profiles (excluding rods and profiles prepared for use in structures)	7604 29 10	Bars and rods of aluminium alloys
24422250	Aluminium alloy bars, rods, profiles and hollow profiles (excluding rods and profiles prepared for use in structures)	7604 29 90	Solid profiles, of aluminium alloys, n.e.s.
24422330	Non-alloy aluminium wire (excluding insulated electric wire and cable, twine and cordage reinforced with aluminium wire, stranded wire and cables)	7605 11 00	Wire of non-alloy aluminium, with a maximum cross-sectional dimension of > 7 mm (excl. stranded wire, cables, plaited bands and the like and other articles of heading 7614, and electrically insulated wires)
24422330	Non-alloy aluminium wire (excluding insulated electric wire and cable, twine and cordage reinforced with aluminium wire, stranded wire and cables)	7605 19 00	Wire of non-alloy aluminium, with a maximum cross-sectional dimension of <= 7 mm (other than stranded wires, cables, ropes and other articles of heading 7614, electrically insulated wires, strings for musical instruments)
24422350	Aluminium alloy wire (excluding insulated electric wire and cable, twine and cordage reinforced with aluminium wire, stranded wire and cables)	7605 21 00	Wire of aluminium alloys, with a maximum cross-sectional dimension of > 7 mm (excl. stranded wire, cables, plaited bands and the like and other articles of heading 7614, and electrically insulated wires)
24422350	Aluminium alloy wire (excluding insulated electric wire and cable, twine and cordage reinforced with aluminium wire, stranded wire and cables)	7605 29 00	Wire, of aluminium alloys, having a maximum cross-sectional dimension of <= 7 mm (other than stranded wires, cables, ropes and other articles of heading 7614, electrically insulated wires, strings for musical instruments)
24422430	Aluminium plates, sheets and strips > 0,2 mm thick	7606 11 10	Plates, sheets and strip, of non-alloy aluminium, of a thickness of > 0,2 mm, square or rectangular, painted, varnished or coated with plastics
24422430	Aluminium plates, sheets and strips > 0,2 mm thick	7606 11 91	Plates, sheets and strip, of non-alloy aluminium, of a thickness of > 0,2 mm but < 3 mm, square or rectangular (excl. such products painted, varnished or coated with plastics, and expanded plates, sheets and strip)
24422430	Aluminium plates, sheets and strips > 0,2 mm thick	7606 11 93	Plates, sheets and strip, of non-alloy aluminium, of a thickness of >= 3 mm but < 6 mm, square or rectangular (excl. such products painted, varnished or coated with plastics)
24422430	Aluminium plates, sheets and strips > 0,2 mm thick	7606 11 99	Plates, sheets and strip, of non-alloy aluminium, of a thickness of >= 6 mm, square or rectangular (excl. such products painted, varnished or coated with plastics)
24422430	Aluminium plates, sheets and strips > 0,2 mm thick	7606 91 00	Plates, sheets and strip, of non-alloy aluminium, of a thickness of > 0,2 mm (other than square or rectangular)
24422450	Aluminium alloy plates, sheets and strips > 0,2 mm thick	7606 12 20	Plates, sheets and strip, of aluminium alloys, of a thickness of > 0,2 mm, square or rectangular, painted, varnished or coated with plastics

24422450	Aluminium alloy plates, sheets and strips > 0,2 mm thick	7606 12 92	Plates, sheets and strip, of aluminium alloys, of a thickness of > 0,2 mm but < 3 mm, square or rectangular (excl. painted, varnished or coated with plastics, expanded plates, sheets and strip)
24422450	Aluminium alloy plates, sheets and strips > 0,2 mm thick	7606 12 93	Plates, sheets and strip, of aluminium alloys, of a thickness of >= 3 mm but < 6 mm, square or rectangular (excl. such products painted, varnished or coated with plastics)
24422450	Aluminium alloy plates, sheets and strips > 0,2 mm thick	7606 12 99	Plates, sheets and strip, of aluminium alloys, of a thickness of >= 6 mm, square or rectangular (excl. such products painted, varnished or coated with plastics)
24422450	Aluminium alloy plates, sheets and strips > 0,2 mm thick	7606 92 00	Plates, sheets and strip, of aluminium alloys, of a thickness of > 0,2 mm (other than square or rectangular)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 11 11	Aluminium foil, not backed, rolled but not further worked, of a thickness of <Â 0,021 mm, in rolls of a weight of <=Â 10Â kg (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 11 19	Aluminium foil, not backed, rolled but not further worked, of a thickness of < 0,021 mm (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material and in rolls of a weight <=Â 10Â kg)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 11 90	Aluminium foil, not backed, rolled but not further worked, of a thickness of >= 0,021 mm but <= 2 mm (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 19 10	Aluminium foil, not backed, rolled and further worked, of a thickness of < 0,021 mm (excl. stamping foils of heading 3212, and foil made up as Christmas tree decorating material)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 19 90	Aluminium foil, not backed, rolled and further worked, of a thickness (excl. any backing) from 0,021 mm to 0,2 mm (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 20 10	Aluminium foil, backed, of a thickness (excl. any backing) of < 0,021 mm (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material)
24422500	Aluminium foil of a thickness (excluding any backing) <= 0,2 mm	7607 20 90	Aluminium foil, backed, of a thickness (excl. any backing) of >= 0,021 mm but <= 0,2 mm (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material)

24422630	Aluminium tubes and pipes (excluding hollow profiles, tube or pipe fittings, flexible tubing, tubes and pipes prepared for use in structures, machinery or vehicle parts, or the like)	7608 10 00	Tubes and pipes of non-alloy aluminium (excl. hollow profiles)
24422650	Aluminium alloy tubes and pipes (excluding hollow profiles, tubes or pipe fittings, flexible tubing, tubes and pipes prepared for use in structures, machinery or vehicle parts, or the like)	7608 20 20	Tubes and pipes of aluminium alloys, welded (excl. hollow profiles)
24422650	Aluminium alloy tubes and pipes (excluding hollow profiles, tubes or pipe fittings, flexible tubing, tubes and pipes prepared for use in structures, machinery or vehicle parts, or the like)	7608 20 81	Tubes and pipes of aluminium alloys, not further worked than extruded (excl. hollow profiles)
24422650	Aluminium alloy tubes and pipes (excluding hollow profiles, tubes or pipe fittings, flexible tubing, tubes and pipes prepared for use in structures, machinery or vehicle parts, or the like)	7608 20 89	Tubes and pipes of aluminium alloys (excl. such products welded or not further worked than extruded, and hollow profiles)
24422670	Aluminium tube or pipe fittings (including couplings, elbows and sleeves) (excluding fittings with taps, cocks and valves, tube supports, bolts and nuts, clamps)	7609 00 00	Aluminium tube or pipe fittings "e.g. couplings, elbows, sleeves"

Annex 4. Exclusion requests from Section 232 import tariffs submitted by US companies by product and origin as of June 17, 2019

	Total requests (t) ([1])		**Approved (t)**		**Denied (t)**		**Approval rate (%)** ([2])	
Origin / **Product**	**Rest of the world**	**EU**	**Rest of the world**	**EU**	**Rest of the world**	**EU**	**Rest of the world**	**EU**
76011000	0	245	0	0	0	245	No requests submitted	0%
76011010	130,000	0	0	0	130,000	0	0%	No requests submitted
76011060	204,927	527	300	158	160,827	0	0%	100%
76011090	30,000	0	0	0	30,000	0	0%	No requests submitted
76012030	499	91	0	0	0	0	No requests processed	No requests submitted
76012090	1,239,203	28,695	23,150	6,245	483,548	0	5%	100%
76021230	60	0	0	0	60	0	0%	No requests submitted
76041030	573	64	0	0	573	0	0%	No requests processed
76042100	19,724	10	11,624	10	8,100	0	59%	100%
76042110	150	0	0	0	150	0	0%	No requests submitted
76042910	63,787	961	11,950	268	0	0	100%	100%
76042930	780	10,359	100	4,362	350	7	22%	100%
76042950	0	85	0	85	0	0	No requests submitted	100%
76051100	337,943	0	0	0	95,400	0	0%	No requests submitted
76052100	46,115	7,316	3,000	0	135	0	96%	Not applicable

76052900	164	0	164	0	0	0	100%	No requests submitted
76061130	12,040	11,702	9,320	8,620	700	910	93%	90%
76061160	0	1,190	0	950	0	120	No requests submitted	89%
76061220	57	4,279	0	0	57	4,279	0%	0%
76061230	5,396,270	621,359	1,851,532	216,645	136,474	8,403	93%	96%
76061260	27,632	13,518	891	2,341	12,459	4,016	7%	37%
76061292	0	8,490	0	0	0	8,490	No requests submitted	0%
76063030	107	0	0	0	0	0	No requests processed	No requests submitted
76069130	26,318	9,629	25,677	7,968	23	1,493	100%	84%
76069230	20,506	13,494	2,767	9,864	241	94	92%	99%
76069260	0	9,090	0	5,685	0	100	No requests submitted	98%
76071130	324,004	62,737	240,074	27,525	11,776	8,904	95%	76%
76071160	152,529	42,137	53,519	26,862	73,655	1,648	42%	94%
76071190	16,698	15,204	4,462	3,579	8,162	10,187	35%	26%
76071260	0	1	0	0	0	0	No requests submitted	No requests processed
76071910	5,185	350	5,185	350	0	0	100%	100%
76071930	1,215	37	0	37	1,155	0	0%	100%
76071960	3,100	1,216	1,150	614	700	400	62%	61%
76072010	0	30	0	30	0	0	Not applicable	100%
76072050	15,860	1,757	540	1,107	5,920	0	8%	100%

76072090	0	20	0	0	0	20	No requests submitted	0%
76082000	5,864	150	3,700	150	581	0	86%	100%
76169951	688	4,360	311	4,360	0	0	100%	100%
Total	**8,081,996**	**869,101**	**2,249,416**	**327,815**	**1,161,046**	**49,314**	**66%**	**87%**

([1]) When exclusion requests identify multiple countries of origin, the total amount requested by individual companies was allocated proportionally to the volumes associated with a particular country in order to be used as a proxy to assess the approval rate per country. Total requests comprise those granted, rejected and pending.

([2]) It corresponds to the approved exclusion quantity requested, divided by the aggregate of approved and denied requests.

Source: Derived from background data in (McDaniel and Parks, 2019)

Annex 5. Exclusion requests from Section 232 import tariffs submitted by US companies by product and origin from 17 June 2019 to 17 September 2021

	Total requests (t) (1)		Approved (t)		Denied (t)		Approval rate (%) (2)	
Origin / **Product**	**Rest of the world**	**EU**	**Rest of the world**	**EU**	**Rest of the world**	**EU**	**Rest of the world**	**EU**
76011030	600	0	0	0	0	0	No requests processed	No requests submitted
76011060	300	83	300	28	0	0	100%	100%
76012090	16,414	7,549	1,805	7,039	5,900	0	23%	100%
76042100	31,930	420	18,838	420	0	0	100%	100%
76042910	20,858	3,800	16,061	3,685	0	0	100%	100%
76042930	1,738	14,190	210	10,188	700	431	23%	96%
76042950	1,030	466	741	79	0	204	100%	28%
76051100	75,164	0	0	0	37,000	0	0%	No requests submitted
76052100	5,797	0	0	0	0	0	No requests processed	No requests submitted
76052900	38	0	38	0	0	0	100%	No requests submitted
76061130	89,955	10,962	86,049	10,382	640	0	99%	100%
76061160	0	1,400	0	1,400	0	0	No requests submitted	100%
76061230	9,518,812	677,952	2,777,148	249,363	3,311,528	295,845	46%	46%
76061260	44,927	62,660	30,405	50,019	0	709	100%	99%
76069130	16,610	103	1,502	103	15,098	0	9%	100%
76069230	17,632	22,710	9,975	14,156	2,650	0	79%	100%

76069260	0	13,500	0	13,500	0	0	No requests submitted	100%
76071130	727,997	203,000	579,230	182,136	-420	6,186	100%	97%
76071160	310,631	137,669	147,286	99,213	10,199	12,747	94%	89%
76071190	26,420	8,153	17,969	7,992	541	0	97%	100%
76071910	5,325	350	3,325	350	0	0	100%	100%
76071930	6,752	2,130	6,752	2,130	0	0	100%	100%
76071960	11,922	7,864	11,850	7,789	0	0	100%	100%
76072010	330	1,064	330	1,019	0	0	100%	100%
76072050	20,518	21,279	19,814	17,326	0	0	100%	100%
76082000	6,477	1,588	2,047	922	968	0	68%	100%
76169951	421	3,000	421	3,000	0	0	100%	100%
Total	**10,958,598**	**1,201,891**	**3,732,096**	**682,238**	**3,384,804**	**316,122**	**52%**	**68%**

(1) When exclusion requests identify multiple countries of origin, the total amount requested by individual companies was allocated proportionally to the volumes associated with a particular country in order to be used as a proxy to assess the approval rate per country. Total requests comprise those granted, rejected and pending.

(2) It corresponds to the approved exclusion quantity requested, divided by the aggregate of approved and denied requests.

Source: Derived from background data in (Brunk et al., 2020)

Annex 6. Expanations provided for Section 232 tariff exclusion by US importing companies, approved requests by volume percentage, 17 June 2019 - 17 September 2019

	Insufficient US Availability	**National Security Requirement**	**No US Production**	**Other**
76011060	91%	0%	9%	0%
76012090	0%	0%	100%	0%
76042100	79%	0%	15%	6%
76042910	60%	0%	16%	23%
76042930	59%	1%	36%	4%
76042950	1%	0%	91%	8%
76052900	100%	0%	0%	0%
76061130	17%	0%	83%	<0.5%
76061160	0%	0%	100%	0%
76061230	93%	<0.05%	6%	<0.5%
76061260	33%	0%	66%	1%
76069130	94%	0%	6%	0%
76069230	39%	0%	61%	0%
76069260	17%	0%	83%	0%
76071130	65%	0%	34%	<0.5%
76071160	63%	0%	31%	6%
76071190	28%	0%	71%	0%
76071910	0%	0%	100%	0%
76071930	99%	0%	1%	0%
76071960	0%	0%	98%	2%
76072010	0%	0%	97%	3%
76072050	42%	0%	31%	27%
76082000	3%	0%	76%	21%
Castings and forgings	0%	0%	100%	0%
Total	**81%**	**<0.05%**	**18%**	**1%**

Source: Derived from background data in (Brunk et al., 2020)

Annex 7. Closed primary aluminium smelters in the 27 EU Member States

Smelter	Country	Company	Year of Closure
Auzat	France	Rio Tinto Alcan	2003
Inota	Hungary	Magyar Aluminium	2006
Stade	Germany	Norsk Hydro	2007
Lannemezan	France	Rio Tinto Alcan	2008
Fusina	Italy	Alcoa Corporation	2010
Konin	Poland	Impexmetal	2010
Vlissingen	Netherlands	ZALCO	2011
Porto Vesme	Italy	Alcoa Corporation	2012

Source: (CEPS, 2013), (S&P Global, 2020a)

Annex 8. Aluminium products classified in the 8-digit subheadings of the Harmonized Tariff Schedule of the United States (HTS) covered by Section 232 tariffs and subject to additional Section 301 tariffs against China

HTS Code	Product Description	Section 301 Tariff Action
7616.99.51	Aluminium, articles, nesoi	List 3
7614.10.50	Aluminium, stranded wire, cables & the like w/steel core, not electrically insulated,	List 3
7614.90.40	Aluminium, stranded wire, cables, & the like (o/than elect. conduct or w/steel core),	List 3
7614.90.50	Aluminium, stranded wire, cables and the like (o/than w/steel core), not electrically	List 3
7601.10.30	Aluminium (o/than alloy), unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	List 4A
7601.10.60	Aluminium (o/than alloy), unwrought nesoi	List 4A
7601.20.30	Aluminium alloys, unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	List 4A
7601.20.60	Aluminium alloys, w/25% or more by weight of silicon, unwrought nesoi	List 4A
7601.20.90	Aluminium alloys nesoi, unwrought nesoi	List 4A
7604.10.10	Aluminium (o/than alloy), profiles	List 4A
7604.10.30	Aluminium (o/than alloy), bar and rods, with a round cross section	List 4A
7604.10.50	Aluminium (o/than alloy), bar and rods, other than with a round cross section	List 4A
7604.21.00	Aluminium alloy, hollow profiles	List 4A
7604.29.10	Aluminium alloy, profiles (o/than hollow profiles)	List 4A
7604.29.30	Aluminium alloy, bars and rods, having a round cross section	List 4A
7604.29.50	Aluminium alloy, bars and rods, other than with a round cross section	List 4A
7605.11.00	Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension over 7 mm	List 4A
7605.19.00	Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension of 7 mm or less	List 4A
7605.21.00	Aluminium alloy, wire, with a maximum cross-sectional dimension over 7 mm	List 4A
7605.29.00	Aluminium alloy, wire, with a maximum cross-sectional dimension of 7 mm or less	List 4A
7606.11.30	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	List 4A
7606.11.60	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	List 4A
7606.12.30	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	List 4A
7606.12.60	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	List 4A
7606.91.30	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	List 4A
7606.91.60	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	List 4A
7606.92.30	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	List 4A
7606.92.60	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	List 4A
7607.11.30	Aluminium, foil, w/thickness n/o 0.01 mm, rolled but not further worked, not backed	List 4A
7607.11.60	Aluminium, foil, w/thickness over 0.01 mm but n/o 0.15 mm, rolled but not further worked, not backed	List 4A
7607.11.90	Aluminium, foil, w/thickness over 0.15 mm but n/o 0.2 mm, rolled but not further worked, not backed	List 4A
7607.19.10	Aluminium, etched capacitor foil, w/thickness n/o 0.2 mm, not rolled or rolled and further worked, not backed	List 4A
7607.19.30	Aluminium, foil nesoi, w/thickness n/o 0.15 mm, cut to shape, not rolled, not backed	List 4A
7607.19.60	Aluminium, foil nesoi, w/thickness o/0.15mm but n/o 0.2 mm or 0.15mm or less & not cut to shape, not rolled, not backed, nesoi	List 4A
7607.20.10	Aluminium, foil, w/thickness n/o 0.2 mm, backed, covered or decorated with a character, design, fancy effect or pattern	List 4A
7607.20.50	Aluminium, foil, w/thickness n/o 0.2 mm, backed, nesoi	List 4A
7608.10.00	Aluminium (o/than alloy), tubes and pipes	List 4A
7608.20.00	Aluminium alloy, tubes and pipes	List 4A

7609.00.00	Aluminium, fittings for tubes and pipes	List 4A

Source:(USTR, 2020)

Annex 9. Aluminium products classified in the 8-digit subheadings of the Harmonized Tariff Schedule of the United States (HTS) subject to additional Section 301 tariffs against China, but not covered by Section 232 tariffs

HTS Code	Product Description	Section 301 Tariff Action
7614.10.10	Aluminium, stranded wire, cables & the like w/steel core, not electrically insulated, not	List 2
7614.90.20	Aluminium, elect. conductors of stranded wire, cables & the like (o/than w/steel core),	List 2
7602.00.00	Aluminium, waste and scrap	List 3
7603.10.00	Aluminium, powders of non-lamellar structure	List 3
7603.20.00	Aluminium, powders of lamellar structure; Aluminium flakes	List 3
7610.90.00	Aluminium, structures and parts of structures, nesoi; Aluminium plates, rods, profiles,	List 3
7611.00.00	Aluminium, reservoirs, tanks, vats & like containers for any material (o/than	List 3
7612.10.00	Aluminium, collapsible tubular containers, w/capacity of 300 l or less	List 3
7612.90.10	Aluminium, casks, drums & like containers, for any material (o/than compressed or liq.	List 3
7612.90.50	Aluminium, casks, drums & like containers, for any material (o/thna compressed or liq.	List 3
7613.00.00	Aluminium, containers for compressed or liquefied gas	List 3
7615.20.00	Aluminium, sanitary ware and parts thereof	List 3
7616.10.10	Aluminium, nails, tacks and staples	List 3
7616.10.30	Aluminium, rivets	List 3
7616.10.50	Aluminium, cotters and cotter pins	List 3
7616.10.70	Aluminium, screws, bolts, nuts, screw hooks, washers and similar articles w/shanks,	List 3
7616.10.90	Aluminium, screws, bolts, nuts, screw hooks, washers and similar articles w/shanks,	List 3
7616.91.00	Aluminium, wire cloth, grill, netting and fencing	List 3
7616.99.10	Aluminium, luggage frames	List 3
7610.10.00	Aluminium, doors, windows and their frames and thresholds for doors	List 4A
7615.10.11	Aluminium, pot scourers, scouring or polishing pads, gloves and the like	List 4A
7615.10.30	Aluminium, cooking and kitchen ware (o/than cast), enameled or glazed or containing nonstick interior finishes	List 4A
7615.10.50	Aluminium, cast cooking and kitchen ware, not enameled or glazed and not containing nonstick interior finishes	List 4A
7615.10.91	Aluminium, table, kitchen or other household articles (o/than cooking or kitchen ware) and parts thereof	List 4A
7615.10.20	Aluminium, cast cooking and kitchen ware, enameled or glazed or containing nonstick interior finishes	List 4B
7615.10.71	Aluminium, cooking and kitchen ware (o/than cast), not enameled or glazed and not containing nonstick interior finishes	List 4B

Source: (USTR, 2020)

Annex 10. US Imports of extra-tariffed aluminium products by 8-digit subheadings of the Harmonized Tariff Schedule of the United States (HTS)

HTS code	Description	Annualised (1) US imports after tariffs (t)	Annualised (1) US imports before tariffs (t)	Variation of US imports (%) after tariffs
7601.10.30	Aluminium (o/than alloy), unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	535	640	-16%
7601.10.60	Aluminium (o/than alloy), unwrought nesoi	1,802,868	2,676,888	-33%
7601.20.90	Aluminium alloys nesoi, unwrought nesoi	2,142,448	2,072,298	3%
7601.20.30	Aluminium alloys, unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	1,351	1,443	-6%
7601.20.60	Aluminium alloys, w/25% or more by weight of silicon, unwrought nesoi	6,126	563	989%
7601	**Total**	**3,953,328**	**4,751,832**	**-17%**
7604.10.30	Aluminium (o/than alloy), bar and rods, with a round cross section	634	16,298	-96%
7604.29.30	Aluminium alloy, bars and rods, having a round cross section	17,794	18,684	-5%
7604.21.00	Aluminium alloy, hollow profiles	101,624	80,190	27%
7604.10.50	Aluminium (o/than alloy), bar and rods, other than with a round cross section	1,343	1,131	19%
7604.29.50	Aluminium alloy, bars and rods, other than with a round cross section	4,699	5,721	-18%
7604.10.10	Aluminium (o/than alloy), profiles	2,129	3,037	-30%
7604.29.10	Aluminium alloy, profiles (o/than hollow profiles)	104,679	109,924	-5%
7604	**Total**	**232,903**	**234,985**	**-1%**
7605.11.00	Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension over 7 mm	209,577	256,164	-18%
7605.29.00	Aluminium alloy, wire, with a maximum cross-sectional dimension of 7 mm or less	4,581	4,441	3%
7605.21.00	Aluminium alloy, wire, with a maximum cross-sectional dimension over 7 mm	40,107	38,943	3%
7605.19.00	Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension of 7 mm or less	2,589	2,639	-2%
7605	**Total**	**256,855**	**302,187**	**-15%**
7606.12.30	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	1,114,710	1,001,266	11%
7606.92.30	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	21,292	17,584	21%
7606.11.60	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	2,940	3,143	-6%

7606.12.60	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	34,015	26,142	30%
7606.91.30	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	12,437	21,145	-41%
7606.91.60	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	904	854	6%
7606.92.60	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	10,261	13,258	-23%
7606.11.30	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	32,009	31,888	0%
7606	**Total**	**1,228,568**	**1,115,279**	**10%**
7607.11.90	Aluminium, foil, w/thickness over 0.15 mm but n/o 0.2 mm, rolled but not further worked, not backed	13,857	17,288	-20%
7607.11.60	Aluminium, foil, w/thickness over 0.01 mm but n/o 0.15 mm, rolled but not further worked, not backed	131,712	117,221	12%
7607.19.10	Aluminium, etched capacitor foil, w/thickness n/o 0.2 mm, not rolled or rolled and further worked, not backed	2,179	1,984	10%
7607.19.30	Aluminium, foil nesoi, w/thickness n/o 0.15 mm, cut to shape, not rolled, not backed	4,904	1,639	199%
7607.20.50	Aluminium, foil, w/thickness n/o 0.2 mm, backed, nesoi	49,866	42,747	17%
7607.20.10	Aluminium, foil, w/thickness n/o 0.2 mm, backed, covered or decorated with a character, design, fancy effect or pattern	5,411	7,851	-31%
7607.11.30	Aluminium, foil, w/thickness n/o 0.01 mm, rolled but not further worked, not backed	73,651	65,443	13%
7607.19.60	Aluminium, foil nesoi, w/thickness o/0.15mm but n/o 0.2 mm or 0.15mm or less & not cut to shape, not rolled, not backed, nesoi	14,700	16,210	-9%
7607	**Total**	**296,279**	**270,383**	**10%**
7608.20.00	Aluminium alloy, tubes and pipes	20,242	24,649	-18%
7608.10.00	Aluminium (o/than alloy), tubes and pipes	672	1,398	-52%
7608	**Total**	20,913	26,046	**-20%**
7609.00.00	Aluminium, fittings for tubes and pipes	1,033	1,114	-7%
7609	**Total**	**7,440**	**8,022**	**-38%**
7616.99.5160	Aluminium castings	13,688	22,782	-40%
7616.99.5170	Aluminium forgings	2,207	3,560	-38%
7616 (Castings and forgings)	**Total**	15,896	26,342	**-40%**
Global Total		6,012,181	6,735,078	**-11%**

([1]) Imports are annualised over 20 months before (August 2016 – March 2018) and after (April 2018 – November 2019) tariffs' imposition.

Source: Calculations based on background data in (USITC Dataweb, 2020)

Annex 11. EU exports to the US of extra-tariffed aluminium products by 8-digit subheadings of the Harmonized Tariff Schedule of the United States (HTS)

HTS code	Description	Annualised ([1]) EU exports after tariffs (t)	Annualised ([1]) EU exports before tariffs (t)	Variation of EU exports (%) after tariffs
7601.10.30	Aluminium (o/than alloy), unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	3	30	-91%
7601.10.60	Aluminium (o/than alloy), unwrought nesoi	2,163	5,608	-61%
7601.20.90	Aluminium alloys nesoi, unwrought nesoi	8,687	43,472	-80%
7601.20.30	Aluminium alloys, unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	7	41	-84%
7601.20.60	Aluminium alloys, w/25% or more by weight of silicon, unwrought nesoi	3	327	-99%
7601	**Total**	**10,863**	**49,478**	**-78%**
7604.10.30	Aluminium (o/than alloy), bar and rods, with a round cross section	65	46	41%
7604.29.30	Aluminium alloy, bars and rods, having a round cross section	6,886	8,234	-16%
7604.21.00	Aluminium alloy, hollow profiles	7,292	7,879	-7%
7604.10.50	Aluminium (o/than alloy), bar and rods, other than with a round cross section	342	226	51%
7604.29.50	Aluminium alloy, bars and rods, other than with a round cross section	1,672	1,911	-13%
7604.10.10	Aluminium (o/than alloy), profiles	331	366	-9%
7604.29.10	Aluminium alloy, profiles (o/than hollow profiles)	5,136	4,617	11%
7604	**Total**	**21,725**	**23,278**	**-7%**
7605.11.00	Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension over 7 mm	61	201	-70%
7605.29.00	Aluminium alloy, wire, with a maximum cross-sectional dimension of 7 mm or less	239	241	-1%
7605.21.00	Aluminium alloy, wire, with a maximum cross-sectional dimension over 7 mm	3,720	3,349	11%
7605.19.00	Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension of 7 mm or less	628	375	68%
7605	**Total**	**4,648**	**4,165**	**12%**
7606.12.30	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	242,731	120,817	101%
7606.92.30	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	7,215	7,954	-9%
7606.11.60	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	740	1,089	-32%
7606.12.60	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	14,627	6,701	118%
7606.91.30	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	5,677	7,438	-24%

7606.91.60	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	288	41	612%
7606.92.60	Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	6,181	6,166	0%
7606.11.30	Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	7,552	14,015	-46%
7606	**Total**	**285,011**	**164,220**	**74%**
7607.11.90	Aluminium, foil, w/thickness over 0.15 mm but n/o 0.2 mm, rolled but not further worked, not backed	4,730	6,435	-27%
7607.11.60	Aluminium, foil, w/thickness over 0.01 mm but n/o 0.15 mm, rolled but not further worked, not backed	19,528	11,590	68%
7607.19.10	Aluminium, etched capacitor foil, w/thickness n/o 0.2 mm, not rolled or rolled and further worked, not backed	483	395	23%
7607.19.30	Aluminium, foil nesoi, w/thickness n/o 0.15 mm, cut to shape, not rolled, not backed	629	92	584%
7607.20.50	Aluminium, foil, w/thickness n/o 0.2 mm, backed, nesoi	11,702	10,212	15%
7607.20.10	Aluminium, foil, w/thickness n/o 0.2 mm, backed, covered or decorated with a character, design, fancy effect or pattern	2,280	1,705	34%
7607.11.30	Aluminium, foil, w/thickness n/o 0.01 mm, rolled but not further worked, not backed	25,932	7,845	231%
7607.19.60	Aluminium, foil nesoi, w/thickness o/0.15mm but n/o 0.2 mm or 0.15mm or less & not cut to shape, not rolled, not backed, nesoi	3,784	3,380	12%
7607	**Total**	**69,067**	**41,655**	**66%**
7608.20.00	Aluminium alloy, tubes and pipes	2,523	2,413	5%
7608.10.00	Aluminium (o/than alloy), tubes and pipes	31	60	-48%
7608	**Total**	**2,554**	**2,473**	**3%**
7609.00.00	Aluminium, fittings for tubes and pipes	401	523	-23%
7609	**Total**	**401**	**523**	**-23%**
7616.99.5070	Aluminium forgings	812	2,468	-67%
7616.99.5060	Aluminium castings	1,071	1,212	-12%
Castings and forgings	**Total**	**1,882**	**3,681**	**-49%**
Global Total		396,152	289,473	37%

(1) Imports are annualised over 19 months before (November 2016 – May 2018) and after (June 2018 – December 2019) tariffs' enforcement to the EU.

Source: Calculations based on background data in (USITC Dataweb, 2020)

Annex 12. 8-digit HTS products subject to tariffs classified by highest growth of EU exports

Product description	HTS code	Annualised (t) EU exports after tariffs	Variation of EU exports (%) after tariffs	Variation of ROW exports (%) after tariffs	EU share (%) by volume in total US imports after tariffs	EU share (%) by volume in total US imports before tariffs
Aluminium, foil nesoi, w/thickness n/o 0.15 mm, cut to shape, not rolled, not backed	7607.19.30	619	496%	179%	13%	6%
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	7606.91.60	221	441%	-16%	24%	5%
Aluminium, foil, w/thickness n/o 0.01 mm, rolled but not further worked, not backed	7607.11.30	25,741	352%	-20%	35%	9%
Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension over 7 mm	7605.11.00	679	235%	-18%	0.3%	<0.01%
Aluminium (o/than alloy), bar and rods, other than with a round cross section	7604.10.50	460	146%	-6%	34%	17%
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	7606.12.60	14,135	135%	-1%	42%	23%
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	7606.12.30	235,525	98%	0%	21%	12%
Aluminium, foil, w/thickness over 0.01 mm but n/o 0.15 mm, rolled but not further worked, not backed	7607.11.60	20,284	88%	5%	15%	9%

Aluminium (o/than alloy), wire, with a maximum cross-sectional dimension of 7 mm or less	7605.19.00	620	84%	-14%	24%	13%
Aluminium, etched capacitor foil, w/thickness n/o 0.2 mm, not rolled or rolled and further worked, not backed	7607.19.10	565	67%	-2%	26%	17%
Aluminium, foil, w/thickness n/o 0.2 mm, backed, nesoi	7607.20.50	16,545	52%	5%	33%	25%
Aluminium (o/than alloy), bar and rods, with a round cross section	7604.10.30	96	40%	-97%	15%	0%
Aluminium alloy, profiles (o/than hollow profiles)	7604.29.10	5,433	28%	-6%	5%	4%
Aluminium, foil, w/thickness n/o 0.2 mm, backed, covered or decorated with a character, design, fancy effect or pattern	7607.20.10	2,250	26%	-48%	42%	23%
Aluminium alloy, wire, with a maximum cross-sectional dimension over 7 mm	7605.21.00	3,970	20%	1%	10%	9%
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), not clad	7606.11.30	23,341	19%	-29%	73%	61%
Aluminium, foil nesoi, w/thickness o/0.15mm but n/o 0.2 mm or 0.15mm or less & not cut to shape, not rolled, not backed, nesoi	7607.19.60	3,769	10%	-14%	26%	21%
Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	7606.92.30	7,960	8%	31%	37%	42%
Aluminium alloy, tubes and pipes	7608.20.00	2,597	7%	-21%	13%	10%

Aluminium alloy, plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), clad	7606.92.60	6,505	5%	-47%	63%	47%
Aluminium alloy, hollow profiles	7604.21.00	7,641	1%	29%	8%	9%
Aluminium (o/than alloy), profiles	7604.10.10	357	1%	-34%	17%	12%
Aluminium alloy, wire, with a maximum cross-sectional dimension of 7 mm or less	7605.29.00	260	-2%	3%	6%	6%
Aluminium alloy, bars and rods, having a round cross section	7604.29.30	7,223	-10%	-1%	41%	43%
Aluminium castings	7616.99.5160	1,093	-13%	-41%	8%	6%
Aluminium, foil, w/thickness over 0.15 mm but n/o 0.2 mm, rolled but not further worked, not backed	7607.11.90	5,797	-18%	-21%	42%	41%
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, o/than rectangular (incl. sq), not clad	7606.91.30	9,757	-20%	-70%	78%	57%
Aluminium, fittings for tubes and pipes	7609.00.00	444	-21%	7%	43%	50%
Aluminium alloy, bars and rods, other than with a round cross section	7604.29.50	1,661	-21%	-16%	35%	37%
Aluminium (o/than alloy), plates/sheets/strip, w/thick. o/0.2mm, rectangular (incl. sq), clad	7606.11.60	924	-23%	3%	31%	38%

Aluminium (o/than alloy), tubes and pipes	7608.10.00	39	-48%	-52%	6%	5%
Aluminium forgings	7616.99.5170	1,077	-51%	-17%	49%	62%
Aluminium (o/than alloy), unwrought nesoi	7601.10.60	2,160	-62%	-33%	0%	0%
Aluminium alloys nesoi, unwrought nesoi	7601.20.90	9,121	-79%	5%	0%	2%
Aluminium alloys, unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	7601.20.30	6	-84%	-4%	0%	3%
Aluminium alloys, w/25% or more by weight of silicon, unwrought nesoi	7601.20.60	45	-88%	3441%	1%	69%
Aluminium (o/than alloy), unwrought, in coils, w/uniform x-section throughout length & w/least cross-sectional dimension n/o 9.5 mm	7601.10.30	3	-98%	0%	0%	17%

(1) US Imports are annualised over 20 months before (August 2016 – March 2018) and after (April 2018 – November 2019) tariffs' imposition.

Source: Calculations based on background data in (USITC Dataweb, 2020)

Annex 13. List of companies used in the evaluation of profitability indicators

The data employed in the evaluation of profitability indicators for the EU aluminium industry is at company level and comes mainly from the records of the S&P database. In a few cases, data is complemented with data from published annual balance sheets of aluminium enterprises. The following tables show the sampled Union producers and the available observations used in the period 2006-2018. The sampled companies may also produce other products than the segment they were allocated and the profitability figures cover both domestic sales and exports.

Primary aluminium:

Country	Company name
France	Liberty Aluminium Dunkerque SAS (2009-2018)
Germany	Trimet Aluminium SE (secondary aluminium production included) (2006-2018)
Greece	Aluminium of Greece SA (alumina segment included) (2006-2016) / Mytilineos SA (metallurgy segment including bauxite and alumina) (2018)
Italy	Alcoa Trasformazioni Srl (2006-2012)
Netherlands	Klesch Aluminium Delfzijl BV (2006, 2008, 2010-2012)
Romania	Alro SA (bauxite, alumina, and rolling segment included) (2006-2018)
Spain	Alcoa Inespal SA (2008-2018), Alumínio Español SA (2008-2018)
Sweden	Kubikenborg Aluminium AB (2006-2018)

Secondary aluminium: The segment comprises companies producing ingots for wrought aluminium production (remelters). Also, companies producing secondary foundry alloys, remelt ingots and steel deoxidation products are included (refiners). The sample does not comprise integrated remelters to rolling or extrusion mills as these are considered to belong in the relevant segment of wrought aluminium production

Country	Company Name
Austria	Alu-met GmbH (2011, 2015), Hütte Klein-Reichenbach GmbH (2009-2018)
Belgium	Alex Bvba (2008-2018)
France	Affinage D'Aluminium Premery (2015-2017), Affinage De Lorraine (2007-2009), Affinerie D'Anjou (2006-2018), Sadillek SA (2006-2018), Sofual Metallurgique Du Tarn (2006-2007, 2009-2016), Solyfi Soremo (2009-2015, 2017-2018)

Germany	Aleris Recycling GmbH (German Works) (2006-2018), Aluminium Rheinfelden GmbH (2006-2007, 2010-2018), Aluminiumschmelzwerk Oetinger GmbH (2006-2012), BAGR Berliner Aluminiumwerk GmbH (2008,2010,2012,2014,2017-2018), Grafenberg-Metall Gmbh (2006,2009,2018), Leichtmetall Aluminium Giesserei Hannover Gmbh (2007-2012), Oetinger Aluminium NU GmbH (2015,2017-2018),
Italy	Aluminium Green SpA (2013-2018), Billette Alluminio SpA (2006-2011), Intals SpA, (2006-2018), Raffmetal SpA (2006-2018)
Luxembourg	Alcuilux Desox (deoxidants) (2010-2014, 2018)
Netherlands	Zeeland Aluminium Company BV (2006,2008-2010)
Portugal	Metalsa - Refinaria Portuguesa de Aluminio SA (2006,2008-2010), Recial - Reciclagem de Aluminios SA (2006-2018)
Spain	Grupal Art Sl (2009-2018), Grupo Clemente Aluminio Sl (2011-2018)

Rolling: Companies producing aluminium plates, sheets, strips and foil. Companies involved in the surface treatment of flat-rolled products are also allocated to the rolling segment. Production of welded tubes is classified under the extrusion segment.

Country	Company name
Austria	AMAG Austria Metall AG (2008-2018)
Belgium	Aleris Aluminum Duffel BVBA (2006-2018)
Bulgaria	Alcomet AD (rolling segment) (2006-2018)
France	Copal SAS (2006-2018), Miralu (Surface treatment) (2006-2018), Societe Industrielle De Tolerie Pour Le Batiment Et Les Activites Annexes (2006-2014, 2016)
Germany	Alanod Aluminium-Veredlung GmbH & Co. KG (Surface treatment) (2006-2009, 2011-2018), Aleris Aluminum Koblenz GmbH (2006), Aleris Rolled Products Germany GmbH (2008-2018), Alimex GmbH Precision in Aluminium (2006-2018), Aluminium Féron GmbH & Co. KG (2006-2013), Aluminium Norf GmbH (2006-2018), Aluminiumfolie Merseburg GmbH (2006-2014), Aluminiumwerk Unna AG (2006-2018), Constellium Singen GmbH (extrusion segment included) (2011-2018), Hillebrand Erbsloh Oberflachen GmbH (Surface treatment) (2010-2011, 2016-2018), Hydro Aluminium Deutschland GmbH (2006-2009), Hydro Aluminium Rolled Products GmbH (operations of primary aluminium production included) (2010-2018), Novelis Deutschland GmbH (2006-2018)
Greece	Elval Hellenic Aluminium Industry S.A/Elvalhalcor Hellenic Copper and Aluminium Industry SA (aluminium segment) (2008-2018)
Italy	Ala Alluminio L'Aquila Srl Per Brevita' Ala Srl (2016-2017), Alcom Alluminio Srl (Surface treatment) (2006-2018), Alital Srl (2006-2018), Almeco SpA (Surface treatment) (2006-2018), Aluberg SpA (Surface treatment) (2006-2018), Aluminium Europa Srl (2006-2007), Aluminium Pieve Srl (2006-2008), Comital SpA Aluminio (2015-2016), Lamial Srl (2018), Laminazione Sottile SpA (2006-2018), Luxe Coat Srl (Surface treatment) (2016-2018), Metalluminia Srl (2013-2018), Norwind Srl (2007-2011), Novelis Italia SpA (2006-2018), Otefal SpA (Surface treatment) (2006-2011), Overland Srl (Surface treatment) (2006-2018), Profilglass SpA (2006-2018), Slim Aluminium SpA (2006-2018), Slim Fusina Rolling Srl (2017-2018), TDK Foil Italy SpA (2006-2018), Vama Srl (2006-2010)
Luxembourg	Eurofoil Luxembourg SA (2011-2018), Novelis Luxembourg SA (2008-2010)
Netherlands	ACR II Aluminium Group Cooperatief UA (2015-2016)
Spain	Alucoat Conversión SA (2009-2018), Aludium Transformacion de Productos Sociedad Limitada (2008-2018), Alumasa Aluminios del Maestre SA (Surface treatment) (2009-2018), Inasa Foil SA (2007-2011), Lacado del Aluminio SA (Surface treatment) (2014-2018),
Sweden	Gränges AB (2006-2010)

Extrusion: Companies producing bars, rods, profiles, tubes and pipes. Companies producing impact extrusions for flexible or rigid tube containers, companies making welded tubes, and companies in the field of surface treatment of extrusion products (anodising, painting) were classified under the extrusion segment

Country	Company name
Austria	Hammerer Aluminium Industries Extrusion GmbH (2009-2018), Hydro Aluminium Nenzing GmbH (2009-2018), Neuman Aluminium Strangpresswerk GmbH (2009-2018), Fried. v. Neuman GmbH (2016-2018)
Belgium	Aliplast Aluminium Extrusion Nv (2006-2018), Almet Belgium Sprl (2014-2018), Hydro Extrusion Eupen SA (2006-2018), Hydro Extrusion Raeren SA (2018), Remi Claeys Aluminium NV (Hydro Precision Tubing Lichtervelde NV)(2006-2018), Sapa Precision Tubing Seneffe (2006-2013)
Denmark	Sapa Extrusion Denmark A/S (2006-2018), Sapa Precision Tubing Tønder A/S (2006-2018)
Finland	Purso Oy (2009-2018)
France	Aviatube (2015), Constellium Extrusions France (2018), Hydro Extrusion Albi (2007-2018), Hydro Buildex (2009-2017), Sepalumic Industries (2006-2018)
Germany	Aluminium-Werke Wutöschingen AG & Co.KG (2006-2018), Apt Hiller GmbH (2006-2018), Apt Products GmbH (2006-2007), ARUP Alu-Rohr und Profil GmbH (2012-2018), Constellium Extrusions Deutschland GmbH (2006-2018), Erbsloh Aluminium GmbH (2007-2011), Gartner Extrusion GmbH (2006-2018), Hydro Aluminium Extrusion Deutschland GmbH (2006-2018), Otto Fuchs Dülken GmbH & Co. KG (forgings included) (2009-2018), PWG Profilrollen-Werkzeugbau GmbH (2011-2018), Richter Aluminium GmbH (2009-2018), Weseralu GmbH & Co. KG (2006),
Greece	Alco Hellas SA (2012-2017), Alumil SA (2006-2018), Etem SA (2006-2015), Europa Profil Aluminium SA (2001-2018)
Italy	Alu M.E.C. SpA (2006-2010), Anoxidall Srl (2006-2018), ARI metal Srl (2006-2018), B.B.C. Srl (2006-2018), Estrusione Italia SpA (2006-2011), Estrusione Roccafranca Srl (2006-2018), FIN.AL SpA (2006-2010), GEAL SpA (2006-2018), Hydro Alluminio Ornago SpA 92006-2018), Indinvest SpA (2006-2007), Metra Ragusa SpA (2006-2018), Metra SpA (2006-2018), Mistral Societa' Cooperativa (2006-2007), Pasturi Srl (2006-2018). Primall Srl (2006-2018), Profilati Alluminio Srl (2018), Ralox SpA (2011-2018), Scandolara SpA (2006-2018), Selca Divisione Estrusi Srl (2006-2018), Sepal SpA (2018), To.Ma. SpA (2006-2018), V.E.Pr.Al. SpA (2006-2010)
Netherlands	Sapa Aluminium BV (2006-2017)
Poland	Grupa Kety SA (extrusion segment) (2008-2018)
Portugal	Adla - Aluminium Extrusion SA (2011-2018), Fortexal- Aluminios SA (2006-2018), Portalex Aluminio SA (2006-2018)
Spain	Alas Iberia, SLU (2008-2010), Alcoa Extrusión Navarra, SL (2008-2016), Alonarti Envases SA (2009-2018), Extrusiones de Toledo, SA (2009-2018), Hydro Extruded Solutions Holding SL (2018), Itesal Lacados SL (2009-2018), Metales Extruidos SL (2008-2012), Tecalum SL (2009-2018)
Sweden	Hydro Extrusion Sweden AB (2006-2018)

Wire: Companies producing aluminium wire products

Country	Company name
France	Trimet France SAS (production of primary aluminium included) (2014-2018)
Germany	Gutmann Aluminium Draht GmbH (extrusion segment included) (2006-2008, 2018)
Portugal	Quintas & Quintas - Condutores Electricos, SA (2006-2018)
Spain	Asturiana de Aleaciones SA (grain refiners, steel division included) (2009-2018)
Sweden	AB Dahréntråd (2006-2018)

Castings: Companies producing aluminium castings. Companies in the sample might also be engaged in the production of other metal castings.

Country	Company name
Austria	Aluminium Lend Gesellschaft M.B.H. & Co Kg (2009-2015), Alutech Gesellschaft M.B.H. (2009-2018), CSA Herzogenburg GmbH (2009-2018), Georg Fischer Druckguss GmbH (2014-2018), Mettec Guss MetallgieBerei Und Formenbau GmbH (2012-2018), Mws Aluguss GmbH (2009-2018)
Denmark	Jydsk Aluminium Industri A/S (2007-2018)
France	Brea System SAS (2006-2018), DIACE SAS (2008-2018), Dial Fonderie SA (2006-2012), Dynafond Société Anonyme (2006-2016), FP Alu (2010-2018), Jinjiang SAM (2006-2016), Montupet SA (2006-2014), Quartz (2007-2008), Rhonalu SA (2006-2018), Sival Fonderie (2009-2017)
Germany	Alcoa Automotive GmbH (2006-2014, 2017-2018), Auer Guss GmbH (2006-2011, 2014-2017), BDW Technologies GmbH (2009), Bharat Forge Aluminiumtechnik GmbH (2015-2018), Eurotech Schwäbisch Gmünd GmbH (2007-2018), Gf Casting Solutions Singen GmbH (2017-2018), HAL Aluminiumguss Leipzig GmbH (2007, 2012-2014), Hueck Industrie Holding KG (2007-2018), Julius Schüle Druckguss GmbH (2006, 2011-2018), Magna BDW technologies Soest GmbH (2013-2018), Metallgießerei Scheeff GmbH (2006-2010), MWK Renningen GmbH (2012-2014), Schweizer Group Plauen GmbH (2015)
Italy	Aesa Fusioni Srl (2006-2007), Eltex Wheels Srl (2006-2007), Endurance Castings SpA (2006-2018), Eucasting Srl (2007-2008), EWheels Srl (2006-2009), F.M.C. Fonderie e Officine Srl (2006-2009), Foma SpA (2006-2018), Fondall Srl (2006-2009, 2016-2018), Fonderia Alfredo Togno Srl (2006-2018), Fonderie 2a Srl (2006-2007), Form SpA (2006-2011), Fover Casting SpA (2006-2008), Getti Speciali Srl (2006-2018), Nuova Renopress SpA (2006-2009), Omr Modena Srl (2010), Tecnomeccanica SpA (2006-2018), Tecnopress Srl Di Seliciato (2006-2018), ZML Industries SpA (2006-2018)
Netherlands	Aluminium Donk BV (2006-2008), Brabant Alucast The Netherlands Site Heijen BV (2007-2011), Buvo Castings BV (2006-2018), Mgg Netherlands BV (2007-2016)
Portugal	Firmago SA (2006-2018), Fundínio-Fundição Injectada de Alumínio SA (2006)
Spain	Alu Nostrum Sl (2009-2011), Alumipres Sl (2013-2018), Fundiciones Fumbarri Durango SA (2008-2018), Fundiciones Humanes SA (2012-2018), Funvisa SA (2009-2017), Vilassarenca SA (2009-2018), Industrias Del Rebarbado Sl (2009-2018), Industrias Seur SA (2009-2012), Productos No Ferricos De Munguia Sl (2009-2016), TAFIME SA (2009-2018), Tyb SA (2015-2018)
Sweden	Ab Lundbergs Pressgjuteri (2006-2018), AB Sedenborgs Metallgjuteri (2006-2018), Ab Skogslunds Metallgjuteri (2007-2018), ADC of Sweden AB (2007-2018), Blekinge Pressgjuteri AB (2006-2018), Fundo Components AB (2011-2018), International Aluminium Casting Sweden AB (2008-2018), Metallfabriken Ljunghäll AB (2006-2018), Nya Gjuteribolaget I Bredaryd Ab (2007-2018)

Annex 14. List of preliminary and final dumping margins determined by the US authorities for EU producers of common alloy sheet.

Country	Exporter/Producer	Preliminary dumping rates (October 2020)	Final dumping rates (April 2021)
Croatia	Impol-TLM doo / Impol doo	3.22%	3.19%
	All Others	3.22%	3.19%
Germany	Novelis Deutschland GmbH	51.18%	49.40%
	Hydro Aluminium Rolled Products GmbH	352.71%	242.80%
	All Others	51.18%	49.40%
Greece	Elval Hellenic Aluminum Industry SA/Elval Colour SA/Symetal SA	2.72%	0.00%
	All Others	2.72%	0.00%
Italy	Laminazione Sottile SpA	0.00%	0.00%
	Profilglass SpA	29.13%	29.13%
	All Others	14.57%	14.57%
Romania	Alro, SA	83.94%	27.26%
	All Others	12.51%	12.51%
Slovenia	Impol FT doo / Impol doo	4.80%	13.43%
	All Others	4.80%	13.43%
Spain	Aludium Transformación de Productos, SL	3.75%	3.80%
	Compania Valenciana de Aluminio Baux SLU/Bancolor Baux SLU	23.32%	24.23%
	All Others	3.75%	3.80%

Source: (ITA, 2020) (ITA, 2021) (Federal Register, 2021a)(Federal Register, 2021d)

Annex 15. A modelling approach to the analysis of main global trade flows

The JRC has conducted an econometric analysis of imports flows between large blocks of global players (EU, US and the rest of the world), based on a model of imports which follows classic international trade theory and uses time series covering the period 1996-2019. The analysis resulted in a model that can be used to explain the behaviour of imports flows during the period of analysis, but also as a forecasting model in the short and medium run. The econometric model can be used in principle to forecast and explain retroactively the behaviour of imports for one category of products given the availability of long time series of their unit prices and demand (or proxies for demand) for the respective category in the importing country. In our case, the target-dependent variables were the **US imports of extra-tariffed aluminium categories of products (4-digit classification) from EU** as compared to the **US imports of same groups of products from the rest of the world** (RoW, all countries except EU), as well as the **imports of the same categories of products done by rest of the world countries (except the US) from EU** as a trading block (intra-EU trade excluded). The results of the analyses using the econometric model are not presented in this Science for Policy Report, where we only briefly introduce the methodology and the model.

The JRC imports econometric model for imports demand equation

The most important aspect of any econometric modelling is to ensure the statistical robustness and avoidance of inconclusive base data when performing regressions (on time series). We tested the results against auto-regression among data, against potential non-stationarity of time series (by reducing the order of integration of the time series), as well as against auto-correlation (by using Granger causality tests in several cases). Our exercise is in line, and the results are consistent with the economic theory of import demand equations. The econometric model which is robust from the statistical point of view is the model linking the annual change of imports (in volume terms) to the annual growth of the real GDP of the importing country (and sometimes, other demand factors, such as aluminium production of importing countries) and the annual variation of constant prices (import unit prices, and sometimes exchange rates). The model is based on the use of error-correction mechanisms, preventing auto-correlation and different levels of integration to negatively impact on the results.

The econometric model we used for describing the behaviour of imports flows from one region to another is based on the classic economic theory of international trade. Imports of a country for any category of goods (or for one product or all goods) is usually influenced by the importing entity's output global demand, by price levels and/or variations, by other variables influencing output and costs perceived by the importing entity (such as investment decisions, taxes and costs associated to imports). An importer would tend to reduce the volume of the imports when prices go up, when expectations for high disruptions in prices or supply are present, or when their own production plans show clear decreasing trends; the opposite is valid for growth of internal demand and decrease in prices and their volatility. Consequently, the levels of the independent (influencing) variables are not so important as their variations (time-unit changes) are. Looking at a function of imports annual variations, one would expect to see a negative coefficient associated with the changes in prices or price volatility and a positive sign of the coefficient associated with internal demand (production, value added, etc.).

The long-term equilibrium equation of the import demand would follow a minimal function like:

$$Imp(t) = A * \prod_{j=1}^{j=n}[Imp(t-j) ** aj] * \prod_{k=1}^{k=m}[GDP(t-k) ** bk] * \prod_{l=1}^{l=q}[Price(t-l) ** dl]$$

Where *Imp(t)* is the dependent variable that we model, which is imports in year t, in volume terms; *Imp(t-j)* are previous years' volumes of imports, *GDP* stands for the gross domestic product, but it can be a generic internal annual output expression, *Price* stands for prices of imports (they can be custom or CIF process, exchange rates, exporters prices, etc. In the case of the aluminium categories considered for our study, we considered that the demand for intermediate aluminium products is coming from a large range of sectors in any economy, and therefore the GDP would be the best proxy for this demand. We also checked for the relevance of variability of prices (import prices including exchange rate). We found a very weak correlation in regressions, thus decided not to take this variable into account. However, the representative price was considered the unit price of imports as reported by the importing country (CIF/custom import prices).

No statistical analysis or regression on time series can be considered reliable unless performed on stationary time series that do not show inter-correlation. By nature, normal time series in value terms are non-stationary, because of the price components included intrinsically; however, they often become more manageable after being deflated with a demand-related price (such as consumer prices); this is why we use the constant import unit prices for our analyses, which means that each unit price time series was deflated with the consumer price index of the importing economy, before being considered for the econometric analysis. Integrability analysis has been performed on all the time series, checking for the order of integration. We found that the processed time series were all non-stationary and that their degree of integration was one, meaning that after one differentiation, they presented stationary time series characteristics.

All the above-presented findings lead us to the definition of the model used for imports demand, as an equation in annual changes of the logarithms of the given variables; this design allowed for the use of a linear equation (log terms) in annual differences (regression between stationary variables). To eliminate the potential non-stationarity of several variables, we chose an error-correction mechanism adjustment in the short-term equation (in differences) based on the long-term equilibrium equation. The theory behind is presented in Annex 13, together with the extended results of our modelling exercises. The error-correction mechanisms is defined - based on the long-term equilibrium equation - as the error term of the regression and is used as a lagged dependent variable in the differential equation (short-term) to stabilise the response of the system to any sudden change (shock) and improve the quality of the model predictions. The error-correction mechanism assumes that even though non-stationary variables are involved in the long-term equation, there is a linear linkage between those stationary variables; consequently, a short-term model in differences will be statistically sound in results.

In our case of aluminium imports for selected categories of products, the error-correction equation (ECM term) was generally considered to be:

$$ECM(t) = Imp(t)-A-B*GDP(t)-C*Price(t)$$

Where A is the long-term constant of the linear regression (in log terms), B is the long-term coefficient of the log of the GDP variable and C the LT coefficient of the log of Imports Unit Prices (in constant USD/kg values). For a few categories of aluminium products, we found out that importers were looking separately at the evolution of import unit prices and of the exchange rate, when deciding on their future demand for imports, despite the obvious correlation between them. It means that expectations on variations of exchange rates had a higher impact on the importers' behaviour than the usual import prices variations, which led us to consider separate price components for the respective categories of aluminium products.

In some cases, we tested categories of production instead or together with GDP; however, most of the statistical computations showed that the most relevant output demand proxy for aluminium intermediate products is the GDP of the importing country, in constant prices.

The short-term equation of the model (in annual changes) that is used for analysis and prediction is presented below:

$$\Delta Imp(t) = el1 * \Delta GDP(t) + el2 * \Delta Price(t) + el3 * \Delta ECM(t-1)$$

Where Δ is the differential operator (annual change rate from year t-1 to t), Imp are the log of imports of one category of products (kg), GDP is the log of the GDP values in 2010 constant prices (USD), Price is the log of Imports Unit Prices of the category (USD/kg), and ECM is the error-correction mechanism term in the previous year. el1, el2 and el3 are the corresponding elasticities, which are supposed to be positive for the GDP term and negative for the price and the ECM term. The ECM elasticity (el3) is normally expected to be between -1 and 0; el1 and el2 express an inelastic response to the changes of the variables if they are smaller than 1 (one) in absolute value, whereas a higher than one value means elastic response.

Annex 16 Imposed anti-dumping measures in imports of aluminium products into the EU from 2010 until February 2021

Related case numbers	Product	<u>CN codes</u>	Countries concerned	Current/last status	Initiation of investigation	Provisional measures	Definitive measures	Expiry	Definitive ad valorem antidumping duty (%)
AD534 R607 (expiry review)	Aluminium foil in big rolls (converter foils)	7607 11 19	Armenia, Brazil, China	In Force ([1])	July 2008	April 2009	October 2009 December 2015	December 2020	13.4 (Armenia) and 17.6 (Brazil) up to October 2014 6.4-30 (China)
AD610	Aluminium foil in big rolls	7607 11 19	Russia	Expired	October 2014	July 2015	December 2015	December 2020	12.2
AD541 R628 (Expiry review)	Aluminium road wheels (certain)	8708 70 10 8708 70 50	China	In Force	August 2009 October 2015	May 2010	October 2010 January 2017	January 2022	22.3
AD578 R676 (Expiry review)	Aluminium radiators (certain)	7615 10 10 7615 10 80 7616 99 10 7616 99 90	China	In Force	August 2011 November 2017	May 2012	November 2012 January 2019	January 2024	12.6 - 61.4
AD582	Aluminium foil in small rolls	7607 11 11 7607 19 10	China	In Force	December 2011	September 2012	March 2013	June 2024	14.2 - 35.6

R684 (Expiry review)					March 2018		June 2019		
AD664	Aluminium extrusions	7604 10 10 7604 10 90 7604 21 00 7604 29 10 7604 29 90 7608 10 00 7608 20 81 7608 20 89 7610 90 90	China	In Force (Provisional)	February 2020	October 2020	Ongoing Investigation		

(1) An expiry review is ongoing (R732)

Source: (European Commission, 2021a)

KJ-NA-30730-EN-N

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doi:10.2760/46784

ISBN 978-92-76-38488-5