Study on Forced Labor in the Xinjiang-Sourced Aluminum and Auto Parts Supply Chain into Mexico

Report

United States Department of Labor

Bureau of International Labor Affairs

Office of Child Labor, Forced Labor, and Human Trafficking

September 2024

This publication was produced for review by the U.S. Department of Labor. It was prepared by ICF Macro, Inc.

Acknowledgments

This report presents research on forced labor in the aluminum and aluminum parts sectors in China and its impact on the aluminum and aluminum auto parts sectors in Mexico. ICF Macro, Inc., prepared this report according to the terms specified in its contract with the U.S. Department of Labor. The research team would like to express sincere thanks to all the parties involved for their support and valuable contributions.

Funding for this research was provided by the U.S. Department of Labor under contract number GS-00F-189CA and task order 220676.0.001.01.007. This material does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does the mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

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Abbreviations

AD	antidumping duty
BIS	Bureau of Industry and Security
CBP	U.S. Customs and Border Protection
CVD	countervailing duty
CSRD	Corporate Sustainability Reporting Directive
DHS	U.S. Department of Homeland Security
EU	European Union
FLETF	Forced Labor Enforcement Task Force
FY	fiscal year
HS	Harmonized System
HS6	Harmonized System 6-digit
KII	key informant Interview
NGO	non-governmental organization
UFLPA	Uyghur Forced Labor Prevention Act
USITC	U.S. International Trade Commission
USMCA	United States-Mexico-Canada Agreement
USTR	Office of the U.S. Trade Representative
XPCC	Xinjiang Production and Construction Corps
XUAR	Xinjiang Uyghur Autonomous Region

Executive Summary

Purpose of Study

This study explores the traceability of aluminum produced with forced labor in the Xinjiang Uyghur Autonomous Region (XUAR) in China into the downstream products of aluminum and aluminum auto parts manufactured in or imported into Mexico, with a focus on the risk of these inputs from China moving downstream to Mexico and then being imported into the United States. The study also provides a broad overview of the likely downstream automotive market in which these parts are used, considering the implications for forced labor risks among manufacturers.

Context and Approach

The Uyghur Forced Labor Prevention Act (UFLPA), signed into U.S. law on December 23, 2021, and implemented on June 21, 2022, establishes a rebuttable presumption that any goods mined, produced, or manufactured wholly or in part in the XUAR, or produced by an entity on the UFLPA Entity List, are prohibited from entry into the United States pursuant to section 307 of the Tariff Act of 1930. The UFLPA is part of the U.S. Government's response to state-sponsored forced labor and human rights abuses within the XUAR against Uyghurs and members of other persecuted groups. Reported abuses include imprisonment, torture, rape, persecution, and the imposition of severe restrictions on freedom of religion or belief, freedom of expression, and freedom of movement.[1] These abuses are often weaponized to compel individuals to work under exploitative conditions. Furthermore, the Chinese government has implemented various labor schemes in the XUAR, including labor transfer programs to relocate Uyghur and members of other persecuted groups from Xinjiang to work in various parts of China, often under the guise of poverty alleviation programs or employment initiatives.[2]

This report reflects on the commercial impact of the UFLPA on imports of aluminum and auto parts from China and trade in these goods among China, Mexico, and the United States. Given that aluminum is one of the most widely used metals around the world, coupled with China's integral role in aluminum's global supply chains, and a significant portion of its production originating from the XUAR, many industries face heightened risk to exposure to aluminum produced in the XUAR. Based on desk research and key informant interviews (KIIs), the report also provides insights and analysis of the UFLPA's impact on China's production and exports of aluminum and auto parts, the challenges faced by automakers and automotive suppliers in meeting the requirements, and recommendations for different stakeholders, including policymakers and the private sector. The study was unable to conduct primary data collection in the XUAR due to restrictions imposed by China on research and information gathering on labor conditions in the region. Thus, it is important to note that the study exclusively explored forced labor in the production of aluminum in XUAR and associated supply chains through publicly available sources, available shipping data sourced from Panjiva, and KIIs. The study findings are not representative of the automotive and aluminum sector as a whole.

[1] Risks and Considerations for Businesses and Individuals with Exposure to Entities Engaged in Forced Labor and Other Human Rights Abuses Linked to Xinjiang, China. July 13, 2021. https://www.state.gov/wp-content/uploads/2021/07/Xinjiang-Business-Advisory-13July2021.pdf

[2] Lehr, A. K. (2020). *Addressing Forced Labor in the Xinjiang Uyghur Autonomous Region: Toward a Shared Agenda*. https://www.csis.org/analysis/addressing-forced-labor-xinjiang-uyghur-autonomous-region-toward-shared-agenda

Key Findings

There is clear evidence of forced labor in aluminum production within the XUAR. In a report from April 2022, Horizon Advisory investigated the Xinjiang aluminum sector and identified forced labor risks at all eight major aluminum companies operating in the XUAR.[3] According to the report, all eight companies were involved in government-led transfer programs, either as direct recipients of transferred labor or serving as coordinators for training and transfer programs. Through labor transfer programs, the Chinese government has implemented policies involving the relocation of Uyghur and members of other persecuted groups from Xinjiang to work in various parts of China, in Xinjiang Production and Construction Corps (XPCC) locations, in urban industrial parks, in satellite factories, and as support for small-scale self-employment, often under the guise of poverty alleviation programs or employment initiatives.[4] In addition, two of these aluminum companies were identified as subordinates of the XPCC. The XPCC is a state-run paramilitary organization in the XUAR responsible for human rights violations in the Uyghur Region.[5] Moreover, two companies were recognized as "ethnic policy" leaders due to their participation in programs aimed at increasing allegiance to the Chinese Communist Party among Uyghur and members of other persecuted groups. Exploitative labor practices, particularly targeting Uyghur minorities, result in low production costs, making the XUAR a highly profitable aluminum smelting center, alongside abundant cheap energy and lax environmental regulations. Approximately 20% of China's aluminum smelting capacity is in the XUAR, with more than one-third of this production carried out by XPCC companies. These producers generated 7.4 million tons of primary aluminum in 2022 and 11% of global aluminum production.[6]

There is evidence of auto parts manufactured with XUAR aluminum and exposure to potential forced labor risks. The aluminum produced in the XUAR can be blended with other materials, making it challenging to trace its origin. When aluminum is traded through international trading intermediaries, or through Chinese companies with undisclosed trade connections to the Uyghur Region, it exposes international car manufacturers to varying degrees of exposure to goods produced with forced Uyghur labor. Sheffield Hallam University's report "Driving Force: Automotive Supply Chains and Forced Labor in The Uyghur Region" traces the supply chains of some of the aluminum companies mentioned previously to international automotive companies. Notably, more than 50 international automotive parts and automakers (or their joint ventures) and more than 100 international automotive parts or car manufacturers exhibit multiple supply chain exposures to the Uyghur Region.[7] Major international auto

[3] Xinjiang Sixth Division Aluminum Co., Ltd., Xinjiang East Hope Nonferrous Metals Co., Ltd. (currently on the UFLPA Entity List), The Eighth Division of the XPCC Tianshan Aluminum Co., Ltd., Xinjiang Qiya Aluminum & Power Co., Ltd., Xinjiang Jiarun Resources Holdings Co., Ltd., Xinjiang Shenhuo Coal and Electricity Co., Ltd., Xinjiang Tianlong Mining Co., Ltd., Xinjiang Zhonghe Co., Ltd. See more: Base Problem: Forced Labor Risks in China's Aluminum Sector, Horizon Advisory, April 2022, https://www.horizonadvisory.org/backtobasics.

[4] Lehr, A. K. (2020). *Addressing Forced Labor in the Xinjiang Uyghur Autonomous Region: Toward a Shared Agenda*. https://www.csis.org/analysis/addressing-forced-labor-xinjiang-uyghur-autonomous-region-toward-shared-agenda

[5] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/drivinF-force.

[6] Horizon Advisory. (2022). *Base Problem: Forced Labor Risks in China's Aluminum Sector.* https://www.horizonadvisory.org/backtobasics. See also: U.S. Geological Survey, Mineral Commodity Summaries, Aluminum, January 2023. Accessed October 15, 2023, https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-aluminum.pdf.

[7] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/drivinF-force.

manufacturers, including Volkswagen Audi Group, Honda, Ford, General Motors, Mercedes-Benz Group, Toyota, Tesla, Renault, NIO, and Stellantis Group, are part of this list.[8]

XUAR aluminum is also used in China in the production of downstream aluminum products, including auto parts. Sheffield Hallam University's report provides an overview of the expansion of auto parts and materials production in the XUAR and tracks the products of these businesses to Western car brands through both direct and indirect supply chain connections. It identifies 96 mining, processing, or manufacturing companies relevant to the automotive sector operating in the XUAR, with at least 38 engaging in state-sponsored labor transfer programs. In addition, it identifies more than 40 Chinese automotive manufacturers sourcing from the Uyghur Region or accepting Uyghur labor transfers across China. Both XUAR auto parts and XUAR aluminum are used in the production of auto parts, automotive components, and finished vehicles assembled in China. However, it is less clear what percentage of XUAR auto parts are exported globally or specifically to Mexico, according to a Mexican official with experience working in China. According to KIIs with former and current automaker purchasing executives, in general, the exact regional origin of aluminum produced in China often is not known, and aluminum from the XUAR is likely commingled with aluminum produced in other parts of China. China has a complex and opaque supplier trading system, which is a significant obstacle to effective forced labor due diligence.

China's exports of aluminum to Mexico are growing. China is the leading global exporter of aluminum. In contrast, Mexico, which has no primary aluminum industry, is dependent on imports of aluminum for use in the production of manufactured goods, including auto parts. Mexico is China's leading export market for aluminum (2019–2023), and China is Mexico's leading source of aluminum after the United States, accounting for 29.8% of imports in 2023, up from 19.5% in 2019. From 2019 to 2023, Mexico's imports of aluminum from China increased by 58.4%, from $1 billion USD in 2019 to $1.6 billion USD in 2023. Although it is plausible that these increasing imports of aluminum from China are being used in automotive parts, a senior auto company manager in Mexico said that it was unclear whether a direct link exists because there are multiple other uses for aluminum in industrial and manufactured applications, in addition to its use in auto parts. These included electronic devices, aircraft, power lines, construction, and appliances.[9] Moreover, there are laws and international legal instruments that directly or indirectly reduce Mexico's reliance on China as an aluminum supplier, such as the United States-Mexico-Canada Agreement (USMCA). Under Article 6 of the USMCA automotive rules of origin, at least 70% of an auto producer's aluminum must originate in North America, which would significantly reduce Mexico's importation of auto parts containing aluminum of Chinese origin. Although the USMCA entered into force in 2020, Mexico did not enact provisions to uphold its USMCA obligations until 2023. Consequently, the full impact of Mexico's Forced Labor Regulations prohibiting the importation of goods produced in whole or in part by forced or compulsory labor, including forced or compulsory child labor, has not been realized.

China's exports of aluminum-intensive auto parts to Mexico are growing. China is the second largest global exporter of auto parts, and Mexico was China's third largest export market for auto parts in 2023. Exports of auto parts from China to Mexico increased by 80.7% from 2019 to 2023, from $2.1 billion USD in 2019 to $3.8 billion USD in 2023. China was Mexico's second largest import source for auto parts after the United States, with body parts, brakes, road wheels, suspensions, and engines as the leading products, making them more susceptible to forced labor risks. Aluminum-intensive auto parts presented

[8] Ibid

[9] 10 Most Common Used of Aluminum, Pennex. Accessed December 19, 2023, http://www.pennexaluminum.com/common-uses-of-aluminum/.

in this report accounted for approximately 21.1% of Mexico's imports of all auto parts from China, with imports of aluminum-intensive auto parts totaling $4.4 billion USD of $20.6 billion USD in total auto parts imports in 2023. However, aluminum-intensive auto parts accounted for 14.6% of China's total exports of all auto parts in 2023, meaning that China's exports to Mexico are more aluminum intensive than China's average exports of auto parts to the world.

There is a clear risk that forced labor occurring in the XUAR is finding its way into auto parts and vehicles produced in Mexico and subsequently imported by the United States. There is documented evidence of forced labor in the production of aluminum and auto parts containing aluminum from the XUAR. In the absence of aluminum traceability, along with the practice of aluminum co-mingling in China, and given the large production of aluminum in the XUAR, Chinese exports of aluminum and auto parts are at risk of being produced with forced labor. Unless companies can prove otherwise, all Chinese exports of these products are at risk of being produced with forced labor. Mexico imports a significant and growing proportion of aluminum and auto parts made with aluminum from China. Consequently, downstream goods such as auto parts and finished vehicles are at risk of being tainted by forced labor. Approximately 85% of the finished vehicles and auto parts produced in Mexico are imported by the United States. Taken together, these findings outline a path through which some aluminum-intensive products tainted with forced labor occurring in the XUAR can find their way to U.S. markets.

It is important to note that automotive supply chains are notoriously complex, with auto manufacturers themselves often lacking full visibility of all input goods. Goods from different sources, such as aluminum, are co-mingled at various nodes of the supply chain, making direct tracing extremely challenging. Consequently, this study was unable to quantitatively define the extent to which aluminum or auto parts produced in the XUAR end up in auto parts and vehicles imported from Mexico by the United States. The opacity and complexity of these supply chains, along with the large volume values of trade in these goods between China and Mexico and Mexico and the United States, suggest that this risk is not negligible and should not overlooked by the auto industry or the U.S. Government. Substantially greater resources should be invested into investigating and quantifying the extent of this risk and identifying steps that auto manufacturers can take to mitigate it in their respective supply chains.

The USMCA automotive rules of origin and Mexico's implementation of the USMCA Forced Labor Import Ban, once fully implemented, have the potential to disincentivize the importation and use of Chinese-made aluminum and auto parts in North American-produced vehicles and auto parts. Under the USMCA's automotive rules of origin implemented on July 1, 2020, automakers must now annually certify that at least 70% of their purchases of aluminum are produced in North America. There was no such requirement under the North American Free Trade Agreement. In addition, core parts of vehicles, such as engines, transmissions, parts of bodies, axles, suspensions, and steering systems—many of which are aluminum intensive—are now subject to a mandatory and substantially higher 75% regional value content requirement. Under the North American Free Trade Agreement, auto parts could simply meet a lower-threshold "tariff shift" rule or a substantially lower regional value content of 50%–62.5%. According to two senior automotive purchasing executives with direct experience in Mexico, the USMCA automotive rules of origin should incentivize the use of North American-sourced aluminum and auto parts and discourage the use of non-USMCA (e.g., Chinese) content. In addition, the Forced Labor Regulation, which became effective on May 18, 2023, implements the obligation included in the USMCA to prohibit the importation of goods into its territory from sources produced, in whole or in part, by forced labor. Although these policies have not yet decreased aluminum trade between China and Mexico, the USMCA rules will be fully phased in by July 1, 2025.

The industry is facing significant challenges in complying with the UFLPA. The automotive industry has some of the most complex global supply chains in the world, with North American automakers and suppliers annually sourcing more than 225 billion individual auto parts valued at more than $450 billion USD, according to an auto company purchasing manager in the United States.[10] Although automakers and larger auto parts suppliers have experience building out complex supply chains and logistics channels, these supply chains have been optimized around delivery schedules and cost accounting with limited insight into subnational geographic restrictions, sanctioned entities, or factory labor conditions beyond those necessary to meet local laws. According to a former U.S. Government trade official and expert on USMCA automotive rules, the UFLPA introduced novel end-to-end reporting elements to supply chains and forced automakers and auto parts suppliers to modify or build out new systems and, where necessary, abruptly change sourcing. Overall, key informants acknowledged businesses' active compliance efforts but emphasized challenges in supply chain tracing visibility. Gathering information becomes intricate when goods extend across diverse sectors and geographies, but restructuring complex supply chains will take time, given the involvement of numerous intermediaries in the production process. As a result, the ongoing adaptation process presents a substantial risk of forced labor persisting in their supply chains.

U.S. Customs and Border Protection (CBP) faces enforcement challenges beyond aluminum supply chains. In its first year of implementation, CBP detained more than $1.3 billion USD worth of products at the border under the UFLPA. As of February 2024, 2,972 shipments have been denied entry, and approximately 1,112 are currently under an extensive review process to determine their eligibility.[11] Although enforcement efforts initially intensified, some members of Congress have expressed dissatisfaction with the speed and scope of CBP's actions, stating that a substantial portion of goods containing components from the XUAR still go undetected.[12] Reports from Sheffield Hallam University and similar studies help substantiate these concerns regarding imports for the automotive industry, suggesting that a large, although undefined, proportion of goods go undetected. Some of the challenges mentioned by members of Congress include greater transparency regarding the review process and the call for an expansion of the Entity List that encompasses more entities located outside China that are connected to the XUAR and profit from the use of Uyghur forced labor.

Another enforcement challenge concerns shipments imported under the de minimis entry provision, 19 U.S.C. § 1321. Section 321(a)(2)(C) of the Tariff Act of 1930, as amended, which authorizes CBP to provide an administrative exemption to admit merchandise (other than bona fide gifts and certain personal and household goods) of not more than $800[13] without paying duties, import-related taxes, or filing entry documentation.[14] The primary goals of the de minimis provision are to "avoid any expense and inconvenience to the Government disproportionate to the amount of revenue that would otherwise be collected,"[15] and to ensure that travelers returning home with gifts from abroad avoid paying fees.

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10 The calculation assumes the use of 15,000 individual parts to produce 15 million vehicles in North America, which totals 225 billion parts sourced annually.

11 U.S. Customs and Border Protection (n.d.). *Uyghur Forced Labor Prevention Act Statistics*. Accessed February 16, 2024, https://www.cbp.gov/newsroom/stats/trade/uyghur-forced-labor-prevention-act-statistics.

12 Flacks, M. (2023, June 21). *What's Next for the Uyghur Forced Labor Prevention Act?* Accessed November 12, 2023, https://www.csis.org/analysis/whats-next-uyghur-forced-labor-prevention-act.

13 The *de minimis* threshold was previously $200 but increased to $800 with the passage of the Trade Facilitation and Trade Enforcement Act (TFTEA).

14 Entry documentation consists of the entry manifest, bill of lading, evidence of the right to make entry, commercial invoice or a pro forma invoice, packing lists, if appropriate, and other documents necessary to determine merchandise admissibility, including country of origin of the merchandise, shipper name, address and country, ultimate consignee name and address, specific description of the merchandise, quantity, shipping weight, and value. See 19 U.S.C. 143.23.

15 19 U.S.C. § 1321.

Although the de minimis exemption can be used only by one person on one day, an e-commerce company operating under one company name can have thousands of merchants that sell on its platform and ship directly to consumers in the U.S. In addition, foreign companies can create warehouses outside the United States, such as in Canada or Mexico, where they send large shipments of component parts that are assembled into products that ship to the United States using the de minimis provision. Furthermore, because formal entry is not required under the de minimis exception, CBP does not receive the entry documentation required to target and identify high-risk shipments, which may facilitate the entry of goods that do not comply with the UFLPA.[16]

Conclusion

There is clear evidence of forced labor in XUAR's aluminum production. Horizon Advisory's report (2022) investigated the Xinjiang aluminum sector and identified forced labor risks at all eight major aluminum companies operating in the XUAR. These risks included involvement in government-led labor transfer programs targeting Uyghur populations, involvement in the XPCC, and being recognized as "ethnic policy" leaders due to their participation in programs aimed at increasing allegiance to the Chinese Communist Party among Indigenous peoples. There is also documented evidence of auto parts manufactured in the XUAR, with 96 mining, processing, or manufacturing companies relevant to the automotive sector operating in the region, including at least 38 that have documented engagement in state-sponsored labor transfer programs. According to reports from Sheffield Hallam University and Horizon Advisory, more than 50 international automotive companies and more than 100 parts manufacturers exhibit multiple supply chain exposures to the Uyghur Region. Due to the absence of aluminum traceability and the substantial aluminum production in the XUAR, Chinese exports of aluminum and auto parts face the risk of being produced with forced labor in the XUAR. In addition, the aluminum and automotive parts manufacturing industry is anticipated to keep growing in the region, as increased subsidies and development projects continue to expand.

Despite efforts such as the USMCA and the UFLPA, there is a clear risk that forced labor occurring in XUAR is finding its way into auto parts produced in China as well as auto parts and vehicles produced in Mexico and imported by the United States. Mexico is now China's leading export market for aluminum and was the third largest export market for auto parts in 2022. Relatedly, China was Mexico's second largest import source for auto parts after the United States, with brakes, body parts, road wheels, and engines being the leading categories, making them more susceptible to forced labor risks. The United States, in turn, imports approximately 85% of finished vehicles and auto parts exported by Mexico. Taken together, these findings outline a path through which products tainted with forced labor occurring in the XUAR can find their way to U.S. markets. As China's exports of aluminum and auto parts to Mexico increase, the risk of materials produced with forced labor entering Mexico's supply chain and,

[16] In an effort to resolve the challenges faced with the *de minimis* exception, CBP established two voluntary Section 321 Programs, the Section 321 Data Pilot and the Entry Type 86. The Section 321 Data Pilot is a voluntary program to test the utility of accepting advanced data from e-commerce supply chain partners, including online marketplaces, for risk segmentation purposes to more clearly and accurately identify the entity causing the Section 321 shipments to move, the final recipient, and the contents of the package. Data submitted before arrival in the United States will help CBP target high-risk shipments for inspection and expedite the clearance of low-risk shipments. CBP recently published a Federal Register Notice soliciting additional participants for the Section 321 Data Pilot. The voluntary Entry Type 86 program automates the Section 321 clearance process using the Automated Commercial Environment. Under this program, Section 321 low-value shipments, including those shipments subject to a partner government agency data requirement, can be entered by filing a new type of informal entry electronically. This program provides greater visibility into the *de minimis* universe for CBP and partner government agencies and allows customs brokers and self-filers to electronically submit entries with a limited dataset.

in turn, U.S. markets, becomes all the more salient, as does the need for responsible sourcing and improved traceability in the automotive industry.

Observations over the 16 months since the UFLPA's implementation indicate a need for amendments to grant CBP more adaptable tools for UFLPA enforcement, as suggested by two leading trade lawyers. However, the UFLPA has notably catalyzed increased transparency in manufactured goods supply chains and prompted shifts in sourcing behavior. In response to the compliance requirements of the UFLPA, automakers and automotive parts suppliers are actively investing to better comprehend the risks and vulnerabilities within their supply chains, as highlighted by several experts. In addition, the USMCA automotive rules of origin and Mexico's implementation of the USMCA Forced Labor import ban, once fully implemented, have the potential to disincentivize the importation and use of Chinese-made aluminum and auto parts in North American-produced vehicles and auto parts. However, the intricate nature of global supply chains, especially in the automotive sector, poses obstacles to effective enforcement. Addressing Mexico's recent surge in aluminum imports requires strategic partnerships with USMCA suppliers, rigorous supply chain transparency measures, and continuous monitoring. For companies operating in Mexico, particularly within top-imported, aluminum-intensive product categories like brakes, bodies, wheels, and engines, there is a pressing need to elevate due diligence efforts.

Recommendations

Based on extensive supply chain research and KIIs, the following are suggested actions that policymakers, private sector actors, and non-governmental organizations should consider in order to create a baseline understanding of current conditions, improve domestic enforcement, encourage greater private sector collaboration, and expand international efforts to combat international trade in forced labor goods.

- **Request an independent fact-finding investigation.** Under authority of Section 332 of the Tariff Act of 1930,[17] the President, Senate Committee on Finance, House Committee on Ways and Means, or the Office of the U.S. Trade Representative (USTR) can request the U.S. International Trade Commission—an independent federal agency—to institute an investigation that includes the following:
    - A review of the current market conditions related to the production, importation, and use of forced labor in aluminum-based goods imported into the United States from China and other countries.
    - An assessment of the impact and effectiveness of private sector actions being implemented to make aluminum/auto parts supply chains more transparent and accountable.
    - A review of other countries' actions to address forced labor in internationally traded aluminum-based goods, specifically auto parts.
    - An economic analysis of trade volumes and trade patterns of aluminum-based goods in response to enforcement measures adopted in the United States and other key markets.

[17] See Section 332 of the Tariff Act of 1930, 19 U.S.C. 1332, https://www.govinfo.gov/content/pkg/USCODE-2017-title19/pdf/USCODE-2017-title19-chap4-subtitleII-partII-sec1332.pdf.

- A comprehensive industry analysis for Mexico focused on identifying the sectors and industries using Chinese aluminum, including, but not limited to, the automotive sector, to understand the diverse applications of imported Chinese aluminum. This analysis will help elucidate the extent to which Chinese aluminum imports are contributing to various sectors of the Mexican economy, facilitating targeted interventions and policy adjustments where necessary.

Given the evolving dynamic, ongoing changes to trade policy, and implementation efforts against imports produced with forced labor in the XUAR, in the United States Mexico, and other key markets, independent fact-finding investigations will keep policymakers updated on the effectiveness of trade policies and allow for the analysis of changes to private sector sourcing of input materials.

- **Enhance supply chain transparency and collaboration for UFLPA compliance.** To effectively address challenges associated with compliance with the UFLPA, businesses should implement robust tracing and monitoring systems capable of providing real-time insight into subnational geographic restrictions, sanctioned entities, and factory labor conditions. Special assistance should be provided to lower-level (tier 3 and lower) suppliers that do not typically have the resources or expertise to meet rigorous reporting obligations. Given that most private sector initiatives addressing forced labor risks in the aluminum supply chain have been implemented at the company level due to the sensitivity of supply chain information, companies must actively collaborate with suppliers and intermediaries to ensure alignment with UFLPA requirements, which may require modifications to existing structures or the development of new ones to ensure compliance. This involves fostering partnerships that prioritize ethical sourcing practices and promote transparency at every stage of the supply chain. For instance, specific measures such as supporting the development of a blockchain supply chain consortium and reporting platform[18] could enhance compliance efforts. Furthermore, businesses should prioritize ongoing education and training programs for employees involved in supply chain management to ensure a comprehensive understanding of UFLPA regulations and compliance requirements.

- **Amend the UFLPA to allow for more flexible and effective enforcement.** Although there is overwhelming support for the UFLPA, there is an emerging consensus that its current framing, with a strong focus on interdiction, provides limited flexibility for CBP to expand its enforcement approaches. For example, the law should be amended to include specific seizure and penalty provisions. CBP has general authority to seize and issue penalties for importations contrary to law (see 19 USC 1595a), but there is disagreement as to whether CBP has authority to use these seizure and penalty provisions for goods that violate the UFLPA and Section 307. If CBP argues that seizing goods that violate the UFLPA would be too onerous on its ports of entry, the law should be amended to include penalty provisions only. Furthermore, although CBP has the authority to seize and issue penalties under its catch-all provision, currently it needs probable cause to seize or issue a penalty for a UFLPA violation, which is challenging, given importers' opaque supply chains.

[18] The construction of these systems is underway, presenting an opportune moment for the U.S. Government to collaborate with the automotive industry, helping broaden the scope of the platform to include and ensure alignment with labor and environmental standards. See Rio Tinto. (n.d.). *Rio Tinto launches START: The first sustainability label for aluminum using blockchain technology*. Accessed January 16, 2024, https://www.riotinto.com/en/news/releases/2021/rio-tinto-launches-start-the-first-sustainability-label-for-aluminium-using-blockchain-technology.

- **Address CBP's de minimis challenges**. Regarding the de minimis exemption, Congress should consider revising the statute to return the threshold back to $200, as it was before the 2016 adjustment to $800,[19] or make the de minimis provision even lower. Alternatively, CBP should make the Section 321 Data Pilot or the Entry Type "86" pilot programs mandatory. Finally, proposed bills such as the De Minimis Reciprocity Act of 2023 and the Import Security and Fairness Act offer potential frameworks for addressing the challenges posed by the de minimis provision. By requiring additional information for entries and imposing restrictions on certain countries, these bills aim to strike a balance between facilitating trade and who can take advantage of this regulation.

- **Enhance U.S. and Mexico due diligence efforts, especially within top-imported, aluminum-intensive product categories.** Mexican and U.S. companies will need to prioritize enhanced due diligence efforts, particularly focusing on the top imports within aluminum-intensive product categories, such as brakes, bodies, wheels, and engines. To leverage the benefits of the USMCA automotive rules of origin and Mexico's USMCA forced labor import ban, strategic partnerships with USMCA suppliers, rigorous supply chain transparency measures, and continuous monitoring need to be prioritized to ensure compliance with USMCA regulations. Given Mexico's current lack of targeted strategies to enforce its import ban, it is crucial for the country to develop effective interagency implementation measures, with a particular focus on the aluminum from Xinjiang. In addition, Mexico should enact legislation requiring companies to disclose their supply chains for commodities with a high potential for human rights violations, particularly forced labor in the XUAR. U.S. technical assistance could be valuable to support Mexico authorities in designing and implementing forced labor enforcement strategies.[20]

- **Incorporate forced labor mitigation into the scope of ongoing and future multilateral negotiating frameworks.** This includes frameworks such as the Indo-Pacific Economic Framework for Prosperity, Americas Partnership for Economic Prosperity, multilateral economic forums such as the G7 and G20, and future multilateral economic and trade negotiations. In January 2022, the USTR initiated a process to develop a focused trade strategy to combat forced labor.[21] As part of this initiative, the USTR should coordinate across the U.S. Government and in cooperation with the private sector to develop and negotiate effective agreements that support greater supply chain transparency and prohibit trade in goods and services produced with forced labor.

[19] The *de minimis* exemption is a statutory provision in which imported goods with an aggregate fair retail value in the country of shipment of not more than $800 can be imported by one person on one day without paying duties, taxes, or filing a formal entry process. No formal entry is filed, so CBP generally does not scrutinize these shipments as much as goods entered under formal or informal customs entry. *De minimis* was raised from $200 to $800 in 2016 in the Trade Facilitation Trade Enforcement Act, which may have contributed to the increased use of this provision. See https://www.cbp.gov/trade/trade-enforcement/tftea/section-321-programs.

[20] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china.

[21] Office of the U.S. Trade Representative. (2022). *USTR Announces the Development of a Focused Trade Strategy to Combat Forced Labor.* https://ustr.gov/about-us/policy-offices/press-office/press-releases/2022/january/ustr-announces-development-focused-trade-strategy-combat-forced-labor. See also Federal Register notice 87 FR 40332, July 6, 2022, https://www.govinfo.gov/content/pkg/FR-2022-07-06/pdf/2022-14355.pdf.

1. Research Methodology and Study Implementation

1.1 Study Objective and Research Questions

This study explores the traceability of aluminum produced with forced labor in the Xinjiang Uyghur Autonomous Region (XUAR) in China into the downstream products of aluminum and aluminum auto parts manufactured in or imported into Mexico. Through key informant interviews (KIIs) and publicly available data, including trade data, shipping records, and company disclosures, the study aims to identify the supply chain of select auto parts at risk of being produced with aluminum from the XUAR to Mexico. The study also provides a broad overview of the likely downstream automotive market in which these parts are used.

1.1.1 Study Objectives

The four main objectives of the study are as follows:

- Summarize forced labor in the production of aluminum and aluminum auto parts exports from the XUAR.
- Map the supply chain of select aluminum auto parts from the XUAR to Mexico, whether imported directly to Mexico or through a third country.
- Identify the downstream products of aluminum auto parts in Mexico. To the extent possible, trace goods produced with forced labor along the supply chain.
- Explore how Mexico and other buyers of aluminum can effectively implement traceability efforts and enforce existing government laws to prevent the importation of goods produced with forced labor.

1.1.2 Research Questions

The study was guided by the following research questions.

1. How does forced labor manifest within the aluminum production in the XUAR into the downstream products of aluminum auto parts in Mexico and within China?
    a. How does such exploitation occur? What is the current evidence indicating the involvement of Xinjiang-based suppliers in government-forced labor programs related to aluminum production?
2. Which specific aluminum auto parts are at risk of being produced with forced labor in XUAR are imported into Mexico? What are the major automotive downstream goods made in Mexico from, and consisting of, aluminum in its various forms?
3. What are the links between aluminum production and supply chain connections of the XUAR-smelted aluminum into Mexico?
4. What are the major automotive downstream goods made in Mexico from, and consisting of, aluminum in its various forms?
5. How can Mexico and other aluminum buyers effectively implement traceability measures and enforce existing government laws to prevent the importation of goods produced with forced labor?

1.2 Research Methodology

The research design and methodology were shaped by ICF's experience with similar studies and by desk research and mapping conducted by ICF and Autovisory LLC. ICF's global research instruments informed the development of data collection tools. The study conducted the following four research activities:

- Collection of background research and materials
- Research instrument development
- Supply chain traceability
- KIIs

1.2.1 Collection of Background Research and Materials

The study builds on existing evidence of forced labor indicators in the XUAR's aluminum smelting facilities and focuses on the supply chain tracing of aluminum and aluminum auto parts from the XUAR, whether imported directly or through a third country, into Mexico. The secondary review of data and reports was guided by the thematic areas of focus, including forced labor in the XUAR and the aluminum supply chain. Reports and data available were sourced from the Internet and from organizations that work in relevant areas in the industry. A list of references is presented in Appendix A.

1.2.2 Research Instrument Development

A KII guide was developed to guide primary data collection. A copy of the final research instruments and KII protocol is presented in Appendix B. Forced labor key concepts and definitions are presented in Appendix C.

1.2.3 Supply Chain Tracing

Following literature review and initial assessment through KIIs, the product scope was narrowed. The product scope was based on supply chain traceability, the importance of parts to the automotive sector, the relative volume or value of goods traded, and any goods deemed to be most at risk for ties to the XUAR or government-sponsored forced labor transfer programs.

1.2.4 Key Informant Interviews

ICF conducted Interviews with global experts on aluminum, automotive supply chains, trade flows between Mexico and China, researchers, and academics. These experts specialized in labor conditions and forced labor issues in aluminum or automotive supply chains, automotive manufacturers and suppliers in Mexico, and international organizations and non-governmental organizations (NGOs) associated with the aluminum or automotive industry in Mexico.

Table 1-1. Sample size achieved for interviews

Key informant industry description
XUAR human rights expert
Auto industry expert
Auto industry expert/China-U.S. supply chain expert
Auto industry expert
Auto industry expert

Key informant industry description
Former Mexican official with expertise in China trade policy
Auto industry expert
Former U.S. trade negotiator
Auto industry expert
Auto industry trade expert
Trade policy expert with expertise in China
Lawyer and Uyghur Forced Labor Prevention Act expert
China policy analyst for supply chain strategy

1.3 Training and Preparation

Before engaging in subject interviews, the interviewer completed the online-based CITI Program Human Subjects Research training course: Social-Behavioral-Educational Refresher 1.[22] The course highlights important concepts from the Human Subjects Research—Social-Behavioral-Educational basic course and covers historical and current information on regulatory and ethical issues important to the conduct of research involving human subjects.

1.4 Data Collection

Research instruments were reviewed and approved by ICF's independent Institutional Review Board. At the beginning of each interview, the interviewer read the consent statement to the participant, and the participant provided verbal consent. All personal identifying information of respondents was redacted for this report. Data collection began on August 7, 2023. A total of 13 KIIs were completed. Interviews took approximately 30 to 45 minutes.

The trade data presented in the report were sourced from China Customs Statistics, Mexico National Institute of Statistics, U.S. Census Bureau, Panjiva, and Trade Data Monitor. Where available, the data are presented for a five-year period from 2019 to 2023 to allow for an analysis of trends.

Of note, the Harmonized System (HS) codes do not generally provide separate tariff classifications for aluminum versus non-aluminum auto parts. Rather, auto parts are classified based on product type, function, and use, rather than material. Therefore, the data for auto parts may contain some non-aluminum auto parts, such as steel parts. Also of note, the trade data do not identify goods that originate from certain provinces or regions within China, such as the XUAR; rather, the trade data are based on country-wide exports and imports. A listing of HS tariff subheadings used in the report are presented in Section 3.3, Tariff Classifications. Table 3-1 presents HS 6-digit (HS6) subheadings for aluminum most commonly used in automotive applications. Table 3-2 presents HS6 subheadings for aluminum-intensive auto parts.

Unless otherwise noted, the trade data are presented at the internationally consistent HS6 subheading level to allow for cross-country comparisons. The use of HS 8-digit "national" subheadings or HS 10-digit "national" statistical reporting numbers that differ by country do not allow comparable country-to-country comparisons. Although the use of HS6 subheahavegs is somewhat broader than ideal, it allows for consistent cross-border comparisons of data trends over time, especially when the relative share of

[22] CITI Program Human Subjects Research, Social-Behavioral-Educational (SBE) Refresher 1.

aluminum auto parts generally has been consistent or increasing over the most recent five-year period of 2019 to 2023.

1.5 Limitations and Lessons Learned

1.5.1 Key Informants' Reluctancy to Discuss Subject Matter

There were considerable challenges with data collection and securing KIIs. Engaging in open discussions about forced labor, the Uyghur Forced Labor Prevention Act (UFLPA), and China's political and economic policies is considered problematic for individuals or entities with political, economic, or commercial ties to the Chinese government or state-owned enterprises. This is because it could lead to potential legal consequences for trading goods at risk of being produced with forced labor, repercussions from suppliers, and the risk of damaging political relationships with government officials or agencies. In addition, individuals and entities are expected to be in full compliance with U.S. forced labor laws and the UFLPA; therefore, there is also a perception that any open or frank discussion of non-compliance or other compliance shortcomings could potentially expose individuals and entities to legal jeopardy or commercial sanctions.

A mitigation strategy involved reassuring anonymity for key informants and fostering a collaborative and conversational environment for open discussions. A crucial takeaway is the significance of adapting research methodologies to accommodate the topics each KII participant was willing to discuss. Recognizing that not everyone was comfortable discussing all topics covered by the research instruments, flexibility was maintained in terms of the interview format, allowing individuals to choose between written responses by email, phone calls, or online meetings based on their comfort level.

1.5.2 Complexities and Opacity of the Supply Chain

The length, complexity, and opaqueness of global supply chains for aluminum and aluminum auto parts—especially those that originate in China—presented additional challenges for engaging in constructive conversations and meaningful research. Mitigation strategies involved supplementing with desk research and supply chain analysis to address areas not extensively covered in interviews.

1.5.3 Securing Key Informant Interviews

Despite persistent efforts by ICF and Autovisory, the initially targeted number of KIIs was not obtained. These efforts involved extensive email outreach and follow-ups, an expansion of the original KII list to encompass a wider range of experts, and outreach through LinkedIn. Unfortunately, experts either did not respond or were not willing to engage in discussions, further highlighting the challenges and limitations of discussing this subject matter. To expand the potential pool of participants, groups outside the original sample were contacted to diversify the sample size and obtain more responses. Despite outreach to more than 40 experts, only 20 responded and only 13 KIIs were conducted. It is recommended that future research projects explore strategies to overcome the obstacles associated with knowledge gaps and limited participation among key informants after additional outreach efforts have concluded. This may involve supplementing the interviews with desk and supply chain research on any subjects that are not covered through interviews and avoiding data saturation among interviews.

2. Forced Labor in XUAR Aluminum Production

2.1 Evidence of Forced Labor in the Aluminum Sector

China, which dominates the global aluminum smelting market, produces more than half of the world's primary aluminum (i.e., aluminum produced from raw materials rather than recycled aluminum).[23] The XUAR's aluminum industry has seen rapid growth, becoming China's second-largest aluminum-producing region and representing a significant portion of the country's capacity and the world's production.[24] In addition, the Xinjiang Production and Construction Corps (XPCC), a key state-owned economic and paramilitary organization implementing central and provincial industrial policy in the XUAR, has actively supported the development of the aluminum industry in Xinjiang for more than a decade.[25] When the Chinese government introduced distinct industrial policies for aluminum production in Xinjiang in 2012, the XPCC was identified as a key player in the aluminum industry.[26] In the first quarter of 2013, the XPCC invested 1.1 billion renminbi in aluminum.[27]

There are significant concerns around the presence of human rights and labor violations in the production chain of aluminum in the XUAR. Exploitative labor practices, particularly targeting Uyghur minorities, along with low production costs, abundant cheap energy, and lax environmental regulations, make the XUAR a highly profitable aluminum smelting center.[28] Since roughly March 2017, the Chinese government in the XUAR has detained more than one million individuals from Uyghur, ethnic Kazakh, ethnic Kyrgyz, and other ethnic and Muslim minority groups in internment camps. Detainees have reported experiencing severe overcrowding, deprivation of sleep and food, neglect of medical needs, physical and psychological abuse, torture, forced labor, ingestion of unidentified substances, sterilizations and abortions imposed without consent, sexual abuse, coerced renunciation of religion, prohibition of prayer and other religious practices (including pressure to consume pork or alcohol), restrictions on the use of native languages, and compulsory study and recitation of Chinese Communist Party propaganda.[29]

According to the Horizon Advisory's report, *Forced Labor Risks in China's Aluminum Sector,* all eight major aluminum companies operating in the XUAR were involved in government-led transfer programs, either as direct recipients of transferred labor or serving as coordinators for training and transfer programs.[30] The labor transfer program, funded and overseen by the Chinese government, involves involuntary training for workers, many of them Uyghurs. The training programs consist of ideological, language, and military education components. Thereafter, individuals are assigned to work in specific industries. The program transfers workers from rural areas of Xinjiang to more industrial sections of the region. Companies and other entities to which these workers are assigned also provide additional re-training programs that include military, language, etiquette, ideological, and skill training

[23] Peng, T., Ren, L., Du, E., Ou, X., and Yan, X. (2022). Life cycle energy consumption and greenhouse gas emissions: Analysis of primary and recycled aluminum in China. *Processes, 10*(11), 2299. https://doi.org/10.3390/pr10112299.
[24] Horizon Advisory. (2022). *Base Problem: Forced Labor Risks in China's Aluminum Sector.* https://www.horizonadvisory.org/backtobasics.
[25] Ibid, pp. 9-10.
[26] Ibid, pp.11.
[27] Ibid.
[28] Ibid, pp. 10.
[29] United States Department of State and Office of International Religious Freedom. (2021). *2021 Report on International Religious Freedom: China—Xinjiang.* https://www.state.gov/reports/2021-report-on-international-religious-freedom/china/xinjiang/.
[30] Horizon Advisory. (2022). *Base Problem: Forced Labor Risks in China's Aluminum Sector.* https://www.horizonadvisory.org/backtobasics.

components. Uyghur workers are compelled or coerced into participating in the program under threat of punishment, detention, or other forms of coercion. In the aluminum sector, transferred Uyghur laborers work in the sweltering and dangerous smelting rooms as well as in hazardous carbon anode manufacturing plants.[31]

In addition, two of the eight major aluminum companies were identified as subordinates of the XPCC.[32] In July 2020, the U.S. Department of the Treasury imposed sanctions on the XPCC due to its involvement in human rights abuses, such as widespread arbitrary detentions and severe physical abuse inflicted on ethnic Uyghur populations in Xinjiang. Moreover, two companies were recognized as "ethnic policy" leaders due to their participation in programs aimed at increasing allegiance to the Chinese Communist Party among Indigenous peoples.

2.2 Forced Labor Risks in the Automotive Supply Chains

A report by Sheffield Hallam University expands on Horizon Advisory's findings by tracing the supply chains of some of the aluminum companies mentioned previously to international automotive companies.[33] Although the aluminum produced in the XUAR can be blended with other materials, making it challenging to trace its origin, when aluminum lacks a clear origin, especially when traded through international trading intermediaries, or through Chinese companies with undisclosed trade connections to the XUAR, it exposes international car brands to XUAR forced labor. Notably, major international auto manufacturers, including Volkswagen Audi Group, Honda, Ford, General Motors, Mercedes-Benz Group, Toyota, Tesla, Renault, NIO, and Stellantis Group, exhibit multiple supply chain exposures to the Uyghur Region.[34] In addition, more than 40 Chinese automotive manufacturers are sourcing from the XUAR or companies accepting Uyghur labor transfers across the country.

According to the Human Rights Watch's *Asleep at the Wheel* report, major automotive companies such as General Motors, Toyota, and Volkswagen operate in China through joint ventures, owning up to a 50% stake in Chinese companies that manufacture and market vehicles bearing the carmakers' global brand.[35] Volkswagen, through a subsidiary of its joint venture with SAIC, maintains a facility in Ürümchi, Xinjiang's capital, although it claims it does not use the region's raw materials. However, Uyghur rights groups suggest that Volkswagen's manufacturing plants elsewhere in China may still source materials, including aluminum, from Xinjiang. Volkswagen and other carmakers argue that they have limited control over their joint ventures' operations and supply chains, with Volkswagen citing Germany's supply chain law as excluding legal responsibility for human rights impacts in their Chinese joint ventures' supply chain.[36] General Motors, Toyota, and BYD did not provide information on oversight of their Chinese joint ventures, supply chain mapping, or aluminum sourcing origins. Tesla, operating independently in China without joint ventures, disclosed detailed information to Human Rights Watch about its aluminum sourcing, stating that it had intensified supply chain mapping efforts to combat

[31] Ibid. pp. 3.
[32] Ibid, pp. 11.
[33] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. Accessed October 15, 2023, https://acrobat.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A86f5da26-e459-4e05-9047-15ba295bbe83&viewer%21megaVerb=group-discover.
[34] Ibid, pp. 1.
[35] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china.
[36] Ibid.

forced labor and had not found evidence of forced labor in its supply chain, tracing back to the mining level in several instances.[37]

In addition to manufacturing aluminum automotive parts, China processes a large percentage of other key inputs in the automotive industry. For example, China processes iron into steel, lithium and cobalt into battery-grade materials, and bauxite into aluminum.[38] The U.S. Department of Labor specifically identifies electronics and lithium-ion batteries produced in China as automotive components that are produced with child or forced labor.[39]

Although the XUAR may not possess an abundance of all the essential raw materials for automotive manufacturing, the Chinese government has allocated substantial resources and incentives for companies to relocate the processing of these raw materials to the XUAR.[40] This initiative was launched through the Auto Parts and Agricultural Machinery Industry Matchmaking Conference in 2014, aiming to establish partnerships with automotive companies.[41] The Made in China 2025 Xinjiang Action Plan, circulated in 2015, outlines the government's explicit goals to enhance the automotive industry in the region and elevate XUAR-based automotive parts brands to national and international recognition.[42] In March 2022, XUAR's capital city, Ürümchi, unveiled 87 measures aimed at further improving the business environment and easing restrictions on corporate development in the region.[43] The impact of these policies cannot be understated, as a 2022 industry report on the Chinese auto parts indicates that the XUAR is ranked third in China in the production of non-ferrous metals that are essential to automotive manufacturing.[44] In addition, domestic and foreign manufacturers in China produced and exported more cars than any other country in the world in 2023.[45]

According to the China Society of Automotive Engineers, electric vehicle purchases will constitute 20% of car acquisitions in the XUAR by 2025, and the regional government is required to ensure that 50% of their vehicle procurements are electric vehicles. This is expected to generate substantial demand for automotive parts produced in the region.[46] The parts manufactured in the XUAR are also being shipped internationally, exposing the global automotive market to forced labor practices in the region. In 2022, car parts ranked among China's leading exports passing through the XUAR's borders by train, reaching Central Asia, Europe, and Russia.[47] These import/export channels facilitate the entry of raw materials for

[37] Ibid.

[38] Building resilient supply chains, revitalizing American manufacturing, and fostering broad-based growth: 100-Day reviews under Executive Order 14017, The White House, June 2021, https://www.whitehouse.gov/wp-content/uploads/2021/06/100-day-supply-chain-review-report.pdf.

[39] Department of Labor. (n.d.). From Artisanal Mines to Electric Cars. Accessed December 27, 2023, http://www.dol.gov/agencies/ilab/reports/child-labor/list-of-goods/supply-chains/lithium-ion-batteries.

[40] XUAR and the Auto Industry. (n.d.). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Accessed December 27, 2023, https://www.shuforcedlabour.org/drivingforce/xuar.

[41] Ibid.

[42] The State Council Information Office of the People's Republic of China. (2016, August 29). Notice on Issuing the Made in China 2025 Xinjiang Action Plan. Archive.Ph., https://archive.ph/KbkQn.

[43] The 69th Press Conference on Xinjiang-Related Issues by Xinjiang Uygur Autonomous Region (28th in Beijing) Embassy of the People's Republic of China in the United States of America. (n.d.). Accessed December 27, 2023, http://us.china-embassy.gov.cn/eng/zt_120777/dmxj/xjfabuhui/28thpressconference/202203/t20220329_10656900.htm.

[44] China Business Industry Research Institute. (2022, September 27). Panoramic view of China's auto parts industry chain in 2022, analysis of upstream, midstream and downstream markets and companies. Archive.Ph., https://archive.ph/6XLO5

[45] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china.

[46] Sun, Y., & Goh, B. (2020, October 27). China's NEV Sales to Account for 20% of New Car Sales by 2025, 50% by 2035. *Reuters*. https://www.reuters.com/article/idUSKBN27C088/.

[47] Xinhua News Agency. (2022, July 6). China-Europe Freight Trains Hit Record High In First Half Of The Year. Archive.Ph. https://archive.ph/8c7PM.

processing, the exit of processed materials for fabrication, and the export of fabricated materials to Central Asia, Europa, and Russia, all while concealing connections to the XUAR and its forced labor practices.

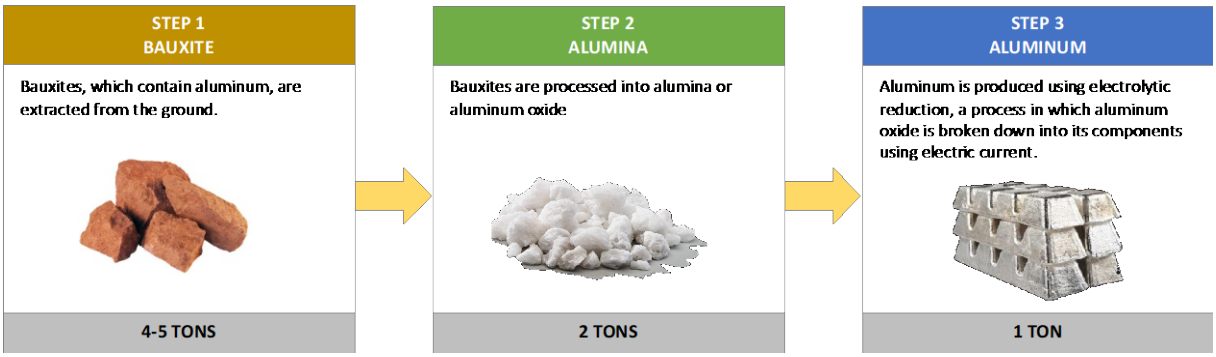
3. Product Scope and Goods Specifications

The product scope is classified into two product groups: (1) aluminum used as intermediate inputs in the production of semi-finished and finished goods, and (2) aluminum-intensive auto parts ("auto parts") produced by automotive suppliers for use in the production of new vehicles and spare or service parts for used vehicles.

3.1 Aluminum

Figure 3-1 presents the most common type of aluminum production process, which involves processing bauxite into alumina, which in turn is processed into aluminum. The bulk of world bauxite production (approximately 85%) is used as feed for the manufacture of alumina through a wet chemical caustic leach method commonly known as the Bayer process. Subsequently, most of the resulting alumina produced from this refining process is in turn employed as the feedstock for the production of aluminum metal by the electrolytic reduction of alumina in a molten bath of natural or synthetic cryolite (Na_3AlF_6), the Hall-Héroult process.[48]

Figure 3-1. Aluminum: Common production process



Source: The Aluminum Association, Aluminum Production and Processing

Aluminum can be alloyed with a range of elements to amplify qualities like strength, electrical conductivity, and corrosion resistance. Aluminum is separated into alloy series, which are determined by their main alloying elements. The most common aluminum grades used in vehicle applications are 1xxx, 2xxx, 3xxx, 4xxx, 5xxx, 6xxx, and 7xxx aluminum alloy series.[49] Figure 3-2 presents common aluminum alloy grades used in auto parts applications.

Figure 3-3 presents the four aluminum fabrication processes: casting, extrusion, forging, and rolling. Fabricated aluminum may be formed directly into finished aluminum products (e.g., components and parts) or into shapes (e.g., coils and plates) that are further processed into finished aluminum products.

[48] Bauxite and Alumina Statistics and Information, U.S. Geological Survey. Accessed October 6, 2023, https://www.usgs.gov/centers/national-minerals-information-center/bauxite-and-alumina-statistics-and-information.
[49] Aluminum in Cars: What Aluminum Alloys are Common in Aluminum Car Bodies, Kloeckner Metals, https://www.kloecknermetals.com/blog/aluminum-in-cars/.

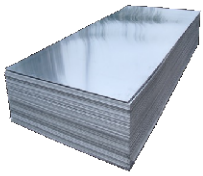
Intermediate aluminum products come in various formats such as sheet, coil, plate, tube, pipe, channel, beam, bar, and angle.

Figure 3-2. Aluminum: Common aluminum alloy grades used in auto parts applications

1xxx	2xxx	3xxx	4xxx	5xxx	6xxx	7xxx
The 1xxx series of aluminum is the purest aluminum available. This grade is extremely malleable and demonstrates excellent corrosion resistance.	The 2xxx series of aluminum is alloyed with copper. This grade is often used for pistons, break components, rotors, cylinders, wheels and gears as it shows high strength and excellent fatigue resistance.	The 3xxx manganese series of aluminum has great formability.	The 4xxx series of aluminum is alloyed with silicon. This grade is often used for pistons, compressor scrolls, and engine components as it demonstrates excellent weldability and abrasion resistance.	5xxx series is one of the most popular for aluminum car bodies. Its main alloying element is magnesium, known to increase strength.	The 6xxx aluminum series is alloyed with magnesium and silicon. This boasts some of the best extrusion and casting capabilities and demonstrate ideal surface finishing character.	The 7xxx is the most powerful and highest strength alloy class, alloyed with zinc and magnesium.

Source: Aluminum in Cars: What Aluminum Alloys are Common in Aluminum Car Bodies, Kloeckner Metals

Figure 3-3. Aluminum: Fabrication processes used in auto parts applications

Casting	Extrusion	Forging	Rolling
			
• Catalytic converter case • Clutch case • Cylinder cover • Cylinder head • Engine block • Intake manifold • Oil pan • Power steering case • Starter case • Steering booster case • Transmission cover & housing • Turbo charger case	• Bumper system • Cross car beams • Door beam • Front rail • Rockers • Roof • Seat back bar • Subframe	• Axle beams and shafts • Connecting rods • Drive Shafts • Drive Shaft Knuckles • Hubs • Shocks • Struts • Suspension Parts • Torsion bars, steering arms • Transmission shafts and gears • Universal Joints • Wheel Spindles	• Body panels • Door panels • EV battery enclosure • Hoods • Parts of bodies • Roof panels • Trunk lids

Source: Various public sources

3.2 Auto Parts

Figure 3-4 presents the top categories of aluminum-intensive auto parts, which are primarily made from aluminum or have a significant proportion of their material composition made up of aluminum. In 2022, approximately 12% of a vehicle's weight is composed of aluminum, or an average of 501 pounds per vehicle.[50]

[50] Ducker Research & Consulting. (2023). *Light Vehicle Aluminum Content and Outlook Study.* Accessed October 8, 2023, https://drivealuminum.org/wp-content/uploads/2023/05/Ducker-ATF-2023-Summary-Report-April-2023.pdf.

Figure 3-4. Auto parts: Top categories of aluminum-intensive auto parts[1]

Parts of Bodies	Brakes	Road Wheels	Engines	Suspensions
				
Crash management systems, Cross beams, Door beams, Door panels, Door sills/rockers, Fenders, Front end structures, Hoods, Instrument panel structures, Pillars, Roofs, Shock towers, Tunnels, Tailgates/Trunks, Truck bed rails, Windshield frames	Brake calipers, Master cylinders, Brake pistons, Anti-lock brake housings	Road wheels	Blocks, Cam covers, Cylinder heads, Engine mounts, Front covers, Fuel rails, Intake manifolds, Oil pans Pistons, Timing chain covers, Turbochargers	Subframe/cradle, Knuckles, Control arms/links
Seats	**Steering**	**Drive Axles**	**Radiators**	**Transmissions**
				
Seat motor housings, Seat pans, Seat frames, Seat tracks, Seat belt spools/retractors	Column housings, Rack & pinion housings, Ball joint yokes, Tie rod ends	Drive axles, Drive shafts, Differential carriers, Drive shaft yokes, Transmission mounts	Radiators, radiator cores, Radiator supports,	Transmission casings, Transmission shafts and gears

[1] Because of limited current production volume to date, the list of aluminum-intensive auto parts does not include electric vehicle-specific parts such as battery housings, traction motor housings, battery management system/converter housings, and battery cables.

Source: Ducker Research & Consulting, Light Vehicle Aluminum Content and Outlook Study, April 2023

3.3 Tariff Classifications

Table 3-1 presents a list of HS6 subheadings for aluminum most commonly used in automotive applications. Table 3-2 presents a list of HS6 subheadings for aluminum-intensive auto parts.

As mentioned previously, the HS does not generally provide separate tariff classifications for aluminum versus non-aluminum auto parts. Auto parts are classified based on product type, function, and use, rather than material. Therefore, the data for auto parts may contain some non-aluminum auto parts, such as steel parts. The trade data also do not identify goods that originate from certain provinces or regions within China, such as the XUAR; rather, the trade data are based on country-wide exports and imports.

Unless otherwise noted, the trade data are presented at the internationally consistent HS6 subheading level to allow for cross country comparisons. The use of HS 8-digit "national" subheadings or HS 10-digit "national" statistical reporting numbers that differ by country do not allow country-to-country comparisons. Although the use of HS6 subheadings is somewhat broader than ideal, it allows for consistent cross-border comparisons of data trends over time, especially when the relative share of aluminum auto parts as a share of total auto parts has been relatively stable (or increasing only slightly) from 2019 to 2023.

Table 3-1. Aluminum: HS6 subheadings

HS6	Description
760110	Aluminum, not alloyed, unwrought
760120	Aluminum alloys, unwrought
760410	Aluminum bars, rods and profiles, not alloyed
760421	Aluminum alloy hollow profiles
760429	Aluminum alloy bars, rods and profiles, not hollow profiles
760511	Aluminum wire of nonalloyed aluminum, over 7mm
760519	Aluminum wire of nonalloyed aluminum, 7mm or less
760521	Aluminum alloy wire, over 7mm
760529	Aluminum alloy wire, 7mm or less
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm
760810	Aluminum tubes and pipes, not alloyed
760820	Aluminum alloy tubes and pipes
760900	Aluminum tube or pipe fittings

Table 3-2. Auto parts[51] HS subheadings

HS6	Description
840732	Engines (spark-ignition over 50cc but not over 250cc)
840733	Engines (spark-ignition over 250cc but not over 1,000cc)
840734	Engines (spark-ignition over 1,000cc)
840820	Engines (compression-ignition)
840991	Engine parts (spark-ignition)
840999	Engine parts (compression-ignition)
870829	Parts of bodies
870830	Brakes
870840	Gear boxes (transmissions)
870850	Drive axles
870870	Road wheels
870880	Suspensions
870891	Radiators
870894	Steering systems
940120	Seats of a kind used for motor vehicles
940190	Parts of seats
940199	Parts of seats, not elsewhere specified

[51] Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

4. Supply Chains for Aluminum

This section presents data on and an analysis of the production, exports, and imports of aluminum, looking at global data as well as country-specific data from China and Mexico. For purposes of this report, "aluminum" comprises aluminum and aluminum alloy forms, shapes, and sizes that are most applicable for automotive use. Other forms, shapes, and sizes of aluminum are excluded from the data. Trade data for the XUAR or other subnational regions are not available. Appendix D presents data tables on the global exports of aluminum and auto parts as well as country-specific data from China and Mexico. Appendix E presents data tables on global imports of aluminum and auto parts as well as country-specific import data for Mexico and the United States.

4.1 Bauxite and Alumina

For bauxite, China relies on a combination of both domestic production and imports. China is the world's second largest producer of bauxite,[52] and high-grade bauxite deposits that account for 87% of China's bauxite resources are found in Shanxi, Guizhou, Henan, and Guangxi provinces.[53] However, due to the high demand for aluminum in China and its growing aluminum industry, the country is becoming increasingly dependent on overseas supplies of bauxite ore, with almost half of the country's ore being imported in 2021.[54]

Table 4-1 presents global production of bauxite and alumina in 2023. Australia, China, Guinea, and Brazil accounted for more than 80% of global bauxite production in 2023.[55] China was the second largest producer of bauxite after Australia, accounting for 23.8% of global production in 2022. Figure 4-1 presents the top global producers of alumina by market share in 2023.[56] In this year, China was the largest producer of alumina, accounting for 59.6% of global production; however, it is important to note that alumina production is derived from bauxite sourced both domestically and imported from abroad.[57]

Table 4-1. Bauxite and alumina: Global production, by source, 2023

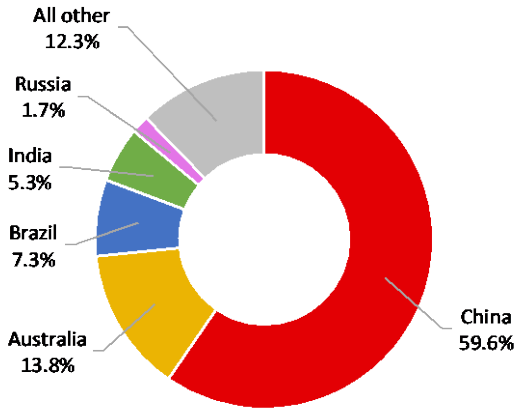
Source	Bauxite production	Alumina production
	1,000 tons	1,000 tons
China	**93,000**	**82,000**
Australia	98,000	19,000
Brazil	31,000	10,000
India	23,000	7,300
Russia	5,800	2,400
United Arab Emirates	-	2,300
Saudi Arabia	4,600	1,800
Canada	-	1,600
Jamaica	6,000	1500

[52] U.S. Geological Survey, Mineral Commodity Summaries, Aluminum, January 2023a. Accessed October 15, 2023, https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-aluminum.pdf.
[53] Sun, L., Zhang, S., Zhang, S., Liu, J., & Xiao, K. (2020). Geologic Characteristics and Potential of Bauxite in China. *Ore Geology Reviews,* 120. https://doi.org/10.1016/j.oregeorev.2019.103278.
[54] Bloomberg News. (2021, December 9). China Steps Up Overseas Hunt for Ore Needed to Make Aluminum. Bloomberg.Com. https://www.bloomberg.com/news/articles/2021-12-09/china-steps-up-overseas-hunt-for-ore-needed-to-make-aluminum.
[55] U.S. Geological Survey, Mineral Commodity Summaries, Bauxite and Alumina, January 2023, https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-bauxite-alumina.pdf.
[56] Ibid.
[57] Ibid.

Source	Bauxite production	Alumina production
	1,000 tons	1,000 tons
Vietnam	3,700	1,400
Kazakhstan	4,300	1,300
Indonesia	20,000	1,200
Ireland	-	1,200
Greece	1200	860
United States	Withheld	780
Germany	-	720
Spain	-	640
Guinea	97,000	330
TürkiyeTürkiye	2000	290
All other	5,600	880
TOTAL	**395,200**	**137,500**

Source: U.S. Geological Survey, Mineral Commodity Summaries, Bauxite and Alumina, January 2023

Figure 4-1. Alumina: Global production, by source, 2023



Source: U.S. Geological Survey, Mineral Commodity Summaries, Bauxite and Alumina, January 2023

4.2 Aluminum Production

The U.S. Department of Energy has added aluminum to its 2023 critical mineral list.[58] The list focuses on key materials with high risk of supply disruption that are integral to clean energy technologies.[59] Table 4-2 presents global capacity, production, and capacity utilization of aluminum in 2023. Figure 4-2 presents global production and capacity utilization. China produced 41 million metric tons of aluminum in 2023, accounting for 58.9% of global production. For comparison, the United States only produced 750,000 tons, approximately 2% of the production in China. Mexico is not a significant producer of

[58] U.S. Department of Energy. (n.d.). What Are Critical Materials and Critical Minerals? Accessed December 27, 2023, https://www.energy.gov/cmm/what-are-critical-materials-and-critical-minerals.

[59] U.S. Department of Energy. (2023). U.S. Department of Energy Releases 2023 Critical Materials Assessment to Evelauate Supply Chain Security for Clean Energy Technologies. Accessed October 15, 2023, https://www.energy.gov/eere/articles/us-department-energy-releases-2023-critical-materials-assessment-evaluate-supply.

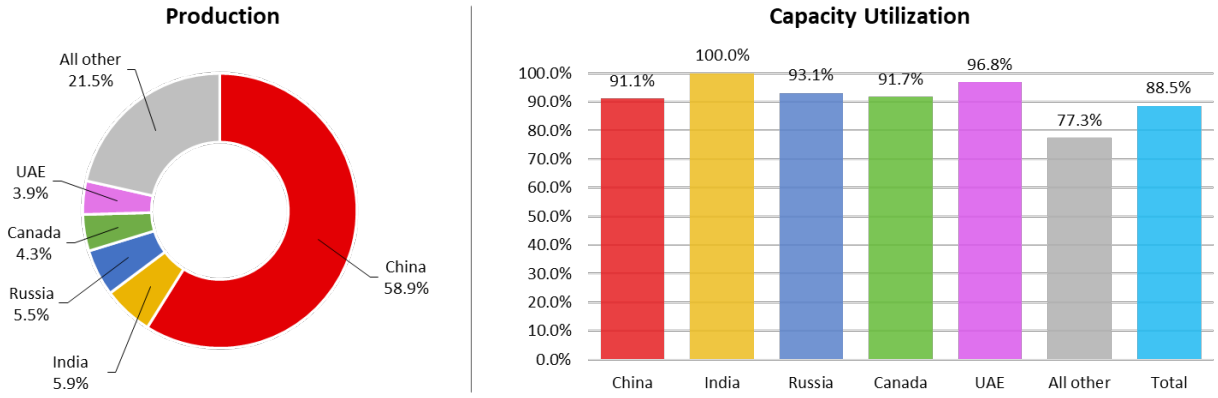
aluminum. All large global producers of aluminum have capacity utilization exceeding 90%, with very limited capability, individually or collectively, to increase global production.[60]

Table 4-2. Aluminum: Global capacity, production, and capacity utilization, by source, 2023

Source	Capacity	Production	Capacity utilization
	1,000 tons	1,000 tons	Percentage
China	**45,000**	**41,000**	**91.1%**
India	4,060	4,100	101.0%
Russia	4,080	3,800	93.1%
Canada	3,270	3,000	91.7%
United Arab Emirates	2,790	2,700	96.8%
Bahrain	1,600	1,600	100.0%
Australia	1,700	1,500	88.2%
Norway	1,460	1,300	89.0%
Brazil	1,280	1,100	85.9%
Malysia	1,080	980	90.7%
United States	1,360	750	55.1%
Iceland	880	730	83.0%
All other	10,000	7,000	70.0%
TOTAL	**78,560**	**69,560**	**88.5%**

Source: U.S. Geological Survey, Mineral Commodity Summaries, Aluminum, January 2023

Figure 4-2. Aluminum: Global production and capacity utilization, by source, 2023



UAE=United Arab Emirates

Source: U.S. Geological Survey, Mineral Commodity Summaries, Aluminum, January 2024

4.2.1 Aluminum Production in China and XUAR

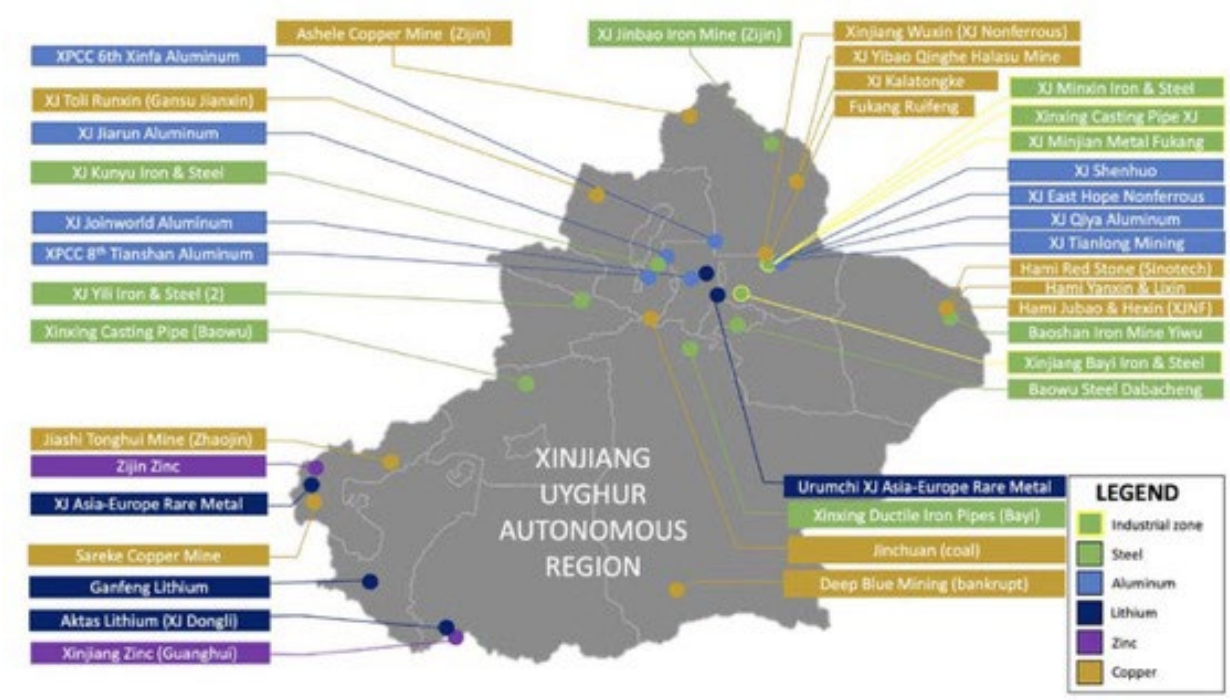
An NGO executive and a former executive in the automotive industry mentioned that the XUAR has become a notable hub for the production of aluminum and automotive components in China. The XUAR, Henan, Shandong, and Inner Mongolia provinces are the main producers of primary aluminum in China, but aluminum-producing regions may vary over time due to factors such as resource availability,

[60] U.S. Geological Survey, Mineral Commodity Summaries, Aluminum, January 2023. Accessed October 15, 2023, https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-aluminum.pdf.

infrastructure development, and government policies. Regional transfers and investments can also impact the distribution of production capacity.[61]

According to a report by Horizon Advisory published in April 2022, XUAR is the second largest primary producer of aluminum after Shandong Province. There are eight aluminum producers in XUAR, with a combined production capacity of 8.1 million tons, accounting for 18% of China's 44 million tons of aluminum production capacity.[62] These eight companies are estimated to have produced 7.4 million tons of aluminum in 2022, which is approximately 10 times the production of the United States.[63] More than 9% of global supply now comes from the region, according to Human Rights Watch's *Asleep at the Wheel* report.[64] Figure 4-3 presents a map of companies mining or processing key materials (steel, aluminum, lithium, zinc, copper) in the XUAR.

Figure 4-3. Aluminum: Map of companies mining or processing key materials in the XUAR



Source: *Driving Force, Automotive Supply Chains and Forced Labor in the Uyghur Region,* Sheffield Hallam University, December 2022, p. 8 (Figure 1)

In addition, nearly a fifth of China's aluminum smelting capacity is concentrated in the XUAR, and more than a third of that production is being smelted by XPCC companies.[65] Established in 1954, the XPCC serves as a regional governing body, with the primary objective to promote the development of the XUAR. Over the years, the XPCC has evolved into a robust and extensive commercial network, spanning

[61] Ning, D., Liu, N., Lu, B, & Yang, J. (2021). Life Cycle Greenhouse Gas Emissions of Aluminum Based on Regional Industrial Transfer in China. *Journal of Industrial Ecology,* 25(6), 1657–72. https://doi.org/10.1111/jiec.13146.
[62] Horizon Advisory (2022). *Forced Labor Risks in China's Aluminum Sector.* Accessed October 15, 2023, https://www.horizonadvisory.org/backtobasics.
[63] Comparing production data noted in the Horizon report with data from the U.S. Geological Survey.
[64] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china
[65] Horizon Advisory. (2022). Forced Labor Risks in China's Aluminum Sector. Accessed October 15, 2023, https://www.horizonadvisory.org/backtobasics.

various sectors of the regional economy.[66] The XPCC is responsible for a wide range of economic activities, including agriculture, transportation, commerce, and various construction activities. It has been reported that the XPCC engages in human rights abuses against Uyghurs, including forced labor, land expropriation, extrajudicial detention and imprisonment, and religious persecution.[67] The organization has numerous affiliated companies globally, making it challenging to exclude it from global supply chains. A 2021 study by the Center for Advanced Defense Studies identified more than 2,900 XPCC-linked companies, with assets connected to approximately 800,000 entities worldwide.[68]

Moreover, according to a professor and leading human rights researcher, XUAR aluminum is used in China in the production of downstream aluminum products, including auto parts. The professor said that some XUAR aluminum was likely co-mingled in the 5.1 million tons (valued at $19.3 billion USD) of China's global exports of aluminum in 2022.

4.2.2 Mexico's Production of Aluminum

Mexico currently does not possess the domestic production capacity to produce primary aluminum.[69] However, Mexico does have the capacity to produce aluminum alloys from imported primary aluminum and to process imported or recycled aluminum into various aluminum forms, shapes, and sizes for downstream use in auto parts or other manufactured goods. Therefore, Mexico can be considered highly dependent on imports of primary aluminum to meet its domestic industrial and manufacturing needs.

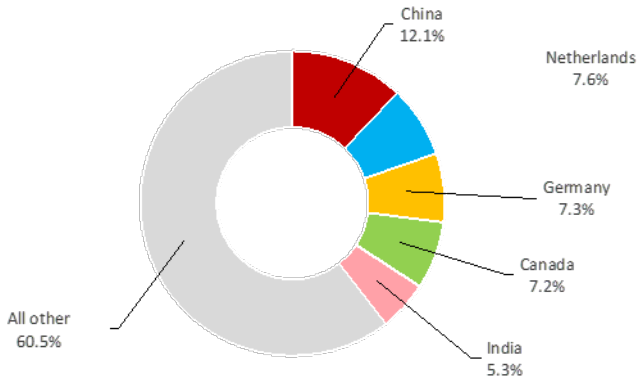
4.3 Exports of Aluminum

4.3.1 Global Exports of Aluminum

Figure 4-4 presents the leading sources of global exports of aluminum in 2022.[70] The leading global exporters were China, the Netherlands, Germany, Canada, and India. Global exports of aluminum increased by 41.3% from 2018 to 2022, from $112.6 billion USD in 2018 to $159.1 billion USD in 2022.[71] Aggregated global export data based on quantity are not available, because countries report in various quantity measures such as tons, pieces, number, or sets; therefore, value data are presented.

[66] Bukharin, I. (2021). *Long Shadows How the Global Economy Supports Oppression in Xinjiang.* Center for Advanced Defense Studies. https://c4ads.org/reports/long-shadows/.
[67] Wyk, B. V. (2022). *What Does the Xinjiang Production and Construction Corps Do, aside from Forced Labor?* The China Project. https://thechinaproject.com/2022/08/08/what-does-the-xinjiang-production-and-construction-corps-do-aside-from-forced-labor/.
[68] Bukharin, I. (2021). *Long Shadows How the Global Economy Supports Oppression in Xinjiang.* Center for Advanced Defense Studies. https://c4ads.org/reports/long-shadows/.
[69] U.S. Geological Survey, Mineral Commodity Summaries, Aluminum, January 2023. Accessed October 15, 2023, https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-aluminum.pdf.
[70] Table D-1 in Appendix D presents data on global exports of aluminum by source from 2018 to 2022.
[71] Trade Data Monitor.

Figure 4-4. Aluminum:[1] Leading global exporters, by source based on value, 2022



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00

Source: Trade Data Monitor.

In 2021 (latest data available), the top five global exports of aluminum by HS6 subheading were as follows:

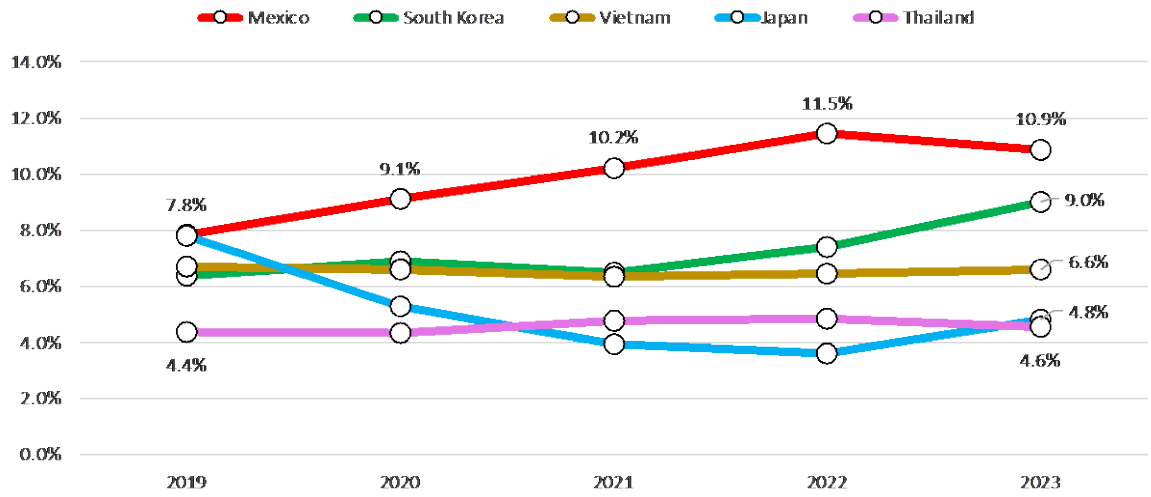
Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$39,218	25.3
2	7601.20	Unwrought aluminum alloys	$38,576	24.9
3	7601.10	Unwrought non-alloyed aluminum	$34,528	22.3
4	7604.29	Aluminum alloy bars, rods, and profiles (non-hollow)	$15,557	10.1
5	7604.21	Aluminum alloy hollow profiles	$7,307	4.7
		Subtotal	**$135,186**	**87.3**

4.3.2 China's Exports of Aluminum to the World

Figure 4-5 presents China's exports of aluminum by destination market and market share from 2019 to 2023.[72] China was the largest global exporter of aluminum in 2022 (the latest available comparative period), accounting for 12.1% of global exports. China exported $14.1 billion USD of aluminum in 2023, a decrease of 26.6% over exports of $19.2. billion USD in 2022.[73] China's exports of aluminum to Mexico as a share of its total exports of aluminum increased from 7.8% in 2019 to 10.94% in 2023.[74]

[72] Table D-3 in Appendix D presents data on China's exports of aluminum to the world by market from 2018 to 2022.
[73] China Customs Statistics.
[74] China Customs Statistics.

Figure 4-5. Aluminum:[1] China's leading export markets, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: China Customs Statistics

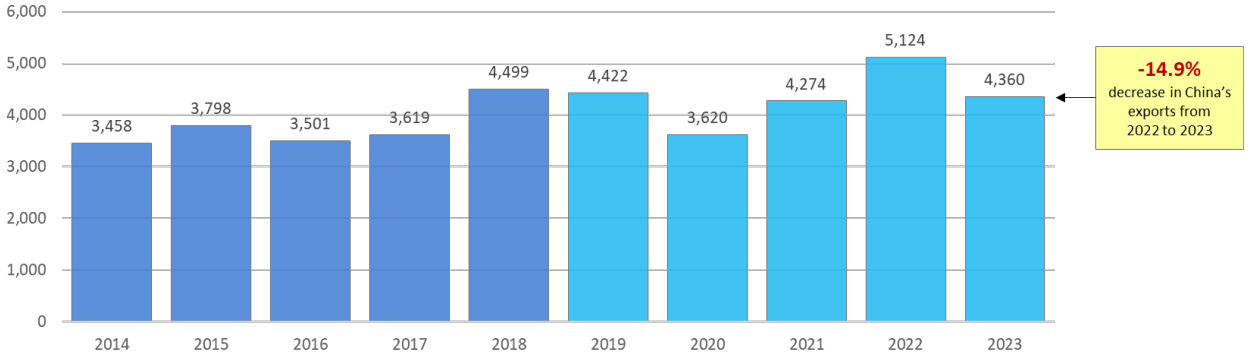
Table D-5 in Appendix D presents data on China's exports of aluminum to the world by HS6 subheading. In 2023, China's top five exports of aluminum to the world by HS6 subheading were:

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$6,956.6	49.3
2	7604.21	Aluminum alloy hollow profiles	$1,856.9	13.2
3	7604.29	Aluminum alloy bars, rods, and profiles (non-hollow)	$1,583.4	11.2
4	7601.11	Aluminum non-alloyed plates, sheets, and strip	$1,106.1	7.8
5	7601.20	Unwrought aluminum alloys	$650.9	4.6
		Subtotal	**$12,153.8**	**86.2**

Figure 4-6 presents China's exports of aluminum by volume from 2014 to 2023.[75] On a quantity basis, China exported 4.4 million metric tons in 2023, a decrease of 14.9% over exports of 5.1 million tons in 2022.[76] Figure 4-7 presents China's exports of aluminum to Mexico and the United States from 2014 to 2023. The figure shows that China's exports of aluminum to Mexico decreased by 17.4% from 2022 to 2023, and its exports to the United States decreased by 41.9% from 2022 to 2023.[77]

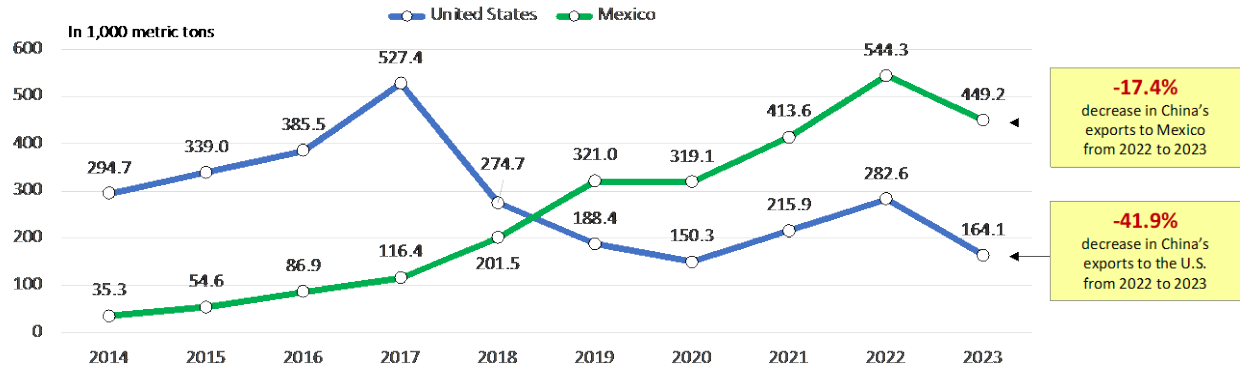
[75] Table D-5 in Appendix D presents data on China's exports of aluminum to the world by HS6 subheading.
[76] Export data comparisons based on quantity across countries are not comparable, as countries report in various quantity measures.
[77] Ibid.

Figure 4-6. Aluminum:[1] China's global exports, 2014–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: China Customs Statistics

Figure 4-7. Aluminum:[1] China's exports to Mexico and the United States, 2014–2023



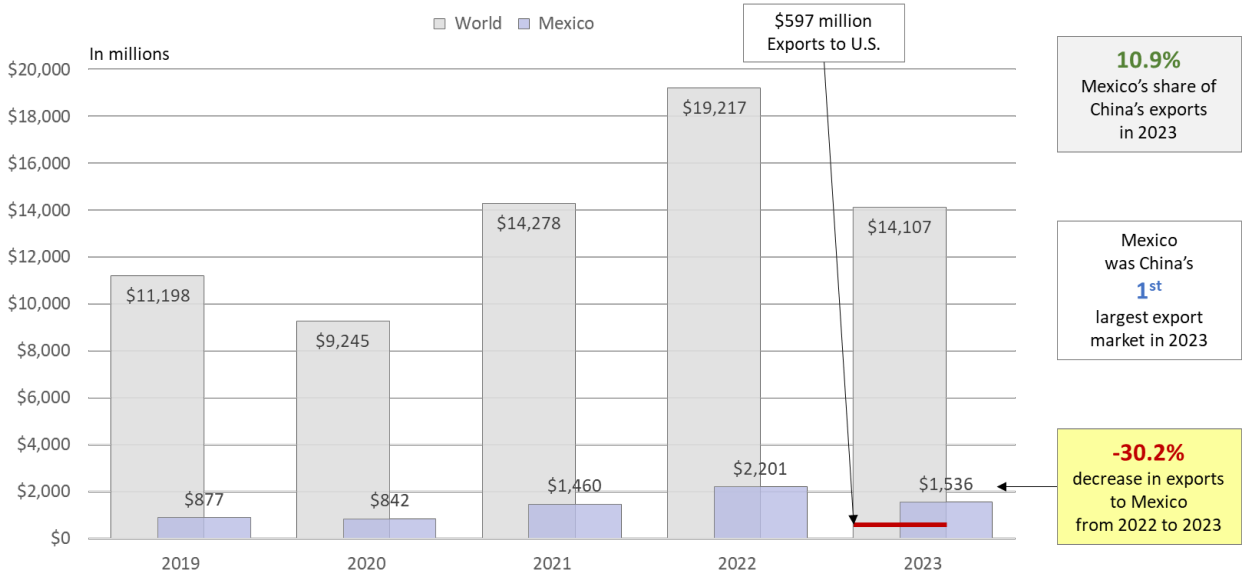
[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: China Customs Statistics

4.3.3 China's Exports to Mexico

Figure 4-8 presents China's exports of aluminum to Mexico and the world from 2019 to 2023. Mexico was China's largest export market for aluminum in 2023, accounting for 10.9% of China's total exports of aluminum.[78] Exports of aluminum from China to Mexico increased by 75.1% from 2019 to 2023 but decreased by 30.2% from 2022 to 2023.[79,80]

[78] Table D-3 in Appendix D presents data on China's exports of aluminum to the world by market from 2019 to 2023. Table D-7 in Appendix D presents data on China's exports of aluminum to Mexico by HS6 subheading from 2019 to 2023.
[79] Mexico National Institute of Statistics, Ministry of Economy. Trade data based on value are presented because data based on quantity are not comparable across different product types, since quantities may be reported as tons, pieces, number, square meters, or sets.
[80] Table D-3 in Appendix D presents data on China's exports of aluminum to the world by market from 2018 to 2022.

Figure 4-8. Aluminum:[1] China's exports to Mexico and the world, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: China Customs Statistics

In 2023, China's top five exports of aluminum to Mexico by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$1,113.6	72.5
2	7608.20	Aluminum alloy tube and pipes	$81.0	5.3
3	7604.21	Aluminum alloy hollow profiles	$77.1	5.0
4	7604.29	Aluminum alloy bars, rods, and profiles	$77.1	5.0
5	7619.20	Unwrought aluminum alloys	$58.5	3.8
		Subtotal	**$1,407.2**	**91.6**

4.3.4 China's Aluminum Export Tariffs to Mexico

In January 2023, China raised its export tariff on primary aluminum from 15% to 30%. China also raised the export tariff on unwrought aluminum alloy from 0% to 15%. Export tariffs on value-added (processed) aluminum products were unaffected. The stated purpose for the increase in export tariffs was to balance domestic demand and supply and encourage exports of value-added aluminum products.[81] Appendix D presents data on Mexico's aluminum exports to the world and the United States.

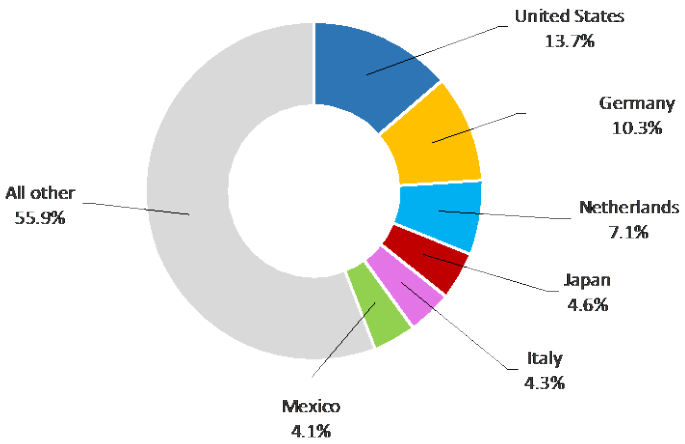
[81] *China hikes aluminum tariffs but export boom already over.* (2023, January 30). Reuters. Accessed October 15, 2023, https://www.reuters.com/markets/commodities/china-hikes-aluminium-tariffs-export-boom-already-over-2023-01-30/.

4.4 Imports of Aluminum

4.4.1 Global Imports of Aluminum

Figure 4-9 presents the leading sources of global imports of aluminum in 2022 (latest comparative data available).[82] The leading importers were the United States, Germany, the Netherlands, Japan, Italy, and Mexico. Global imports of aluminum increased by 43.0% from 2018 to 2022, from $120.2 billion USD in 2018 to $171.9 billion USD in 2022.[83] Aggregated global import data based on quantity are not available, as countries report in various quantity measures such as tons, pieces, number, square meters, or sets; therefore, value data are presented.

Figure 4-9. Aluminum:[1] Leading global importers, by market-based on value, 2022



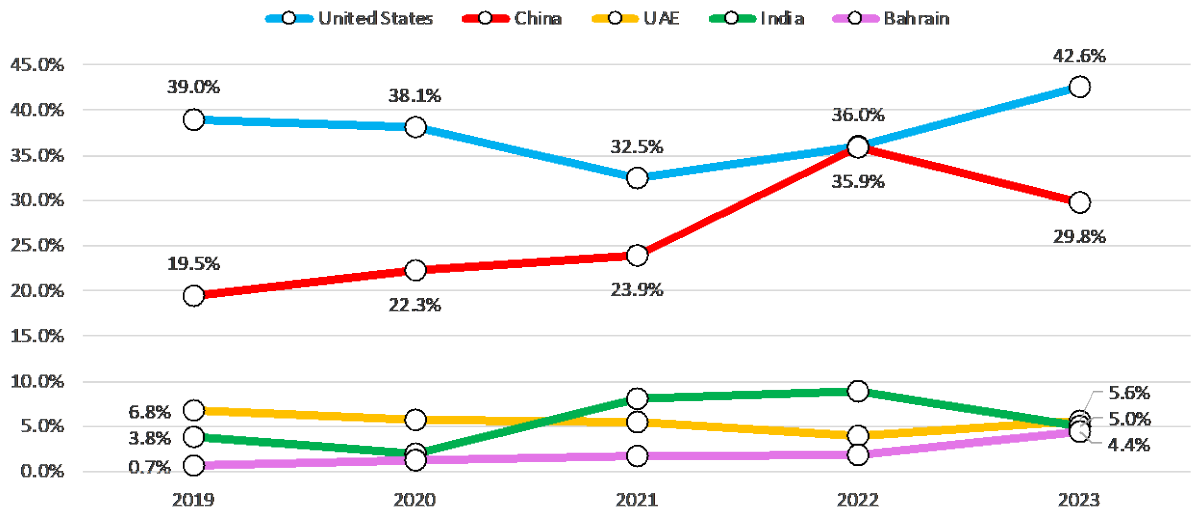
[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: Trade Data Monitor.

4.4.2 Mexico's Imports from the World

Figure 4-10 presents Mexico's imports of aluminum by source from 2019 to 2023.[84] Mexico was the sixth largest importer of aluminum in 2022 (latest comparative year available), accounting for 4.1% of global imports. Mexico imported $5.4 billion USD of aluminum in 2023, a decrease of 24.3% over imports of $7.1 billion USD in 2022.[85] On a quantity basis, Mexico imported 1.8 million metric tons in 2023, a decrease of 12.5% over imports of 2.1 million tons in 2022.[86]

[82] Table E-1 in Appendix E presents data on global imports of aluminum by market from 2018 to 2022.
[83] Trade Data Monitor. Note that global import and global export data do not exactly match, as these are based on distinct data sets with differences in collection and reporting by different customs authorities and official statistical reporting agencies.
[84] Table E-3 in Appendix E presents data on Mexico's imports of aluminum by source from 2018 to 2022.
[85] Trade Data Monitor.
[86] Import data comparisons based on quantity across countries are not comparable, as countries report in various quantity measures.

Figure 4-10. Aluminum:[1] Mexico's leading import sources, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: Mexico National Institute of Statistics, Ministry of Economy

In 2023, Mexico's top five imports of aluminum from the world by HS6 subheading[87] were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$2,401.6	44.7
2	7601.20	Unwrought aluminum alloys	$1,353.7	25.2
3	7604.29	Aluminum alloy bars, rods, and non-hollow profiles	$453.1	8.4
4	7601.10	Unwrought non-alloyed aluminum	$313.9	5.8
5	7608.20	Aluminum alloy tubes and pipes	$205.5	3.8
		Subtotal	**$4,727.80**	**88.0**

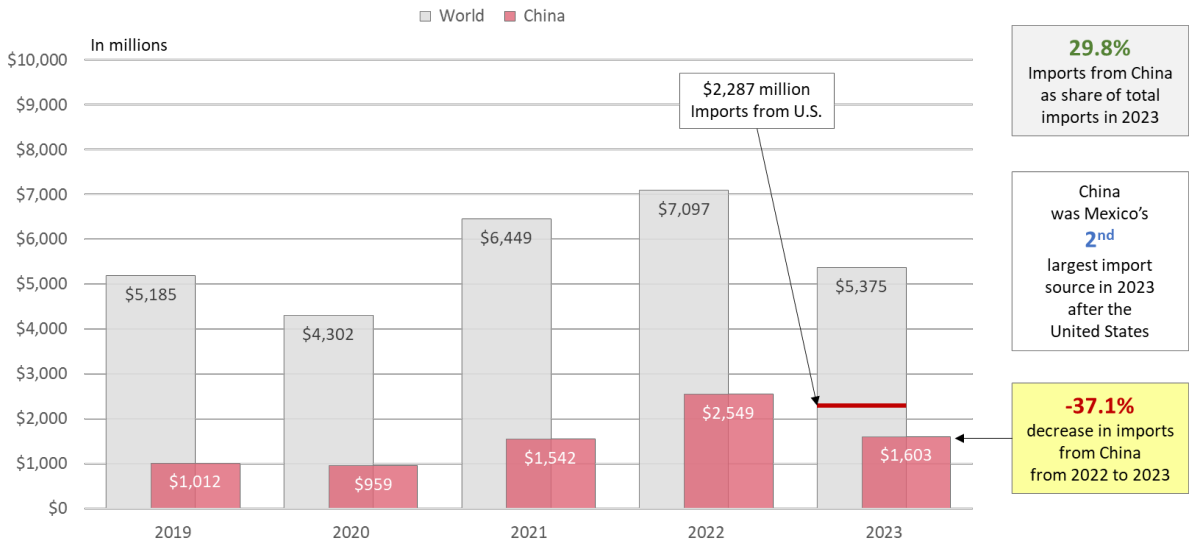
4.4.3 Mexico's Imports from China

China was Mexico's second-largest import source of aluminum in 2023.[88] Appendix E presents further data on Mexico's imports of aluminum from the United States. Mexico's imports of aluminum from China increased by 58.4% from 2019 to 2023 but decreased by 37.1% from 2022 to 2023.[89] Figure 4-11 presents Mexico's imports of aluminum from China and the world from 2019 to 2023. China's share of Mexico's imports of aluminum increased from 19.5% in 2019 to 29.8% in 2023.[90] The substantial increase in Mexico's imports of aluminum from China signifies a growing dependency on Chinese

[87] Table E-3 in Appendix E presents data on Mexico's imports of aluminum by source from 2018 to 2022.
[88] Table E-3 in Appendix E presents data on Mexico's imports of aluminum from China from 2019 to 2023.
[89] Trade data based on value are presented because data based on quantity are not comparable across different product types, since quantities may be reported as tons, pieces, number, square meters, or sets.
[90] Mexico National Institute of Statistics, Ministry of Economy

aluminum. This heightened reliance suggests that any forced labor risks in China's aluminum production could potentially expose Mexico to such risks.

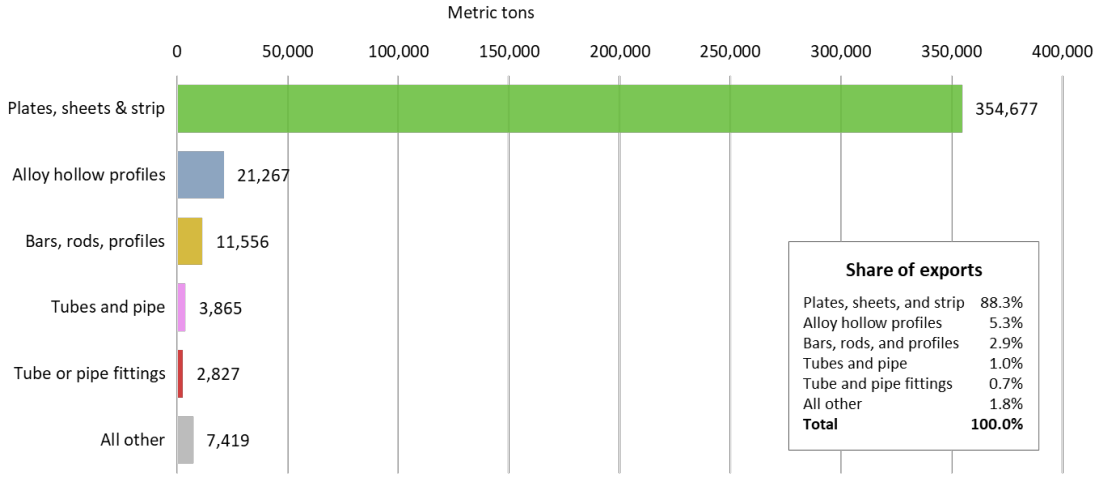
Figure 4-11. Aluminum:[1] Mexico's imports from China and the world, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure 4-12 presents Mexico's imports of aluminum from China by product type in 2023. Mexico imported 401,611 metric tons of aluminum from China in 2023. Plates, sheets, and strip accounted for 88.3% of imports of aluminum from China, followed by alloy hollow profiles (5.3%), bars, rods and profiles (2.9%), tubes and pipe (1%), tube and pipe fittings (0.7%), and all other (1.8%).[91] Table E-7 in Appendix E presents data on Mexico's imports of aluminum from China by HS6 subheading.

Figure 4-12. Aluminum:[1] Mexico's imports from China, by product type, 2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: Mexico National Institute of Statistics, Ministry of Economy

[91] Ibid.

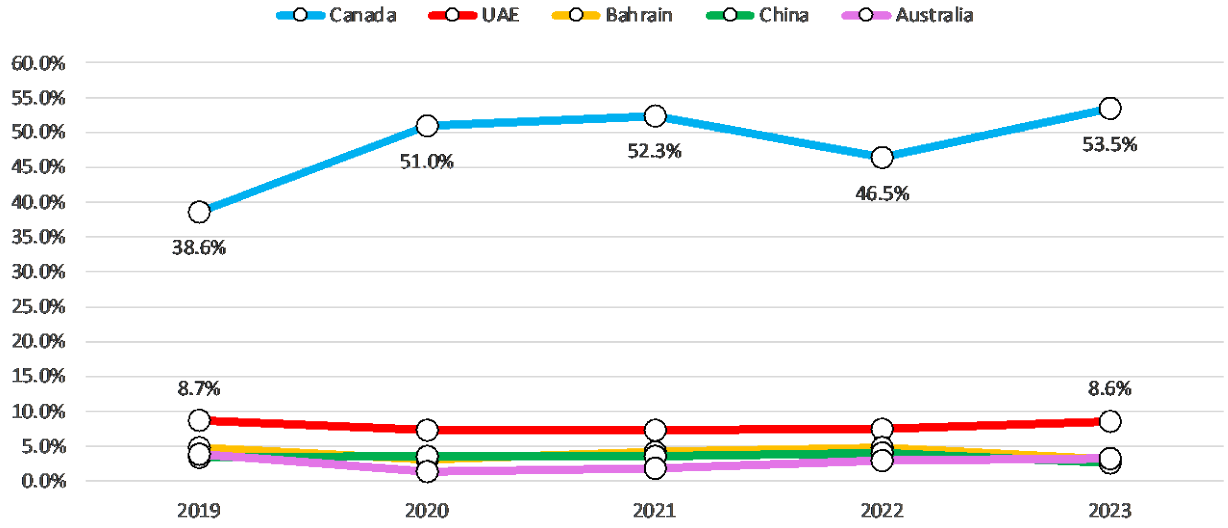
In 2023, Mexico's top five imports of aluminum from China by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$1,321.6	82.5
2	7604.21	Aluminum alloy hollow profiles	$84.9	5.3
3	7604.29	Aluminum alloy bars, rods, and non-hollow profiles	$49.5	3.1
4	7609.00	Aluminum tube or pipe fittings	$40.7	2.5
5	7606.11	Aluminum non-alloyed plates, sheets, and strip	$29.7	1.9
		Subtotal	**$1,526.5**	**95.3**

4.4.4 U.S. Imports of Aluminum from the World

Figure 4-13 presents the leading U.S. import sources from 2019 to 2023[92]. In 2023, the leading U.S. import sources for aluminum were Canada (53.5% share), United Arab Emirates (8.6%), Australia (3.3%), Bahrain (3.1%), and South Africa (3%). China fell from the fourth leading import source in 2022 (4.0% share) to the sixth leading import source in 2023 (2.7%). The United States imported 5.5 million metric tons of aluminum valued at $9.2 billion USD from Canada in 2023.[93]

Figure 4-13. Aluminum:[1] United States' leading import sources, 2019–2023



UAE=United Arab Emirates
[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: U.S. Census Bureau

[92] Table E-11 in Appendix E presents data on U.S. imports of aluminum by source from 2018 to 2022.
[93] U.S. Census Bureau, U.S. Department of Commerce

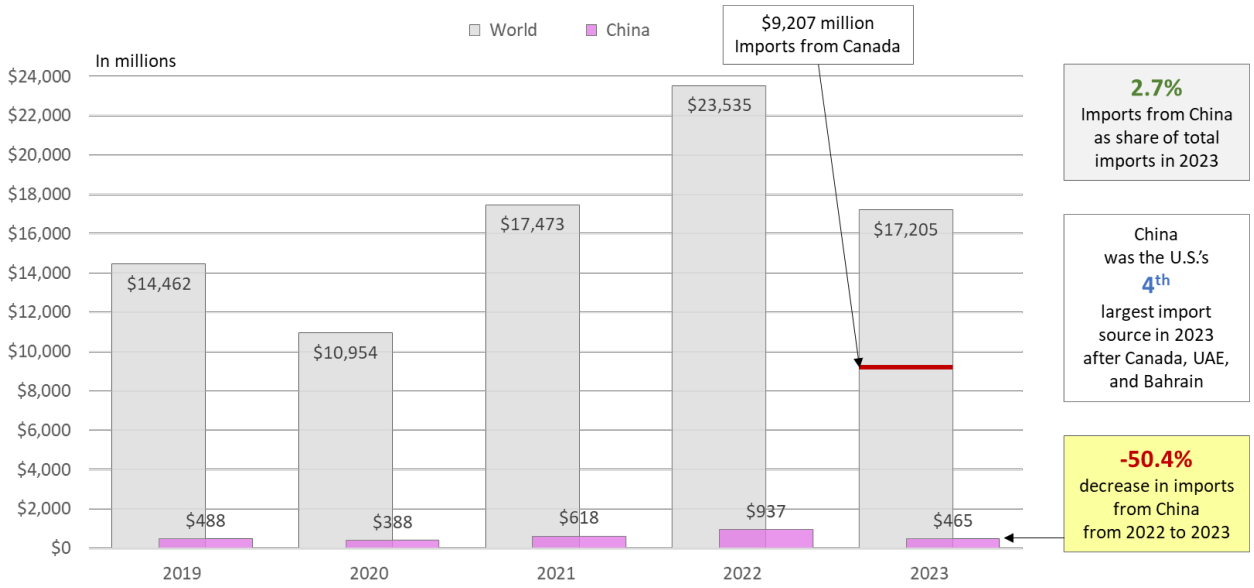
In 2023, the United States' top five imports of aluminum from the world by HS6 subheading[94] were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	7601.10	Unwrought non-alloyed aluminum	$6,351.1	36.9
2	7601.20	Unwrought aluminum alloys	$5,228.7	30.4
3	7606.12	Aluminum alloy plates, sheets, and strip	$2,707.1	15.7
4	7604.29	Aluminum alloy bars, rods, and non-hollow profiles	$808.5	4.7
5	7604.21	Aluminum alloy hollow profiles	$741.1	4.3
		Subtotal	**$15,836.50**	**92.0**

4.4.5 U.S. Imports from China

Figure 4-14 presents U.S. imports of aluminum from China and the world from 2019 to 2023. China was the United States' fourth largest import source of aluminum, accounting for 2.7% of U.S. imports in 2023.[95] The United States imported 131,939 metric tons of aluminum valued at $465 million USD from China in 2023.[96]

Figure 4-14. Aluminum:[1] U.S. imports from China and the world, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: U.S. Census Bureau

[94] Table E-11 in Appendix E presents data on U.S. imports of aluminum by source from 2018 to 2022.
[95] U.S. Census Bureau, U.S. Department of Commerce
[96] Import data comparisons based on quantity across countries are not comparable, as countries report in various quantity measures. Therefore, value data are presented in multiple country comparisons.

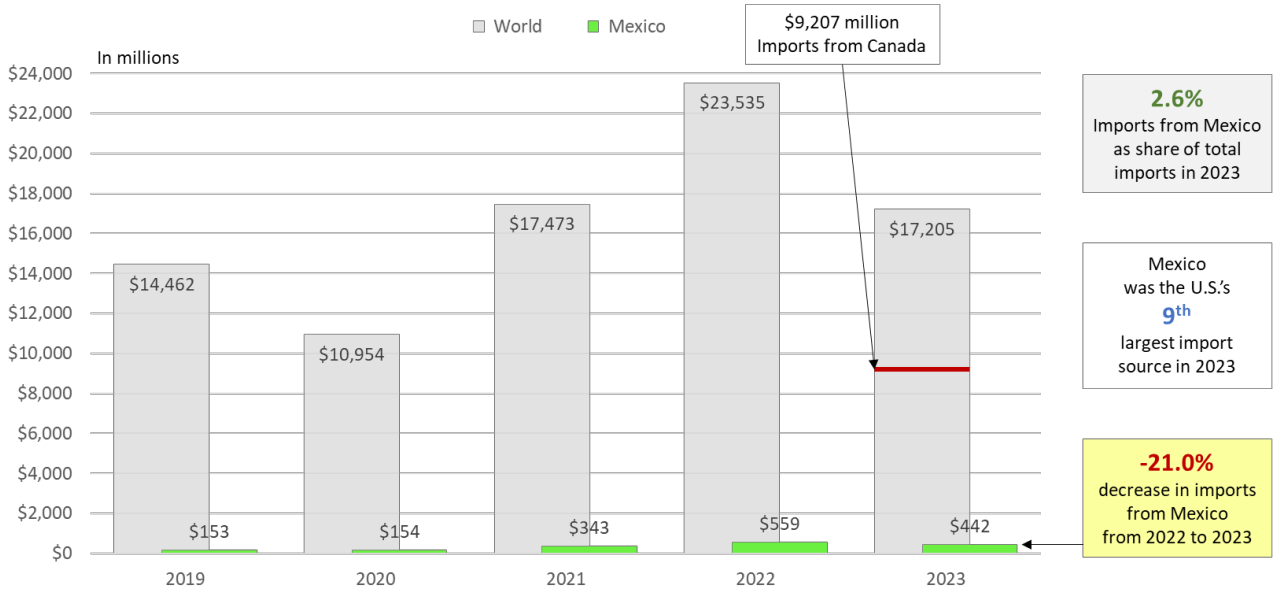
In 2023, the United States' top five imports of aluminum from China by HS6 subheading[97] were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$373.4	80.3
2	7609.00	Aluminum tube or pipe fittings	$36.6	7.9
3	7604.29	Aluminum alloy bars, rods, non-hollow profiles	$10.2	2.2
4	7606.11	Aluminum non-alloyed plates, sheets, and strip	$8.6	1.9
5	7604.21	Aluminum alloy profiles	$6.3	1.4
		Subtotal	**$435.1**	**93.6**

4.4.6 U.S. Imports from Mexico

Figure 4-15 presents U.S. imports of aluminum from Mexico and the world from 2019 to 2023. Mexico was the ninth largest import source of aluminum, accounting for 2.6% of U.S. imports in 2023. The United States imported 102,175 metric tons of aluminum valued at $442 million USD from Mexico in 2023, which was a 21% decrease from the 109,976 metric tons and $559 million USD of imports of aluminum from Mexico in 2022.[98]

Figure 4-15. Aluminum:[1] U.S. imports from Mexico and the world, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: U.S. Census Bureau

[97] Table E-15 in Appendix E presents data on U.S. imports of aluminum from the world by HS6 subheading.
[98] U.S. Census Bureau, U.S. Department of Commerce. Import data comparisons based on quantity across countries are not comparable, as countries report in various quantity measures.

In 2023, the United States' top five imports of aluminum from Mexico by HS6 subheading[99] were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	7604.29	Aluminum alloy bars, rods, and non-hollow profiles	$128.4	29.1
2	7601.20	Unwrought aluminum alloys	$108.4	24.5
3	7604.21	Aluminum alloy hollow profiles	$96.9	21.9
4	27608.20	Aluminum alloy tubes and pipes	$78.3	17.7
5	7609.00	Aluminum tube or pipe fittings	$15.1	3.4
		Subtotal	**$427.0**	**96.7**

5. Supply Chains for Aluminum Auto Parts

Building on Section 4, which discussed the supply chains for aluminum, this section presents data and analysis on production, exports, and imports of aluminum-intensive auto parts ("auto parts"), which account for approximately 13–17% of total auto parts,[100] while aluminum parts content on vehicles is approximately 12% of vehicle weight.[101] Because of limitations in HS classifications, the data presented for auto parts may include products composed of steel or other materials. Trade data for the XUAR or other subnational regions are not available. Appendix D presents data tables on exports of aluminum and auto parts from the world, China, and Mexico. Appendix E presents data tables on imports of aluminum and auto parts for the world, Mexico, and the United States. Appendix F presents figures on Mexico's imports of specific auto parts.

5.1 Auto Parts Production

5.1.1 Auto Parts Production in XUAR

Over the last decade, China has been investing considerable resources to build the XUAR into a major hub of automotive materials mining and processing and auto parts manufacturing. The Made in China 2025 Xinjiang Action Plan, released in 2015, identifies the Chinese government's specific ambitions to expand the automotive industry in the XUAR to make automotive parts brands into national and internationally recognized brands.[102] China's top 100 auto parts manufacturers nationwide have a market capitalization of $150 billion USD.[103]

[99] Table E-17 in Appendix E presents data on U.S. imports of aluminum from Mexico by HS6 subheading.
[100] Calculation based on Mexico's imports of total auto parts and aluminum-intensive auto parts from China from 2019 to 2023. For complete good specifications, refer to Section 3, Product Scope and Goods Specifications.
[101] Ducker Research & Consulting, Light Vehicle Aluminum Content and Outlook Study, April 2023. Accessed October 8, 2023, https://drivealuminum.org/wp-content/uploads/2023/05/Ducker-ATF-2023-Summary-Report-April-2023.pdf.
[102] XUAR and the Auto Industry. (n.d.). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region,* Sheffield Hallam University. Accessed October 15, 2023, https://www.shuforcedlabour.org/drivingforce/xuar.
[103] Top 130 Largest Chinese Companies in the Auto Parts industry by Market Cap, Disfold. Accessed October 15, 2023, https://disfold.com/china/industry/auto-parts/companies/?page=1.

As mentioned previously, a December 2022 study produced by Sheffield Hallam University identified nearly 100 automotive industry-relevant companies operating in the XUAR.[104] The study provides an interactive website that identifies the relationships between XUAR auto parts manufacturers and Chinese and global automakers.[105] The Sheffield Hallam investigation identifies more than 70 auto parts manufacturers in the XUAR, with at least 38 engaging in state-sponsored labor transfer program with extensive relationships with Chinese and global automakers.[106] Figure 5-1 presents a map of these companies; however, it presents only a partial list of auto parts manufacturers.[107]

In addition, according to a former senior auto purchasing executive, the XUAR is a relatively newer area of increased aluminum and auto parts production in China and appears to be its fastest growing industrial region for these products (from a low base). The development of XUAR production coincides with the substantial increase in China's domestic auto parts and vehicle production. According to the same source, much of the auto parts and finished vehicles are sold in China's domestic market.

However, the *Asleep at the Wheel* report notes that, unlike other regions in China, the XUAR has limited capability to refine aluminum produced by smelters into more refined alloys or to manufacture semi-finished products like aluminum sheet or foil, which are essential for industries such as car manufacturing. Consequently, the majority of aluminum produced in Xinjiang is transported to other provinces in China in the form of "unalloyed" ingots—blocks of raw aluminum metal that can be melted again to create specific alloys as needed.[108]

[104] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. Accessed October 15, 2023, https://www.shuforcedlabour.org/drivingforce/. See Annex A, Automotive Industry-Relevant Companies Operating in the Uyghur Region, https://www.shu.ac.uk/-/media/home/research/helena-kennedy-centre/projects/drivinF-force/annex-a----cos-operatinF-in-uyghur-region.pdf.

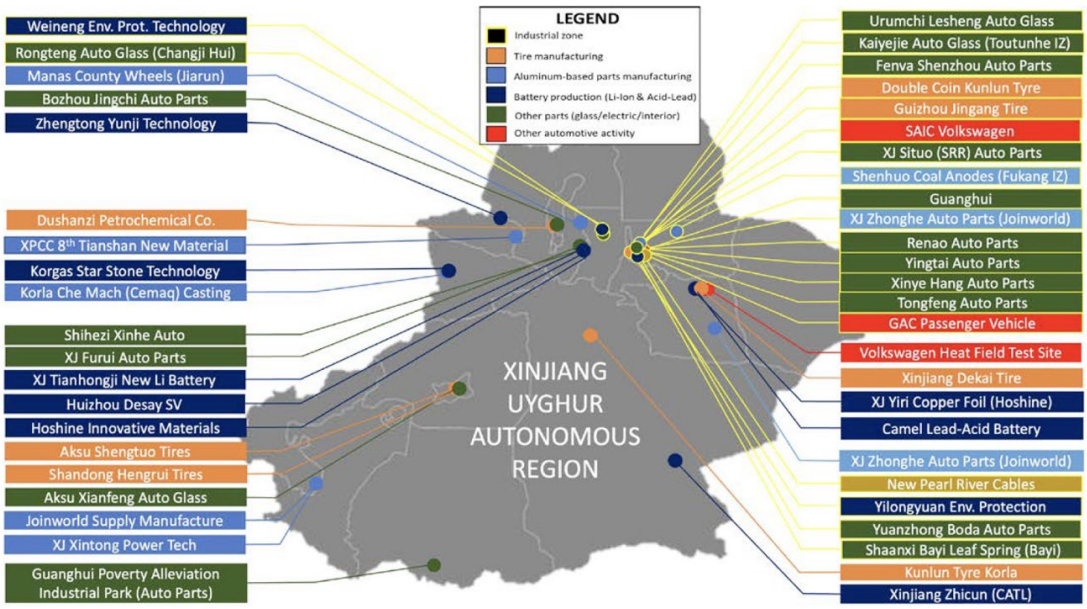
[105] Ibid. See interactive supply chain infographic. Accessed October 15, 2023, https://www.shuforcedlabour.org/drivingforce/sankey/.

[106] Ibid.

[107] Ibid. Full list of companies is available on the "Driving Force" interactive website. Accessed October 15, 2023, https://www.shuforcedlabour.org/drivingforce/companies/.

[108] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleepwheel/car-companies-complicity-forced-labor-china

Figure 5-1. Auto parts: Map of companies producing auto parts in the XUAR



Source: *Driving Force, Automotive Supply Chains and Forced Labor in the Uyghur Region,* Sheffield Hallam University, December 2022, p. 8 (Figure 2)

5.1.2 Mexico's Production of Auto Parts

Mexico is now the fourth largest global producer of auto parts, surpassing Germany in 2022. The auto parts industry accounts for 7.7% of Mexico's manufacturing gross domestic product, and Mexico exports 86% of its auto parts production.[109] Mexico produced $106.7 billion USD of auto parts in 2022, an increase of 12.7% from production of $104.8 billion USD in 2021. Auto parts production is estimated to increase to $108.9 billion USD in 2023 and $110 billion USD in 2024. The automotive sector accounted for 29.1% of Mexico's exports in 2022.[110] Mexico's imports of aluminum and aluminum-intensive auto parts from China represented approximately 6.3% of the value of Mexico's auto parts production in 2022.[111]

5.1.3 Mexico's Consumption of Auto Parts

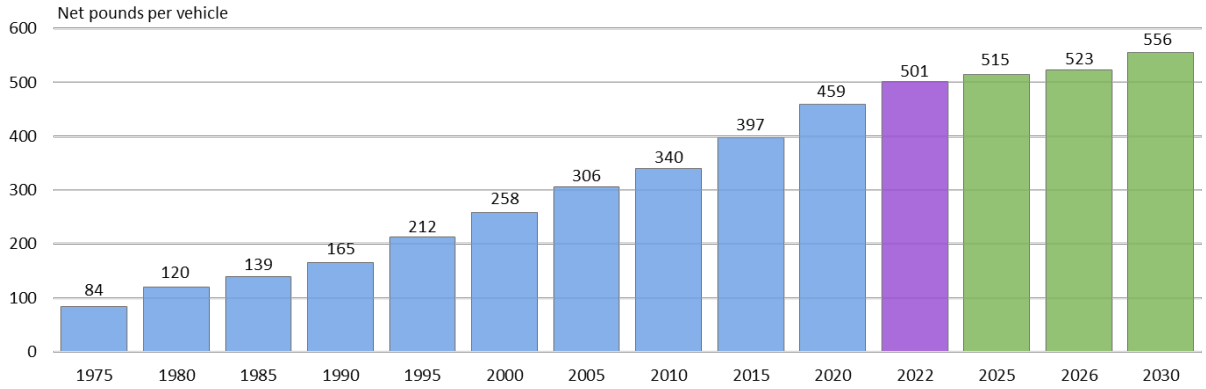
According to Ducker Research & Consulting, an average of 501 pounds of aluminum content was in North American-built light vehicles in 2022, and that amount is expected to increase to 556 pounds by 2030.[112] Figure 5-2 presents the average aluminum content per North American-built vehicle from 1975 to 2030.

[110] Aftermarket International. *INA announced historical record in the production of auto parts in Mexico*. (2022). Accessed September 17, 2023, https://www.aftermarketinternational.com/en/202212137436/news/ina-announced-historical-record-in-the-production-oE-auto-parts-in-mexico.html.

[111] Calculation based on $106.7 billion in Mexican auto parts production divided by $6.74 billion of aluminum and aluminum-intensive auto parts imports ($2.55 billion of aluminum plus $4.2 billion of aluminum-intensive auto parts).

[112] Ducker Research & Consulting, (2023). *Light Vehicle Aluminum Content and Outlook Study.* Accessed October 8, 2023, https://drivealuminum.org/wp-content/uploads/2023/05/Ducker-ATF-2023-Summary-Report-April-2023.pdf.

Figure 5-2. Auto parts: Average aluminum content per North American-built vehicle, 1975–2030



Source: Ducker Research & Consulting. *Light Vehicle Aluminum Content and Outlook Study.* (2023). https://drivealuminum.org/wp-content/uploads/2023/05/Ducker-ATF-2023-Summary-Report-April-2023.pdf.

Mexico produced 3,509,072 light vehicles in 2022.[113] Using an average of 501 pounds of aluminum content per vehicle, Mexico's consumption of aluminum used in the production of new light vehicles would be approximately 1.76 billion pounds or 879,000 tons. In addition, Mexico imported 541,137 metric tons of aluminum from China in 2022. Although there are various uses for imported aluminum, this would be equivalent to the approximate aluminum content in 2.2 million vehicles if all imported aluminum from China was used exclusively for auto parts.

The United States produced 10,060,339 light vehicles in 2022.[114] Therefore, U.S. consumption of aluminum used in the production of new light vehicles would be approximately 5.04 billion pounds or 2.52 million tons.

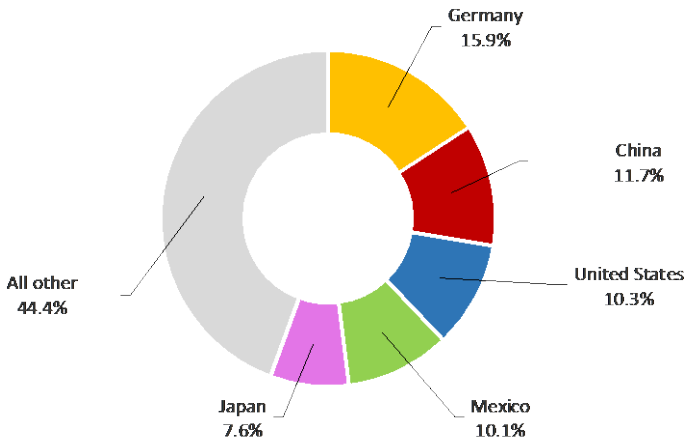
5.2 Exports of Auto Parts

5.2.1 Global Exports of Auto Parts

Figure 5-3 presents the leading sources of global exports of auto parts in 2022 (latest comparative data available).[115] The leading exporters were Germany, China, the United States, Mexico, and Japan. Global exports of auto parts decreased by 4.0% from 2018 to 2022, from $453.9 billion USD in 2018 to $436.0 billion USD in 2022.[116] Aggregated global export data based on quantity are not available because of the complex mix of parts; therefore, value data are presented.

[113] Motor Vehicle Production by Country Comparison, CEIC Data, ISI Emerging Markets Group. Accessed October 8, 2023, https://www.ceicdata.com/en/indicator/united-states/motor-vehicle-production.
[114] Ibid.
[115] Table D-2 in Appendix D presents data on global exports of auto parts by source from 2018 to 2022.
[116] Trade Data Monitor.

Figure 5-3. Auto parts:[1] Leading global exporters, by source based on value, 2022



[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Trade Data Monitor.

In 2021 (the latest data available), the top five global exports of auto parts by HS6 subheading were as follows:

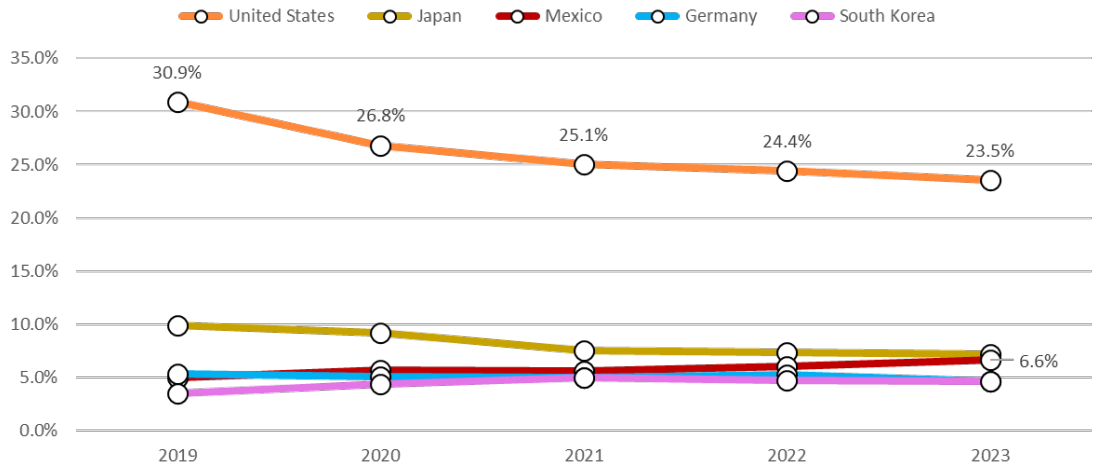
Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	8708.29	Parts of bodies	$93,485.7	17.0
2	8708.40	Gearboxes (transmissions)	$90,157.4	16.4
3	8407.34	Engines (spark-ignition over 1,000cc)	$44,074.8	8.0
4	8408.20	Engines (compression-ignition)	$43,901.0	8.0
5	8409.99	Engine parts (compression-ignition)	$41,086.9	7.5
		Subtotal	**$312,705.8**	**56.9**

5.2.2 China's Exports of Auto Parts to the World

Figure 5-4 presents China's leading auto parts export markets from 2019 to 2023.[117] The United States was China's leading export market, accounting for 23.5% of its global exports in 2023, a decrease from 30.9% in 2019. Mexico accounted for 6.6% of China's auto parts exports in 2023, an increase from the 5.0% share in 2019.

[117] Table D-4 in Appendix D presents data on China's exports by market of auto parts to the world from 2019 to 2023.

Figure 5-4. Auto parts:[1] China's leading export markets, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: China Customs Statistics

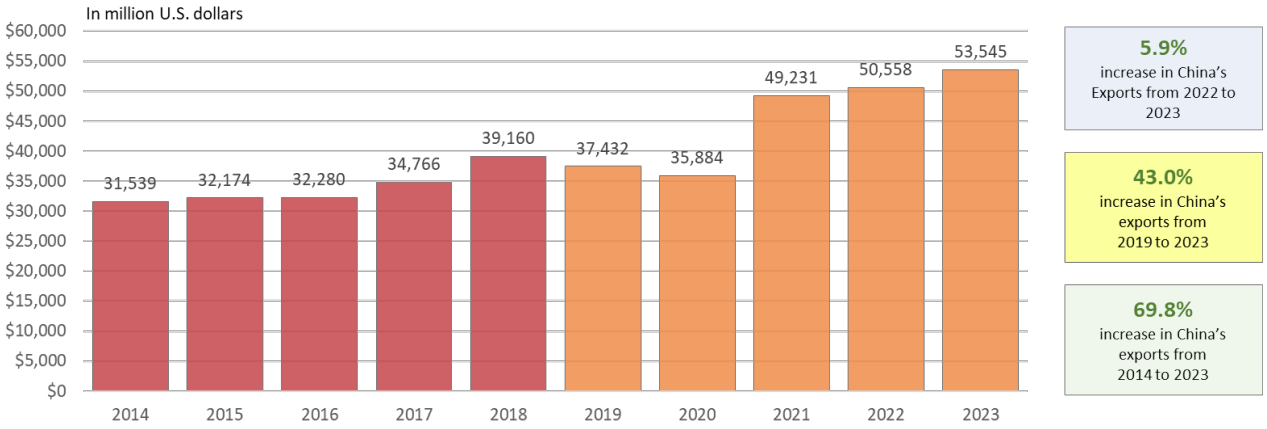
In 2023, China's top five exports of auto parts to the world by HS6 subheading[118] were as follows:

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	8708.29	Parts of bodies	$8,624.7	16.1
2	8708.30	Brakes	$7,527.5	14.1
3	8408.70	Road wheels	$6,715.4	12.5
4	8409.91	Engines parts (spark-ignition)	$5,085.1	9.5
5	8708.80	Suspensions	$4,459.8	8.3
		Subtotal	**$32,412.5**	**60.5**

Figure 5-5 presents China's global exports of auto parts from 2014 to 2023. China's exports of auto parts increased by 43.0% between 2019 to 2023 from $37.4 billion USD in 2019 to $53.5 billion USD in 2023. China was the second largest global exporter of auto parts, accounting for 11.7% of global exports in 2022 after Germany, which accounted for 15.9% of global exports. For comparison, the United States exported $44.9 billion USD of auto parts in 2023 and Japan exported $44.2 billion USD of auto parts.[119]

[118] Table D-6 in Appendix D presents data on China's exports of auto parts by HS6 subheading from 2019 to 2023.
[119] Trade Data Monitor.

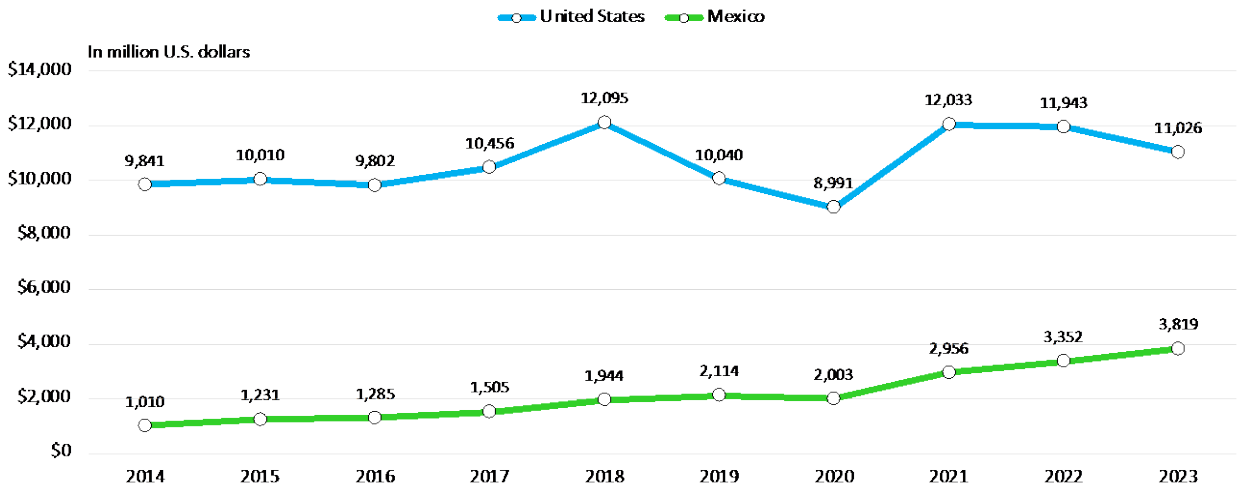
Figure 5-5. Auto parts:[1] China's global exports, 2014–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: China Customs Statistics

Figure 5-6 presents China's exports of auto parts to Mexico and the United States from 2014 to 2023. Although China's exports of auto parts to the United States increased by 9.8% between 2019 to 2023, from $10 billion USD in 2019 to $11.0 billion USD in 2023, China's exports of auto parts to Mexico increased by 80.7% during this same period, from $2.1 billion USD in 2019 to $3.8 billion USD in 2023.[120] However, it is noteworthy that the United States is still significantly importing large volumes of auto parts directly from China.

Figure 5-6. Auto parts:[1] China's exports to Mexico and the United States, 2014–2023



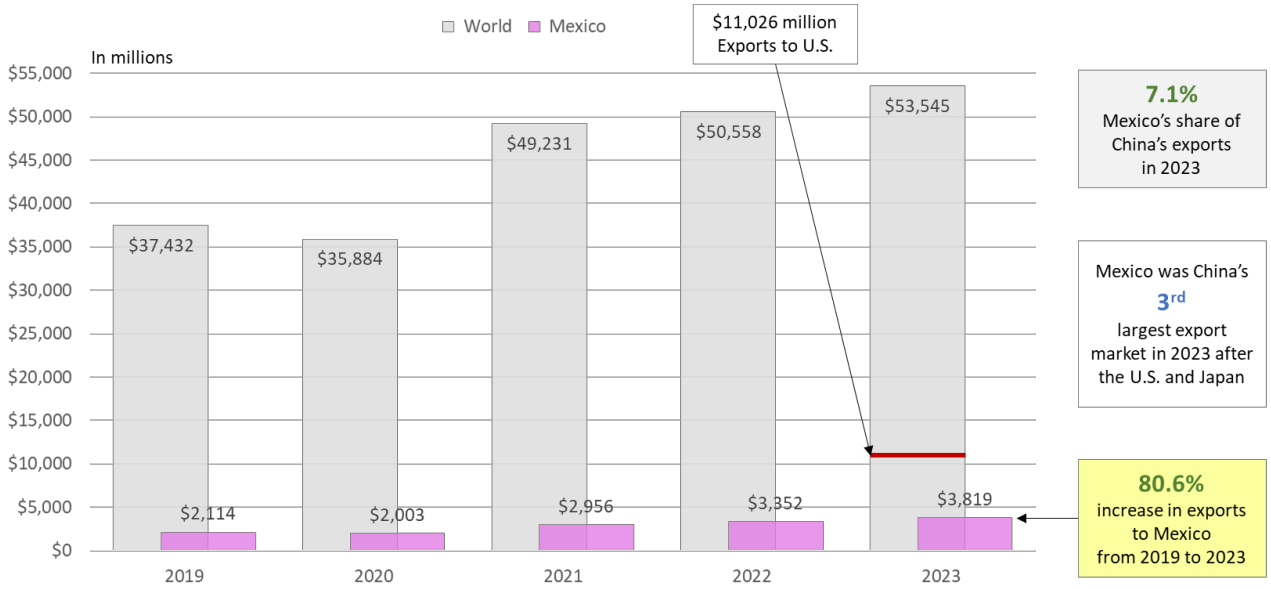
[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: China Customs Statistics

[120] China Customs Statistics

5.2.3 China's Exports to Mexico

Figure 5-7 presents China's exports of auto parts to Mexico and the world from 2019 to 2023. Mexico was China's third largest export market for auto parts in 2023, after the United States and Japan,[121] accounting for 7.1% of China's exports of auto parts. China's exports of auto parts to Mexico increased by 13.9% between 2022 to 2023, from $3.4 billion USD in 2022 to $3.8 billion USD in 2023.[122]

Figure 5-7. Auto parts:[1] China's exports to Mexico and the world, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: China Customs Statistics

In 2022, China's top five exports of auto parts to Mexico by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	8708.29	Parts of bodies	$589.9	17.6
2	8408.70	Road wheels	$567.9	16.9
3	8408.30	Brakes	$456.9	13.6
4	8409.91	Engines parts (spark-ignition)	$378.1	11.3
5	8708.80	Suspensions	$334.4	10.0
		Subtotal	**$2,327.2**	**69.4**

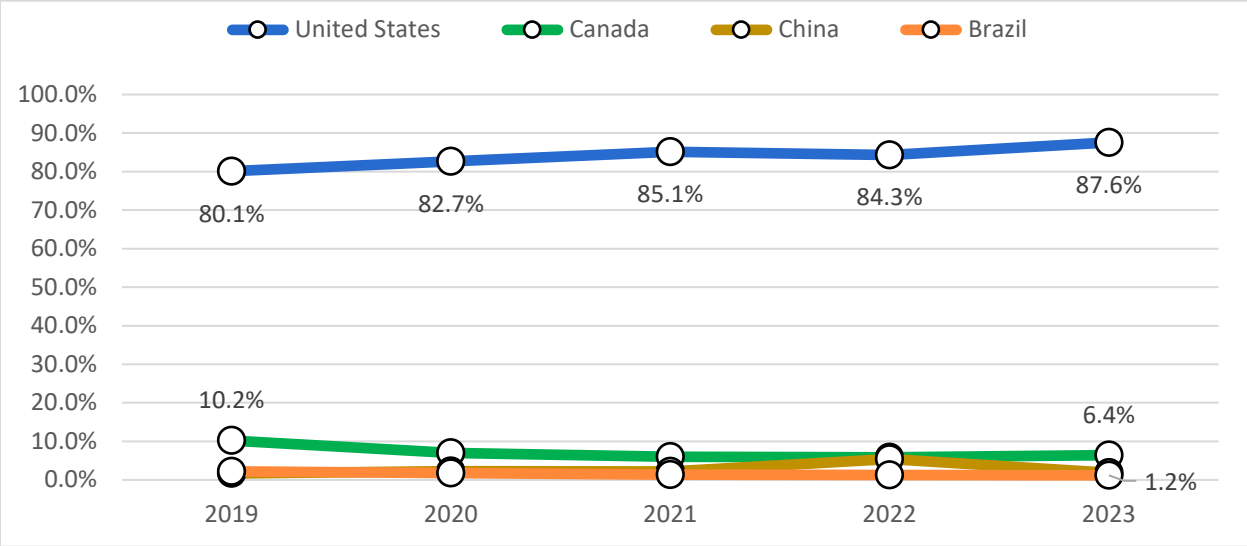
5.2.4 Mexico's Exports to the World

Mexico was the fourth largest global exporter of auto parts in 2023 (latest comparative data available) after Germany, China, and the United States, accounting for 10.1% of global exports. Mexico exported

[121] Table D-6 in Appendix D presents data on China's exports of auto parts by HS6 subheading from 2018 to 2022.
[122] Trade data based on value are presented because data based on quantity are not comparable across different product types, since quantities may be reported as tons, pieces, number, square meters, or sets.

$46.4 billion USD of auto parts in 2023, an increase of 5.1% over exports of $44.28 billion USD in 2022.[123] Figure 5-8 presents Mexico's exports of auto parts by market and market share from 2019 to 2023.[124] The United States was Mexico's largest export market, accounting for 87.6% of Mexico's exports of auto parts in 2023.

Figure 5-8. Auto parts:[1] Mexico's leading export markets, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Table D-12 in Appendix D presents Mexico's exports of auto parts to the world by market from 2019 to 2023. In 2023, Mexico's top five exports of auto parts to the world by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	8708.29	Parts of bodies	$8,721.2	18.8
2	9401.99	Parts of seats	$6,142.3	13.2
3	8408.40	Gearboxes (transmissions)	$5,529.2	11.9
4	8708.30	Brakes	$4,518.2	9.7
5	8409.91	Engine parts (spark-ignition)	$3,719.3	8.0
		Subtotal	**$28,630.3**	**61.7**

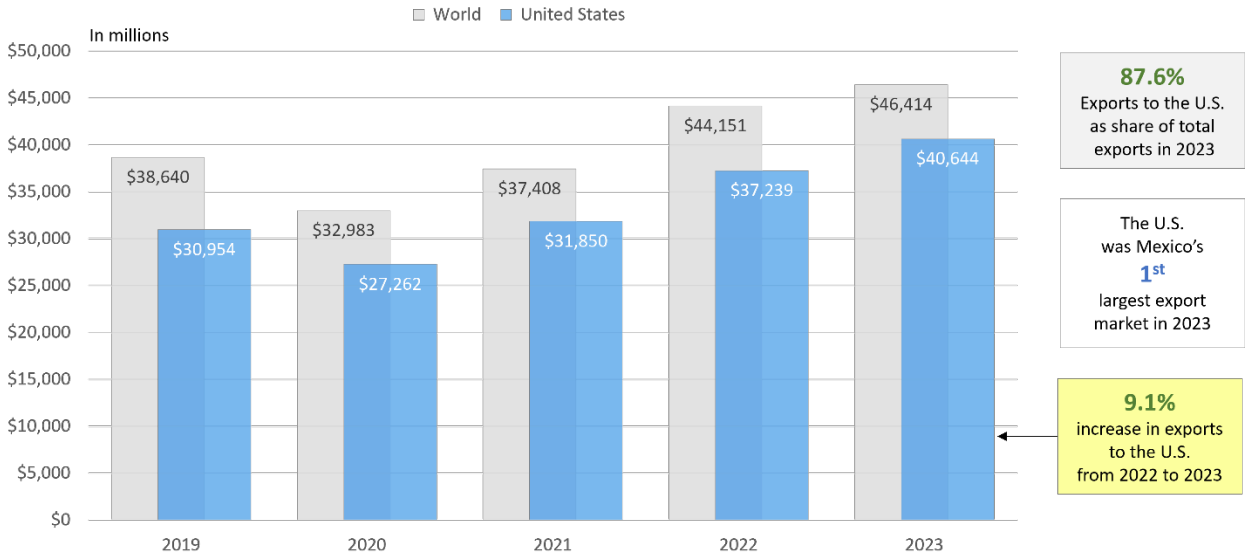
5.2.5 Mexico's Exports to the United States

The United States was Mexico's leading export market for auto parts in 2023, accounting for 87.6% of auto parts exports.[125] Figure 5-9 presents data on Mexico's exports of auto parts to the United States

[123] Trade Data Monitor.
[124] Table D-10 in Appendix D presents Mexico's exports of auto parts to the world by market from 2018 to 2022.
[125] Mexico National Institute of Statistics, Ministry of Economy

and the world from 2019 to 2023.[126] Mexico's exports to the United States increased by 9.1% between 2022 to 2023, from $37.2 billion USD in 2022 to $40.6 billion USD in 2023.[127] In 2023, Mexico exported approximately 10 times the value of auto parts to the United States as it imported from China ($4.4 billion USD).

Figure 5-9. Auto parts:[1] Mexico's exports to the United States and the world, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

In 2023, Mexico's top five exports of auto parts to the United States by HS6 subheading were as follows:

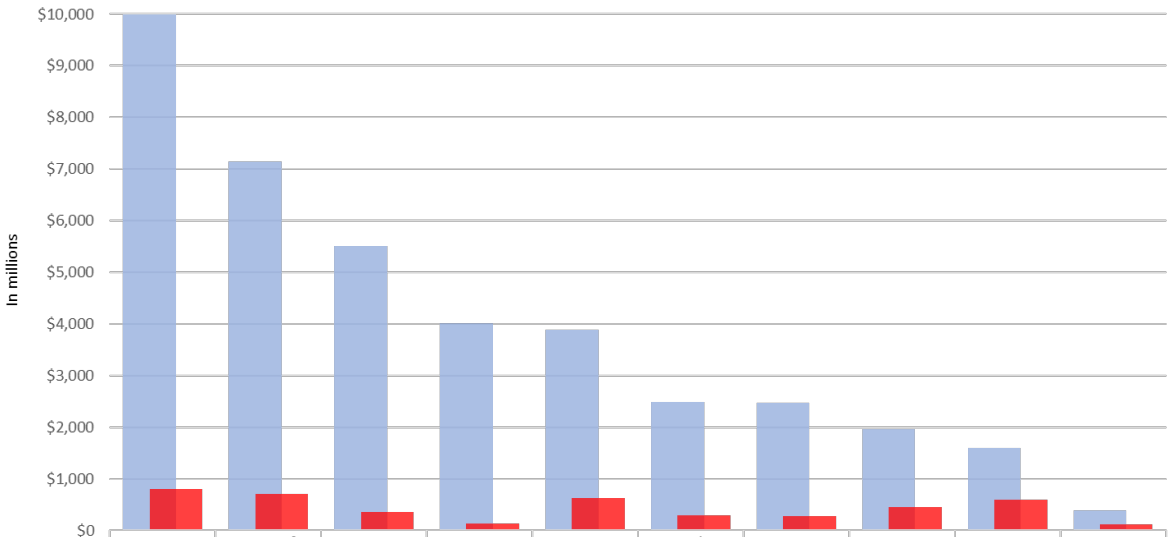
Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	8708.29	Parts of bodies	$7,870.1	19.4
2	9401.99	Parts of seats	$5,753.6	14.2
3	8408.30	Brakes	$4,220.9	10.4
4	8708.40	Gearboxes (transmissions)	$4,213.3	10.4
5	8408.94	Steering systems	$3,048.7	7.5
		Subtotal	**$25,106.6**	**61.8**

Figure 5-10 presents Mexico's imports of auto parts from China and exports to the United States in 2022 by product category. Mexico's leading exports of auto parts are engine parts ($9.9 billion USD), parts of bodies ($7.1 billion USD), and parts of seats ($5.5 billion USD).[128] The figure shows China-sourced auto parts that are typically incorporated into downstream components and then exported from Mexico. However, many of these imported auto parts from China are also incorporated and exported in finished

[126] Table D-14 in Appendix D presents data on Mexico's exports of auto parts to the United State by HS6 subheading from 2018 to 2022.
[127] Mexico National Institute of Statistics, Ministry of Economy
[128] Mexico National Institute of Statistics, Ministry of Economy

vehicles. China is also increasingly exporting semi-finished aluminum products such as plates, sheets, strips, tubes, pipes, bars, rods, and other shapes and forms that are manufactured into auto parts in Mexico and ultimately either exported as downstream parts or incorporated into finished vehicles.

Figure 5-10. Auto parts:[1] Mexico's imports from China and exports to the United States, by product, 2022



	Engines	Parts of bodies	Seats	Gearboxes	Brakes	Steering systems	Drive axles	Suspensions	Road wheels	Radiators
MX exports to U.S.	9,993	7,140	5,506	4,018	3,889	2,490	2,467	1,960	1,589	388
MX imports from China	800	711	356	131	626	300	272	455	595	114

[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts. Not included because of limited production volumes are electric vehicle-specific auto parts such as battery housings, traction motor housings, battery management system/converter housings, and battery cables.
Source: Mexico National Institute of Statistics, Ministry of Economy.

An auto company manager involved the United States-Mexico supply chain said that it is unclear whether imported Chinese auto parts are being incorporated into finished vehicles assembled in Mexico and/or exported to the United States. However, Mexico's substantial imports of auto parts from China pose a risk of forced labor, especially given the integration of these parts into both downstream components and finished vehicles. In addition, the growing export of semi-finished aluminum products from China, further processed in Mexico for auto part manufacturing, amplifies the exposure to forced labor risks throughout the U.S.-Mexico vehicle supply chain.

5.3 Imports of Auto Parts

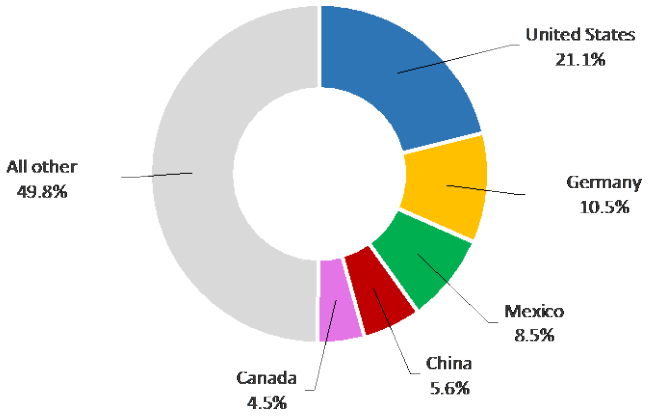
5.3.1 Global Imports of Auto Parts

Figure 5-11 presents the leading sources of global imports of auto parts in 2022 (latest comparative data available).[129] The leading importers were the United States, Germany, Mexico, China, and Canada. Global imports of auto parts decreased by 4.9% from 2018 to 2022, from $456.9 billion USD in 2018 to

[129] Table E-2 in Appendix E presents data on global imports of auto parts by source from 2018 to 2022.

$434.6 billion USD in 2022.[130] Aggregated global export data based on quantity are not available because of the complex mix of parts; therefore, value data are presented.

Figure 5-11. Auto parts:[1] Leading global importers, by market based on value, 2022



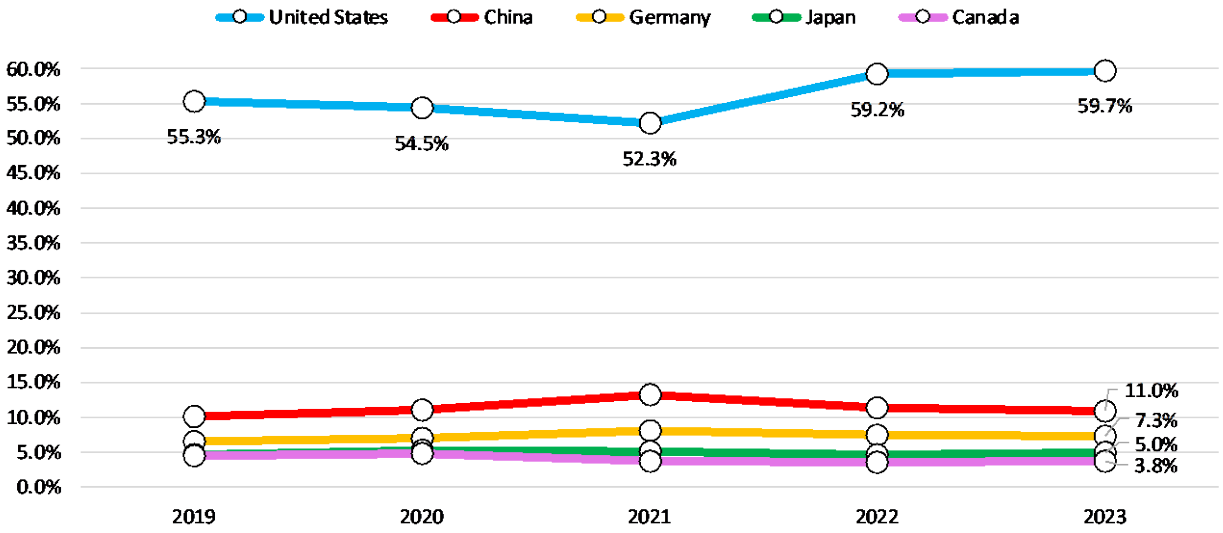
[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Trade Data Monitor.

5.3.2 Mexico's Imports from the World

Figure 5-12 presents Mexico's imports of auto parts by source from 2019 to 2023.[131] Mexico imported $39.8 billion USD of auto parts in 2023, an increase of 7.6% over imports of $37.0 billion USD in 2022.[132] Mexico's imports of auto parts increased by 74.7% from 2019 to 2023.[133]

[130] Trade Data Monitor.
[131] Table E-4 in Appendix E presents data on Mexico's imports of auto parts from the world by source from 2018 to 2022.
[132] Mexico National Institute of Statistics, Ministry of Economy
[133] Import data comparisons based on quantity across countries are not comparable, as countries report in various quantity measures.

Figure 5-12. Auto parts: [1] Mexico's leading import sources, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Table E-6 in Appendix E presents data on Mexico's imports of auto parts from the world by HS6 subheading. In 2022, Mexico's top five imports of auto parts from the world by HS6 subheading were as follows:

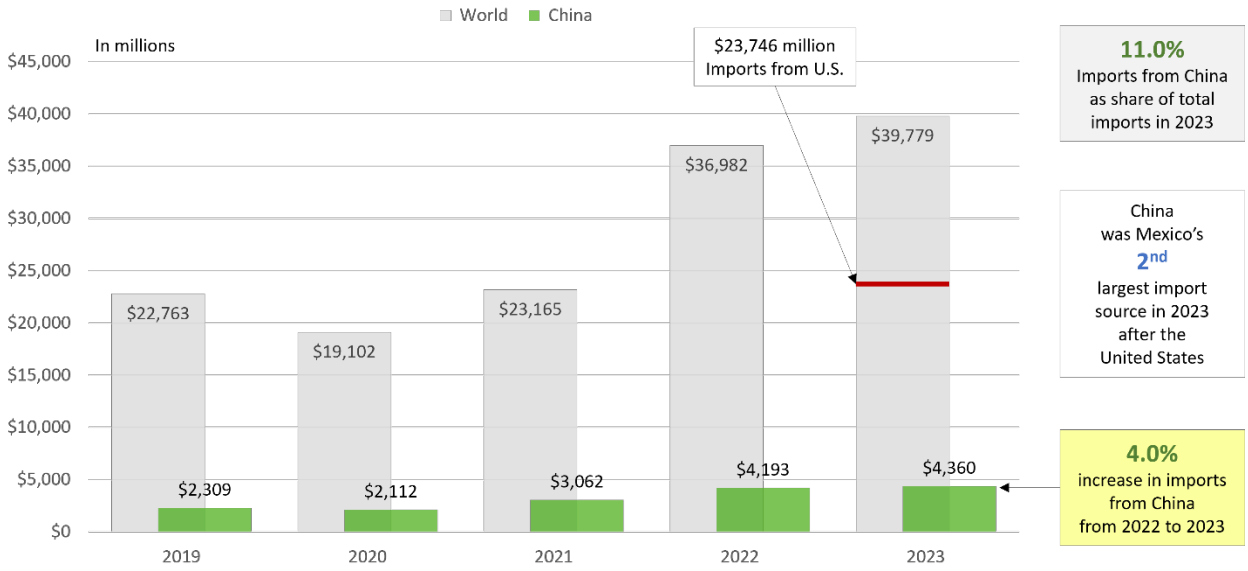
Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	8408.20	Engines (compressions-ignition)	$6,764.0	17.0
2	8708.40	Gearboxes (transmissions)	$6,383.7	16.0
3	8708.29	Parts of bodies	$5,567.4	14.0
4	8708.30	Brakes	$3,133.2	7.9
5	8409.91	Engine parts (spark-ignition)	$3,021.4	7.6
		Subtotal	**$24,869.7**	**62.5**

5.3.3 Mexico's Imports of Auto Parts from China

Figure 5-13 presents Mexico's imports of auto parts from the world and China from 2019 to 2023.[134] China was Mexico's second largest import source of auto parts during 2019 to 2023, accounting for 11.0% of Mexico's imports of auto parts in 2023. Mexico's imports of auto parts from China increased by 88.9% from 2019 to 2023, and by 4.0% from 2022 to 2023.[135] Mexico imported $4.4 billion USD in auto parts from China in 2023.

[134] Table E-8 in Appendix E presents data on Mexico's imports of auto parts from China from 2019 to 2023.
[135] Mexico National Institute of Statistics, Ministry of Economy

Figure 5-13. Auto parts:[1] Mexico's imports from the world and China, 2019–2023



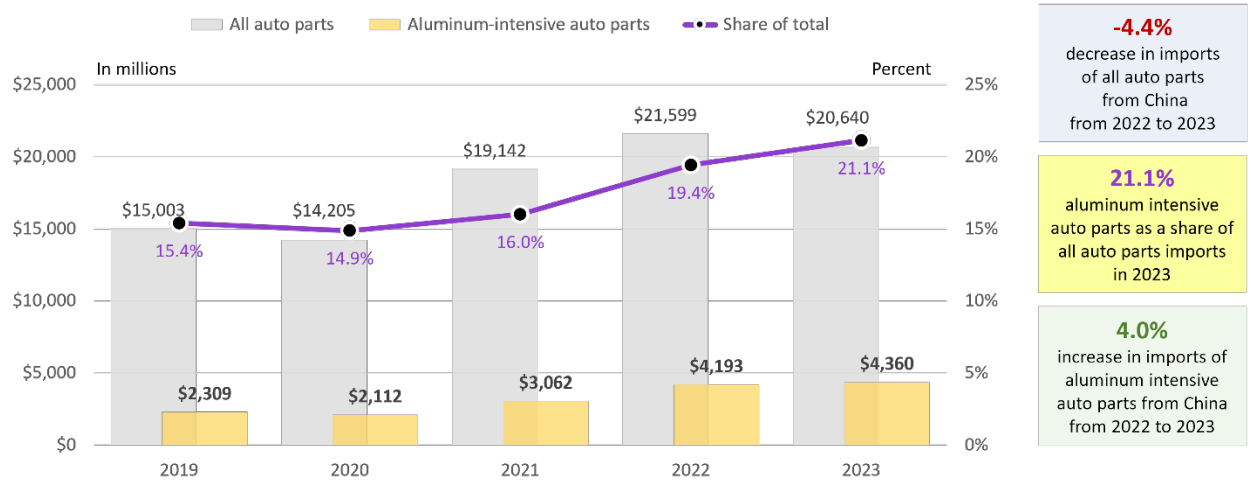
[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

In 2023, Mexico's top five imports of auto parts from China by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	8708.29	Parts of bodies	$711.4	16.3
2	8708.30	Brakes	$626.2	14.4
3	8708.70	Road wheels	$594.7	13.6
4	8708.80	Suspensions	$454.6	10.4
5	8409.91	Engine parts (spark-ignition)	$454.0	10.4
		Subtotal	**$2,840.9**	**65.2**

Figure 5-14 presents Mexico's imports of all auto parts from China, including aluminum-intensive auto parts, from 2019 to 2023. Aluminum-intensive auto parts accounted for 15.4% of Mexico's total imports of auto parts in 2019, which increased to 21.1% in 2023. Mexico imported $20.6 billion USD in total auto parts from China in 2023, of which $4.4 billion USD were aluminum-intensive auto parts.

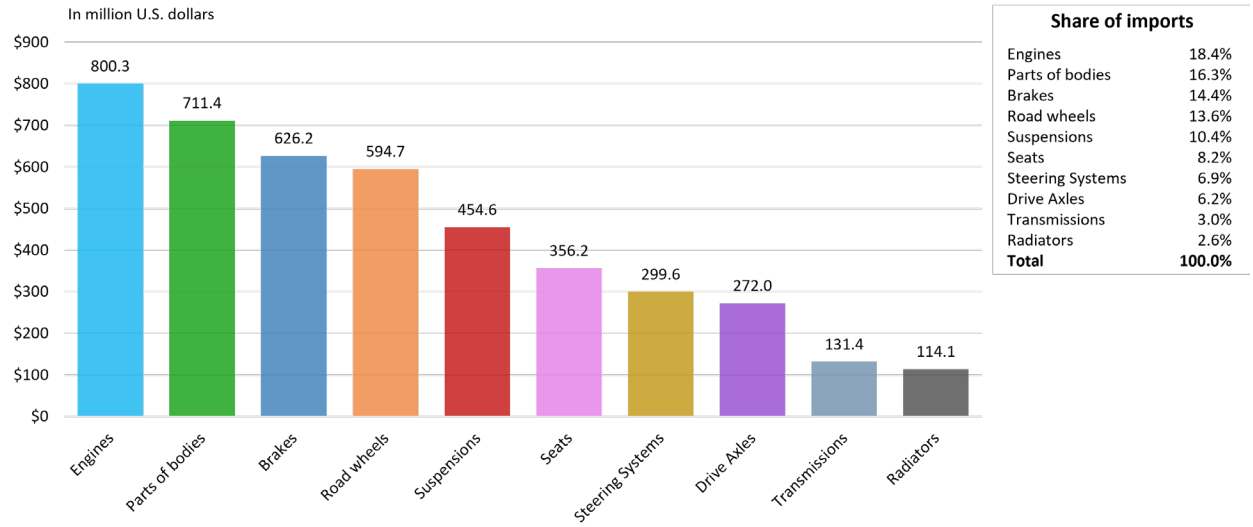
Figure 5-14. Total auto parts:[1] Mexico's imports from China, by type, 2019–2023



[1] Total auto parts comprise 144 HS6 subheadings. Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure 5-15 presents Mexico's imports of auto parts from China by product type in 2023. Mexico imported $4.4 billion USD in auto parts from China in 2023. Mexico's leading imports of auto parts from China were engines (18.4%), parts of bodies (16.3%), brakes (14.4%), and road wheels (13.6%).

Figure 5-15. Auto parts:[1] Mexico's imports from China, by product category, 2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

5.3.4 Mexico's Imports of Specific Auto Parts from China[136]

Parts of bodies. Mexico imported $711 million USD of parts of bodies from China in 2023, which was a 73.3% increase over imports of $411 million USD in 2019. China was Mexico's second largest import source of parts of bodies after the United States in 2023, accounting for 12.8% of Mexico's imports of parts of bodies in 2023. Figure F-1 in Appendix F presents data on parts of bodies.

Brakes. Mexico imported $626 million USD of brakes from China in 2023, which was a 55.9% increase over imports of $402 million USD in 2018. China was Mexico's second largest import source of brakes after the United States in 2023, accounting for 20.7% of Mexico's imports of brakes in 2023. Figure F-2 in Appendix F presents data on brakes.

Road wheels. Mexico imported $595 million USD of road wheels from China in 2023, which was a 105.3% increase over imports of $290 million USD in 2019. China was Mexico's largest import source of road wheels in 2023, accounting for 51.0% of Mexico's imports of road wheels in 2023. Figure F-3 in Appendix F presents data on road wheels.

Engines. Mexico imported $800 million USD of engines and parts of engines from China in 2023, which was a 159.7% increase over imports of $308 million USD in 2019. China was Mexico's second largest import source of engines in 2023 after the United States, accounting for 5.8% of Mexico's imports of engines in 2023. Figure F-4 in Appendix F presents data on engines and parts of engines.

Suspensions. Mexico imported $455 million USD of suspensions from China in 2023, which was a 118.6% increase over imports of $208 million USD in 2019. China was Mexico's second largest import source of suspension in 2023 after the United States, accounting for 22.0% of Mexico's imports of suspensions in 2023. Figure F-5 in Appendix F presents data on suspensions and parts of suspensions.

Seats. Mexico imported $356 million USD of seats from China in 2023, which was a 78.0% increase over imports of $200 million USD in 2019. China was Mexico's second largest import source of seats in 2023 after the United States. China accounted for 20.5% of Mexico's imports of seats in 2023. Figure F-6 in Appendix F presents data on seats and parts of seats.

Steering systems. Mexico imported $300 million USD of steering systems from China in 2023, which was a 63.7% increase over imports of $183 million USD in 2019. China was Mexico's second largest import source of steering systems in 2023 after the United States. China accounted for 14.0% of Mexico's imports of steering systems in 2023. Figure F-7 in Appendix F presents data on steering systems and parts of steering systems.

Drive axles. Mexico imported $272 million USD of drive axles from China in 2023, which was a 34.3% increase over imports of $203 million USD in 2019. China was Mexico's second largest import source of drive axles in 2023 after the United States, accounting for 8.7% of Mexico's imports of drive axles in 2023. Figure F-8 in Appendix F presents data on drive axles and parts of drive axles.

Radiators. Mexico imported $114 million USD of radiators from China in 2023, which was a 121.8% increase over imports of $51 million USD in 2019. China was Mexico's second largest import source of radiators in 2022 after the United States, accounting for 28.9% of Mexico's imports of radiators in 2023. Figure F-9 in Appendix F presents data on radiators and parts of radiators.

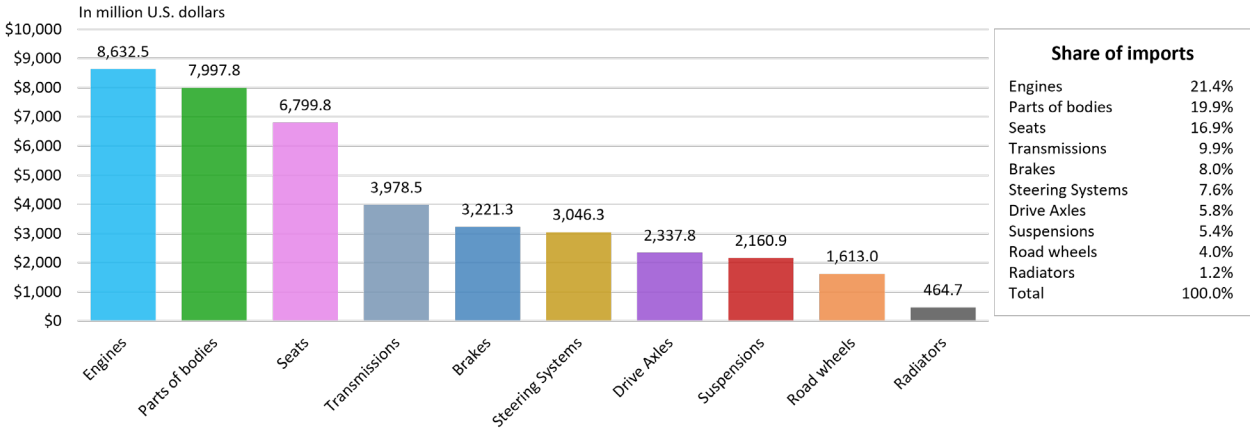
[136] Appendix F presents additional data on Mexico's imports of specific auto parts from China. The import data are sourced from Mexico Nationa Institute of Statistics in the Ministry of Economy.

Transmissions. Mexico imported $131 million USD of transmissions from China in 2023, which was a 144.7% increase over imports of $54 million USD in 2019. China was Mexico's sixth largest import source of transmissions in 2023 (after the United States, Germany, Japan, and Canada), accounting for 1.9% of Mexico's imports of transmissions in 2023. Figure F-10 in Appendix F presents data on transmissions and parts of transmissions.

5.3.5 U.S. Imports of Auto Parts from Mexico

Figure 5-16 presents U.S. imports of auto parts from Mexico by product category in 2023. The United States imported $40.3 billion USD in auto parts from Mexico in 2023. The leading U.S. imports of auto parts from Mexico were engines (21.4%), parts of bodies (19.9%), seats (16.9%), and transmissions (9.9%).[137] Appendix E presents Mexico's imports of auto parts from the United States.

Figure 5-16. Auto parts:[1] U.S. imports from Mexico, by product category, 2023



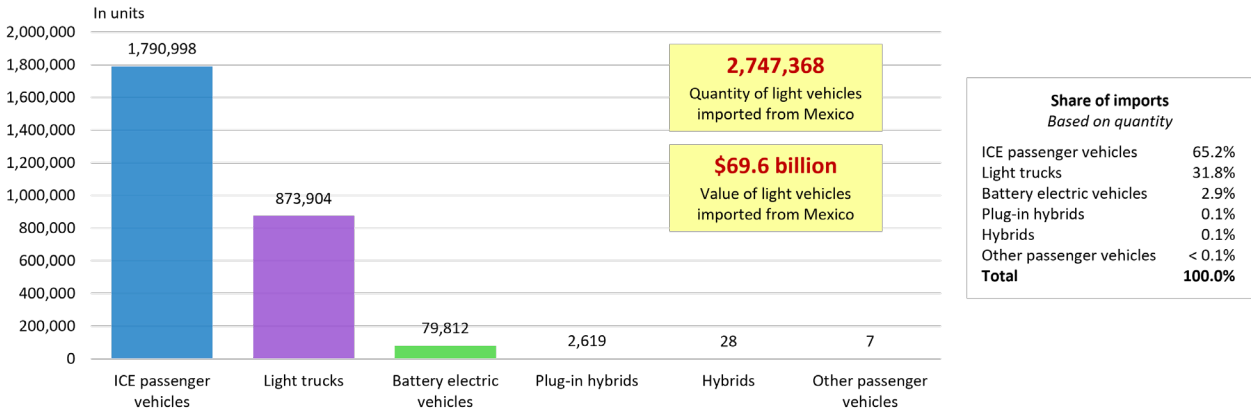
[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: U.S. Census Bureau

5.3.6 U.S. Imports of Vehicles from Mexico

Figure 5-17 presents U.S. imports of light vehicles from Mexico by vehicle type in 2023. The United States imported 2.75 million vehicles from Mexico in 2023 valued at $69.6 billion USD. Internal combustion engine passenger vehicles accounted for 65.2% of imports in 2023, light trucks (pickup trucks and vans) accounted for 31.8% of imports, and hybrids and battery electric vehicles accounted for 3.0% of imports. The estimated aluminum content in vehicles imported from Mexico was 1.38 billion pounds or 688,215 tons in 2023 based on 501 pounds of aluminum per vehicle.[138]

[137] U.S. Census Bureau, U.S. Department of Commerce
[138] Ibid.

Figure 5-17. Light vehicles:[1] U.S. imports from Mexico, by vehicle type, 2023



[1] Based on HS subheadings 8703.22, 8703.23, 8703.24, 8703.31, 8703.32, 8703.33, 8703.40, 8703.50, 8703.60, 8703.70, 8703.80, 8703.90, 8704.21, and 8704.31
Source: U.S. Census Bureau

6. Supply Chain Dynamics

6.1 Dynamics of the Aluminum Supply Chain

Tracing the origin of aluminum that is smelted in the XUAR is challenging because it can be shipped directly to manufacturers or blended with aluminum from other suppliers, within China or abroad. After an aluminum ingot produced in the XUAR is melted and combined with other substances, it is impossible to determine the origin or quantity of aluminum from Xinjiang. This situation allows contaminated aluminum to seamlessly infiltrate both domestic and international supply chains without detection.[139] In addition, the aluminum from Xinjiang is largely primary aluminum that is further processed into alloys downstream before being used in a broad range of applications and industries.[140] The complexities and obscurities of the supply chain, combined with the extant research on forced labor conditions in the XUAR, when taken together, present a plausible risk of inputs made with forced labor making their way into the production of downstream uses of aluminum, including building materials, household appliances, automotive and aircraft components, and electronics.

As previously discussed, aluminum production in the XUAR is linked to forced labor and is distributed both domestically and internationally. Moreover, studies indicate that auto parts and other downstream goods are at risk of being manufactured with aluminum originating from facilities in the XUAR associated with forced labor. The majority of China's aluminum is consumed domestically, including by the country's car industry. The risk of exposure to aluminum from the XUAR is therefore highest for carmakers' manufacturing operations in China, including global carmakers' China-based factories and joint ventures. However, given that Chinese companies also engage in the production and export of aluminum-intensive components, such as alloy wheels, as well as foil, casings, and trays used in electric vehicle batteries, car manufacturers, whether based in China or elsewhere, that procure parts

[139] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china.
[140] Barnes, Richardson & Colburn, LLP. (2022, May 2). Aluminum from XUAR a Possible Forced Labor Risk. Accessed December 5, 2023, https://www.barnesrichardson.com/aluminum-from-xuar-a-possible-forced-labor-risk.

containing aluminum manufactured in China run the risk of sourcing aluminum originating from the XUAR.[141]

Other studies, such as the Sheffield Hallam University report, note the concern regarding auto parts made directly in the XUAR. However, according to the *Asleep at the Wheel* report, the XUAR has limited capacity compared to other regions in China to refine aluminum smelter output into advanced alloys or to manufacture semi-finished products like aluminum sheets or foil, which are crucial for various industries, including automotive manufacturing.[142] That said, the automotive part manufacturing industry will continue to grow in the region, as increased subsidies and development projects continue to expand. China is actively expanding its automotive sector by incentivizing companies to relocate processing operations to the XUAR, exemplified by the Made in China 2025 Xinjiang Action Plan of 2015 and Ürümchi's introduction of 87 measures in March 2022 to facilitate corporate development and enhance the business environment.[143] With these measures, China intends to make XUAR-based automotive parts brands into national and internationally recognized brands, highlighting the anticipated expansion of auto part manufacturing in the region.[144]

6.1.1 Supply Chain Tracing—Aluminum

Although shipping data are limited due to limited national and business disclosures, a review of available shipping data is consistent with trends identified through more comprehensive import-export data. This section overviews major suppliers and buyers of aluminum exported from China to Mexico in the available shipping data. Shipping records reveal a significant flow of aluminum shipments from China to Mexico, totaling 136,164 shipments between January 1, 2019, and January 1, 2023. This constitutes 45.03% of the entire global aluminum shipments to Mexico during the same timeframe, which stands at 300,750 shipments. This underscores the substantial economic ties between the two nations in the aluminum industry and highlights Mexico's reliance on imports of Chinese aluminum for domestic use.[145]

The available shipping data accessed on Panjiva showed 1,417 Chinese suppliers of aluminum contributing to the Mexican market. Among the key contributors to the aluminum trade, specific major Chinese suppliers stand out. Nashan America Co., Ltd. emerged as a prominent player, with 3,447 shipments matching HS 7606.12. Notable Mexican buyers include Rexam Beverage Can Americas S.A. De C.V, specializing in containers and packaging, and Fabricas Monterry S.A. De C.V. Other significant Chinese suppliers included R Squared Puckett Inc., Yingbang Clad Material Co., Ltd., Chalco Swa Cold Rolling Co., Ltd., and Shanghai Huafon Aluminum Corporation.[146]

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[141] Wormington, J. (2024). *Asleep at the Wheel.* https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china

[142] Ibid.

[143] XUAR and the Auto Industry. (n.d.). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Accessed December 27, 2023, https://www.shuforcedlabour.org/drivingforce/xuar. See more: The State Council Information Office of the People's Republic of China. (2016, August 29). Notice on Issuing the Made in China 2025 Xinjiang Action Plan. Archive.Ph. https://archive.ph/KbkQn.

[144] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al.. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. Accessed October 15, 2023, https://acrobat.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A86f5da26-e459-4e05-9047-15ba295bbe83&viewer%21megaVerb=group-discover.

[145] Shipping data (Panjiva, 2019–2023) based on HS Codes: 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00

[146] Panjiva, 2019–2023

On the Mexican side, the available shipping data accessed on Panjiva indicate that 1,198 buyers were engaged in the aluminum trade with China between January 2019 and January 2023. Major Mexican buyers include Rexam Beverage Can Americas S.A. De C.V. (3,014 shipments matching HS 7606.12), Fabricas Monterrey S.A. De C.V. (1,238 shipments matching HS 7606.12), Sanhua Mexico Industry S. De R.L. De C.V. (1,516 shipments matching HS 7604.21), Behr Mexico S De Rl De Cv (944 shipments matching HS 7609.00), and Royal Border SA De Cv (838 shipments matching HS 7606.12).[147] The top industries of these buyers are containers and packaging, HVAC services, manufacturing of aluminum bars, rods, and profiles, and the production of aluminum tubes and pipes—indicating involvement in industries such as construction, automotive, and general manufacturing.[148]

In particular, Sanhua Mexico Industry and Behr Mexico operate within the automotive sector. Sanhua Mexico Industry is a subsidiary of Shanhua Automotive, a company of Chinese origin, established in Ramos Arizpe, Coahuila, Mexico, dedicated to the assembly of various components related to ventilation and air conditioning systems in the automotive industry.[149] Behr Mexico also specializes in electrification, thermal management, and internal combustion engine components.[150] This highlights the possibility that some of the aluminum imported by Mexico from China is used in the manufacturing of automotive components.

6.2 Dynamics of the Auto Parts Supply Chain

6.2.1 Supply Chain Tracing—Auto Parts

Total shipments of auto parts from China to Mexico between January 1, 2019, and January 1, 2023, reached 481,269, presenting a significant portion of total global auto part shipments into Mexico, accounting for 35.5% of a total 1,354,460 shipments.[151] Throughout this time period, there were 4,972 Chinese suppliers to Mexico, with major players including Chongqing Loncin Imp. & Exp. Co., Ltd. (6,945 shipments matching HS 9409.91), Shanghai Daimay Automotive Interior Co., Ltd. (3,826 shipments matching HS 9401.91), Chongqing Rato Intelligent Equipment Co., Ltd. (3,736 shipments matching HS409.91), Citic Dicastal Wheel Manufacturing Co., Ltd. (1,796 shipments matching HS 8708.70), and Minth International Macao Commercial Offshore Ltd. (1,211 shipments matching HS 8708.29). Noteworthy customers of these suppliers include various automotive and manufacturing entities.[152]

Among these suppliers, CITIC Dicastal, a major car wheel manufacturer, has potential connections to Xinjiang's labor practices through its association with Xinjiang Xintou, a company mandated by regional plans to facilitate aluminum trade.[153] Xinjiang Xintou is affiliated with the XPCC and primarily engages in trading aluminum between Xinjiang and the rest of China. This includes collaborating with downstream aluminum product manufacturers like CITIC Dicastal and establishing factories in Xinjiang. Although the

[147] Panjiva, 2019
[148] Panjiva, 2019
[149] See more: *Directorio Automotriz | Plataforma Electrónica*. (n.d.). Accessed January 23, 2024, https://www.directorioautomotriz.com.mx/listing/search/details/6578.
[150] See more: *Directorio Automotriz | Plataforma Electrónica*. (n.d.). Accessed January 23, 2024, https://www.directorioautomotriz.com.mx/listing/search/details/2412.
[151] Shipping data (Panjiva, 2019–2023) based on HS Codes: 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199.
[152] Panjiva, 2019–2023
[153] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/drivinF-force.

establishment of factories remains uncertain, there is a significant risk that CITIC Dicastal is part of the supply chain linked to Xinjiang Xintou. CITIC Dicastal, known for producing car wheels, serves major automakers such as General Motors, Ford, Mercedes-Benz, BMW, and Tesla.[154] The top buyers for CITIC Dicastal for Mexico cannot be confirmed, but the majority of shipping records attribute sales to Mexico to two logistics companies: Automotive Logistics S.A. De and Supplier S Citysa De Cv. (Panjiva).

On the Mexican side, 2,153 buyers engage in this trade, with major purchasers being Operadoras En Servicios Comerciales (11,078 shipments matching HS 8409.91), ThyssenKrupp Presta De Mexico S.A. De C.V. (3,116 shipments matching HS 8708.94), Olympus Automotive Interiors S. De R.L. De C.V. (3,186 shipments matching HS 8708.29), Adient Mexico Automotriz S. De R.L. De C.V. (3,411 shipments matching HS 9401.99), and Govi Refaccionaria SA De Cv (1,104 shipments matching HS 8708.80). These buyers are heavily involved in the automotive industry, including machinery, automotive parts, and interior automotive components.[155]

6.2.2 Supply Chain Tracing—Xinjiang/Mexico

Shipping data specifically filtered to entities situated in Xinjiang revealed additional Mexican companies importing auto parts from Chinese suppliers in Xinjiang. Regarding auto parts, available shipping records indicate that two Mexican entities have been buyers of auto parts from Chinese suppliers located in Xinjiang. Leggett & Platt Residencial, with four shipments matching HS 9401.90,[156] has been associated with the Chinese supplier Leggett & Platt (Taizhou) Co., Ltd. Another Mexican entity, Polygroup Industries, with one shipment matching HS 8409.99, has been linked to the Chinese supplier Automu Automation Equipment Co. Ltd.[157] These specific examples from 2019 illustrate that at least some Mexican companies have imported aluminum auto parts made in Xinjiang under conditions of forced labor. It is noteworthy, however, that it cannot be stated that these entities are currently sourcing from the region, because all identified shipments date back to 2019.

According to an auto company manager in Mexico, it is less clear whether the increasing imports of aluminum from China are being used in auto parts production in Mexico. Although limitations exist to answer this question, Mexico's imports of aluminum and aluminum-intensive auto parts from China represented approximately 5.5% of the value of Mexico's auto parts production in 2023.[158] A 5.5% share suggests a notable but small contribution. Yet, China exports more aluminum-intensive auto parts to Mexico than most other destination markets. In 2022, approximately 14% of Chinese auto part exports were aluminum-intensive, but that value nearly doubles when examining exports to Mexico—in that same year, 21.1% of auto parts imported to Mexico from China were aluminum-intensive. This raises concerns about the potential entry of auto parts and aluminum manufactured with forced labor into Mexico, given their integration into both downstream components and finished vehicles.

An auto company manager involved the United States-Mexico supply chain stated that it is unclear whether imported Chinese auto parts are being incorporated into finished vehicles assembled in Mexico and/or exported to the United States. Although these questions remain, China's increasing export of

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[154] Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/drivinF-force.

[155] Panjiva, 2019–2023

[156] Seats (other than those of heading 9402), whether or not convertible into beds, or parts thereof. Other

[157] Shipping data (Panjiva, 2019) based on HS Codes: 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199

[158] Calculation based on $106.7 billion in Mexican auto parts production divided by $6.74 billion of aluminum and aluminum-intensive auto parts imports ($2.55 billion of aluminum plus $4.2 billion of aluminum-intensive auto parts)

semi-finished aluminum products, which are processed in Mexico for auto part manufacturing, elevates exposure to forced labor risks throughout the U.S.-Mexico vehicle supply chain, especially given that 85% of the finished vehicles and auto parts produced in Mexico are imported by the United States. Taken together, these findings outline a path through which the import of aluminum auto parts from Mexico to the United States thus carries a risk of being produced with forced labor. Although this research encountered challenges in quantifying exact trade patterns, it is reasonable to presume that a portion of these imports may involve forced labor.

In addition, a former Mexican official with experience working in China mentioned that it is unclear what percentage of XUAR auto parts are exported globally or specifically to Mexico, although it is clear that these parts are used in the production of auto parts, automotive components, and finished vehicles assembled in China. However, the deliberate investment by the Chinese government in relocating a significant portion of its domestic automotive industry to the XUAR amplifies the risk of Xinjiang-made products being exported globally. This impacts Mexico directly because its auto parts industry is a major manufacturing sector, contributing 7.7% to the country's manufacturing gross domestic product.[159] China, as Mexico's second largest source of auto parts imports from 2019 to 2023, accounted for 11% of Mexico's auto parts imports in 2023, with a 74.2% increase from 2019 to 2023.[160] In 2023, Mexico imported $4.4 billion USD worth of auto parts from China, with parts of bodies, brakes, road wheels, and suspensions being the leading categories, making them particularly susceptible to forced labor risks. With Mexico ranking as the fourth largest global producer of auto parts, surpassing Germany in 2022, the integration of these parts into downstream components and finished vehicles further compounds the risk. Furthermore, as Mexico exports 86% of its auto parts produced, the risk extends to various markets.[161]

The risk of forced labor, however, is found in the supply chains of aluminum and aluminum auto parts produced in Xinjiang and downstream goods within China and beyond. This presents a complex scenario with two significant pathways. First, there is direct manufacturing of aluminum and aluminum auto parts in Xinjiang, where concerns about forced labor practices have been raised. Second, and equally noteworthy, is the uncertainty surrounding the presence of Xinjiang-produced aluminum in downstream auto parts. Specific details are limited, but the potential for Xinjiang aluminum to be present in downstream goods is heightened, because aluminum exported from other provinces in China may contain traces of Xinjiang-produced aluminum. Horizon Advisory's report states that 17% of China's aluminum production, which already makes up 60% of the world's primary aluminum production, comes from the XUAR.[162]

7. Policies and Other Factors Affecting China

This section addresses the impact of private sector initiatives, public policies, and enforcement measures affecting the production of aluminum and auto parts in China, and the importation and use of Chinese aluminum and auto parts in Mexico and the United States. Despite the implementation of policies from various sectors aimed at reducing dependence on China, the desired impact has not materialized, raising concerns about the persisting risks of forced labor in the automotive supply chains.

[159] Industria Nacional de Autopartes. Accessed September 17, 2023, https://ina.com.mx.
[160] Mexico National Institute of Statistics, Ministry of Economy
[161] Ibid.
[162] Horizon Advisory. (2022). *Base Problem: Forced Labor Risks in China's Aluminum Sector.* https://www.horizonadvisory.org/backtobasics.

7.1 Relevant U.S. Laws and Regulations

7.1.1 Uyghur Forced Labor Prevention Act

The UFLPA, Public Law No. 117-78, signed into law on December 23, 2021, with an effective implementation date of June 21, 2022,[163] enforces Section 307 of the Tariff Act of 1930, as amended (19 U.S.C. § 1307), which prohibits the importation into the U.S. of "all goods, wares, articles, and merchandise mined, produced, or manufactured wholly or in part in any foreign country by convict labor or/and forced labor or/and indentured labor under penal sanctions."[164] The UFLPA requires U.S. Customs and Border Protection (CBP) to enforce the UFLPA's rebuttable presumption that any goods mined, produced, or manufactured wholly or in part in the XUAR, or produced by an entity on the UFLPA Entity List, are prohibited from entry into the United States.

The UFLPA requires the publication and maintenance of entities and facilities described in Sections 2(d)(2)(B)(i),(ii),(iv), and (v) of the UFLPA, identified as follows, and collectively known as the UFLPA Entity List.

- Entities in Xinjiang that mine, produce, or manufacture wholly or in part any goods, wares, articles, and merchandise with forced labor
- Entities working with the government of Xinjiang to recruit, transport, transfer, harbor or receive forced labor or Uyghurs, Kazakhs, Kyrgyz, or members of other persecuted groups out of Xinjiang
- Entities that exported products made wholly or in part by entities on the previous list 1 or 2 from the People's Republic of China into the United States
- Facilities and entities, including the XPCC, that source material from Xinjiang or from persons working with the government of Xinjiang or the XPCC for purposes of the "poverty alleviation" program or the "pairing-assistance" program or any other government-labor scheme that uses forced labor
- Entities identified are subject to the UFLPA's rebuttable presumption, and products they produce, wholly or in part, are prohibited from entry into the United States. As of September 30, 2023, the U.S. Department of Homeland Security (DHS) published three Federal Register notices updating the UFLPA Entity list.[165] DHS also maintains a UFLPA Entity list website.[166]

7.1.2 Forced Labor Enforcement Task Force

The Forced Labor Enforcement Task Force (FLETF) is a DHS-led task force of interagency partners that are dedicated to monitoring enforcement of 19 U.S.C. 1307, the prohibition on importing goods into the United States that are made wholly or in part in any foreign country by forced labor, convict labor, or indentured labor under penal sanctions.[167] The FLETF is responsible for implementing the UFLPA Entity List, and it also provides biannual reports to Congress regarding CBP's enforcement of 19 U.S.C. 1307 and enforcement of goods included on the Department of Labor's Findings on the Worst Forms of Child Labor report and List of Goods Produced by Child Labor or Forced Labor report.

[163] Uyghur Forced Labor Prevention Act, DHS website. Accessed October 15, 2023, https://www.dhs.gov/uflpa.
[164] Public Law 117-78, 117th Congress, December 23, 2021, https://www.congress.gov/117/plaws/publ78/PLAW-117publ78.pdf.
[165] Federal Register, 87 FR 47777 (August 4, 2022), 88 FR 38080 (June 12, 2023), 88 FR 50902 (August 2, 2023).
[166] UFLPA Entity List website, DHS website. Accessed October 15, 2023, https://www.dhs.gov/uflpa-entity-list.
[167] FLETF website, DHS website. Accessed October 15, 2023, https://www.dhs.gov/forced-labor-enforcement-task-force.

The FLETF is chaired by the DHS Under Secretary for Strategy, Policy and Plans and is composed of seven member agencies.[168] Additional participants include observer agencies that also contribute to FLETF efforts.

7.2 U.S. Enforcement Efforts of Existing Laws

The United States enacted the UFLPA on December 23, 2021, which strengthened the United States' policy prohibiting the importation of goods made with forced labor.[169] CBP has issued guidance to assist companies and traders in enforcing the provisions of the UFLPA.

According to CBP's UFLPA enforcement statistics, for fiscal year (FY) 2023 (October 1, 2022, through September 30, 2023), automotive/aerospace goods were the least examined industry sector (of nine sectors), accounting for 1.3% of total shipments examined, 1.5% of denied shipments, 0.1% of released shipments, 3.4% of pending shipments, and 0.3% of the total value of shipments examined. Virtually all other automotive goods shipments examined were from China.[170]

Given the large number of shipments of auto parts imported into the United States each year from China, CBP's enforcement efforts appear, at least initially, to be prioritizing other sectors. CBP also appears to be working with the automotive industry using informed compliance and promoting reasonable care best practices by educating importers on UFLPA regulations and requirements.[171]

7.2.1 UFLPA Strategy

The UFLPA charged the FLETF, chaired by DHS, to develop a strategy for supporting the enforcement of the UFLPA. The UFLPA strategy includes the following:

- A comprehensive assessment of the risk of importing goods mined, produced, or manufactured, wholly or in part, with forced labor in the People's Republic of China
- An evaluation and description of forced-labor schemes, UFLPA-required lists (including the UFLPA Entity List), UFLPA-required plans, and high priority sectors for enforcement
- Recommendations for efforts, initiatives, tools, and technologies to accurately identify and trace affected goods
- A description of how CBP plans to enhance its use of legal authorities and tools to prevent entry of goods in violation of 19 U.S.C. § 1307 at U.S. ports
- A description of additional resources necessary to ensure that no goods made with forced labor enter U.S. ports
- Guidance to importers
- A plan to coordinate and collaborate with appropriate NGOs and private sector entities[172]

[168] The Department of Labor is a member agency, with the Bureau of International Labor Affairs representing the Department on the FLETF.
[169] Public Law 117-78, 117th Congress, December 23, 2021, https://www.congress.gov/117/plaws/publ78/PLAW-117publ78.pdf.
[170] UFLPA online dashboard, CBP website. Accessed October 15, 2023, https://www.cbp.gov/newsroom/stats/trade/uyghur-forced-labor-prevention-act-statistics.
[171] CBP. (2017). *What Every Member of the Trade Community Should Know: Reasonable Care.* https://www.cbp.gov/sites/default/files/assets/documents/2018-Mar/icprescare2017revision.pdf.
[172] U.S. Department of Homeland Security. (2022). Strategy to Prevent the Importation of Goods Mined, Produced, or Manufactured with Forced Labor in the People's Republic of China. Report to Congress https://www.dhs.gov/sites/default/files/2022-06/22_0617_fletf_uflpa-strategy.pdf.

The FLETF released an update to the UFLPA strategy in July 2023. The update included changes to the evaluation and description of forced labor schemes, the UFLPA Entity List, additional resources necessary to deny entry of goods made with forced labor, and coordination and collaboration with appropriate NGOs and private sector entities.[173]

7.2.2 UFLPA Dashboard

The UFLPA identified tomatoes, cotton, and polysilicon-based products as high-priority sectors for enforcement. However, CBP employs a dynamic, risk-based approach to enforcement that prioritizes actions against the highest risk entities based on an ever-changing data and intelligence environment to prevent goods made, wholly or in part, with forced labor from entering U.S. commerce.[174] Accordingly, CBP has identified additional key sectors of enforcement, including aluminum products, batteries, polyvinyl chloride products, steel products, and tires for automobiles and trucks.[175] The outlined measures suggest the CBP's intention to broaden its enforcement scope beyond traditionally scrutinized sectors like cotton, textiles, tomatoes, and polysilicon. Notably, CBP's focus on products such as automobile components, as well as copper, steel, aluminum, and their downstream products, aligns with recent reports highlighting forced labor risks associated with these specific product categories.[176] For FY 2023, CBP examined 4,218 total shipments valued at $1.44 billion.[177]

For FY 2023 (October 1, 2022, through September 30, 2023), base metals (steel, ferrous/nonferrous metals, and aluminum), which were not among the top examined industry categories, accounted for 5.1% of total shipments examined, 1.7% of denied shipments, 8.0% of released shipments, 5.7% of pending shipments, and 5.9% of the total value of shipments examined. During this period, CBP examined 215 base metal shipments valued at $85.2 million USD, of which 28 shipments were denied, 139 shipments were released, and 48 shipments were still pending an examination outcome. All the examined shipments were from China.[178]

For FY 2023 (October 1, 2022, through September 30, 2023), automotive/aerospace goods were the least examined industry sector (of nine sectors), accounting for 1.3% of total shipments examined, 1.5% of denied shipments, 0.1% of released shipments, 3.4% of pending shipments, and 0.3% of the total value of shipments examined. During this period, CBP examined 53 automotive/aerospace shipments valued at $3.9 million USD, of which 24 shipments were denied, 1 shipment was released, and 28 shipments were pending an examination outcome. Except for one small shipment from Thailand valued as $20,000 USD, all other shipments of automotive/aerospace goods examined were from China.[179]

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[173] U.S. Department of Homeland Security. (2023). 2023 Updates to the Strategy to Prevent the Importation of Goods Mined, Produced, or Manufactured with Forced Labor in the People's Republic of China. Report to Congress. https://www.dhs.gov/sites/default/files/2023-08/23_0728_plcy_uflpa-strategy-2023-update-508.pdf.

[174] UFLPA data dictionary, CBP website, Publication No, 3244-0623, June 2023. Accessed October 15, 2023, https://www.cbp.gov/sites/default/files/assets/documents/2023-Jun/forced-labor-data-dictionary.pdf.

[175] UFLPA Attachment to the Notice of Detention (cbp.gov)

[176] Allen, B.E., et al. (2023). *US Government Updates Forced Labor Strategy, Expands UFLPA Entity List.* Skadden, Arps, Slate, Meagher & Flom LLP. Accessed January 25, 2024, https://www.skadden.com/insights/publications/2023/08/us-government-updates-forced-labor-strategy.

[177] UFLPA online dashboard, CBP website. Accessed October 15, 2023, https://www.cbp.gov/newsroom/stats/trade/uyghur-forced-labor-prevention-act-statistics.

[178] Ibid.

[179] Ibid.

It is noteworthy that Mexico did not appear as a UFLPA concern for automotive/aerospace shipments in FY 2023, despite being a crucial trading partner for China. It also appears that automotive and aerospace shipments may be facing a higher rate of denial compared to other sectors potentially due to CBP's targeting parameters specifically capturing these products. However, CBP's targeting is based on a number of factors, the majority of which are unknown to the public. In the case of automotive and aerospace shipments, the denial of entry 24 times suggests that CBP found insufficient documentation to establish the goods' origin outside XUAR or the absence of entities from the UFLPA Entity list in the supply chain.

7.2.3 Operational Guidance for Importers

On June 13, 2022, CBP issued Operational Guidance for Importers. The UFLPA requires the Commissioner of CBP to apply a presumption that imports of all goods, wares, articles, and merchandise mined, produced, or manufactured wholly or in part in the XUAR, or by entities identified by the U.S. Government on the UFLPA Entity List, are presumed to be made with forced labor and are prohibited from entry into the United States. The presumption also applies to goods made in, or shipped through, China and other countries that include inputs made in Xinjiang.[180] However, according to a China policy analyst for global supply chain strategy, although there has been a committed effort from manufacturers to comply with the regulation, a barrier they encounter is the restricted visibility when it comes to tracing the origins of certain products within the supply chain, especially in the case of complicated products that involve multiple geographies and sectors.

7.2.4 Xinjiang Supply Chain Business Advisory

On July 13, 2021, the U.S. Department of State, the U.S. Department of the Treasury, the U.S. Department of Commerce, DHS, the Office of the U.S. Trade Representative (USTR), and the U.S. Department of Labor published a business updated advisory (originally published in July 2020) in light of growing evidence of the use of forced labor in Xinjiang and the Secretary of State's determinations that the Chinese government committed genocide and crimes against humanity in Xinjiang.

The business advisory specifies that raw and refined materials, commodities, Intermediate goods, byproducts, and recycled materials may all have connections to forced labor and human rights violations in Xinjiang, regardless of the final product and region of origin or export. The advisory outlines the risks that businesses and individuals should consider when assessing business partnerships with, investing in, sourcing from, or providing other support to companies operating in Xinjiang, linked to Xinjiang, or with laborers from Xinjiang.[181]

On September 26, 2023, an addendum was issued to the July 2021 business advisory. This addendum aimed to inform the business community about new obligations and updates under the UFLPA, based on additional reports on continuing human rights abuses in Xinjiang from various sources. The addendum emphasized potential supply chain exposure from entities engaged in human rights abuses through sourcing goods from Xinjiang or from entities elsewhere in China connected to Xinjiang and highlighted

[180] U.S. Customs and Boarder Protection Operational Guidance for Importers, June 13, 2022. CBP website. Accessed October 15, 2023, https://www.cbp.gov/sites/default/files/assets/documents/2022-Jun/CBP_Guidance_for_Importers_for_UFLPA_13_June_2022.pdf.

[181] Xinjiang Supply Chain Business Advisory, updated July 13, 2021. DHS website. Accessed October 15, 2023, https://www.dhs.gov/sites/default/files/publications/xinjianF-business-advisory-13july2021-1.pdf.

actions taken by various U.S. departments to address human rights abuses present in supply chains.[182] Businesses with potential supply chain exposure should carefully review the addendum to understand its implications and continue to monitor updates related to the issue.

7.2.5 Enforcement Funding

CBP's FY 2023 budget request included an increase of $70.3 million USD for UFLPA "Trade and Travel Enforcement and Facilitation" to fund additional enforcement personnel, technology, training, strategy, and outreach. The funding included 300 additional positions. CBP estimated that UFLPA requirements would increase workload by 11.5 million shipments and subsequent transactions across all tariff codes at ports of entry, and an increase of 20,000 petitions annually related to the rebuttable presumption.

The budget request also included technology enhancements, software licenses, and improvements to the Forced Labor Case Management system. CBP anticipates using various tools for data, analysis, and targeting for increased supply chain tracing capabilities and Origin Tracing Isotope Ratio Technology for shipment origin tracing. Additional funding supports the development of sustained outreach strategies and communication education and training materials for both internal and external stakeholders.[183]

7.3 Non-Government Initiatives to Improve Traceability

According to KIIs with current and former automaker purchasing executives (with direct experience in Mexico) and international trade lawyers, the UFLPA is creating incentives for importers to better understand their end-to-end supply chains and to alter sourcing to reduce risk and ensure compliance with existing laws and regulations. However, according to three current and former automotive executives, most initiatives addressing forced labor risks in the aluminum supply chain have been implemented at the company level. This is attributed to the sensitivity of supply chain information, making it unsuitable for public discussion and consequently restricting the visibility of public initiatives.

The UFLPA is, however, spurring greater transparency in manufactured goods supply chains and altering sourcing behavior. As a result of the compliance requirements of the UFLPA, automakers and automotive parts suppliers are making substantial investments to better understand the risks and vulnerabilities in their supply chains. According to several experts, the automakers are continuously implementing sourcing strategies not only to meet the legal obligations of the UFLPA, but also to comply with environmental, social, and governance requirements, net-zero carbon initiatives, and other international, national, and subnational obligations.

7.3.1 Helena Kennedy Centre Forced Labour Lab

The Forced Labour Lab is a project of the Helena Kennedy Centre for International Justice that conducts research on forced labor, modern slavery, and human trafficking. The Lab's current research focuses on the systematic forced labor of minoritized citizens in the XUAR. The Lab's reports, evidence briefs, and datasets inform advocacy groups, journalists, researchers, governments, corporations, and stakeholders

[182] Department of Commerce, Department of Labor, Department of the Treasury, Office of the U.S. Trade Representative, & Department of Homeland Security. (2023). *Addendum to July 2021 Advisory on the Risks and Considerations for Businesses and Individuals with Exposure to Entities Engaged in Forced Labor and other Human Rights Abuses linked to Xinjiang Uyghur Autonomous Region, People's Republic of China*. https://www.state.gov/wp-content/uploads/2023/09/Xinjiang-Business-Advisory-Addendum-July-2023-FINAL-Accessible-09.26.2023.pdf.

[183] U.S. Customs and Border Protection Budget Overview, Fiscal Year 2023 Congressional Justification. Accessed October 15, 2023, https://www.dhs.gov/sites/default/files/2022-03/U.S.%20Customs%20and%20Border%20Protection_Remediated.pdf.

about Xinjiang forced labor in international supply chains.[184] In December 2022, the Helena Kennedy Centre, in collaboration with NomoGaia,[185] published the *Driving Force Automotive Supply Chains and Forced Labor in the Uyghur Region* report following a six-month investigation on automotive supply chains and forced labor in the XUAR.[186] The report and accompanying website also include an interactive supply chain network map that identifies potential supply chain connections between XUAR-based companies and international automotive manufacturers and car parts distributors.[187]

7.4 Government Initiatives to Combat Forced Labor in Supply Chains

Several governments around the world have enacted legislation and policy directives to increase transparency and combat forced labor in supply chains, including the European Union (EU), Norway, and Australia. The following list is meant to be illustrative but not exhaustive.[188]

7.4.1 European Union

The EU Council passed the Corporate Sustainability Reporting Directive (CSRD) in November 2022, which went into effect on January 5, 2023. The directive will be phased in over several years and require large companies and listed companies to publish regular reports on the social and environmental risks they face, and on how their activities impact people and the environment. All reporting must also be independently audited based on a newly defined common reporting framework. The purpose of the CSRD is to help investors, consumers, civil organizations, and other stakeholders better evaluate companies' sustainability performance while streamlining the reporting process to reduce the cost burden on companies over time.[189] The directive applies to large companies that meet two out of the following criteria: (1) companies with more than 250 employees, (2) companies with a balance sheet of more than 20 million euros, or (3) companies with a net turnover of 40 million euros.

In addition, in September 2022, inspired by the U.S. model and guided by the European Parliament's Motion for a Resolution on the Human Rights Situation in Xinjiang (2022), the EU Commission unveiled a proposal for a regulation aimed at prohibiting products manufactured with forced labor from entering the Union market. This initiative holds the potential to effectively complement the CSRD.[190] The EU's framework has predominantly targeted major corporations, as evident in initiatives like the CSRD. In the current proposal, the EU Commission stipulates that competent authorities should consider the size and economic resources of economic operators before launching an investigation, but the prohibition

[184] Sheffield Hallam University, Helena Kennedy Centre website. Accessed October 15, 2023, https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/forced-labour-lab.
[185] NomoGaia is an independent nonprofit research organization that helps companies and customers make informed decisions to address human rights risks and harms. Accessed October 15, 2023, https://nomogaia.org/.
[186] L Murphy, L., Salcito, K., Uluyol, Y., Rabkin, M., et al. (2022). *Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region.* Sheffield Hallam University Helena Kennedy Centre for International Justice. https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/drivinF-force.
[187] Murphy et al. See https://www.shuforcedlabour.org/drivingforce/sankey/.
[188] The initiatives mentioned in this section are not targeted to the aluminum industry but are general initiatives to increase transparency in supply chains.
[189] Corporate Sustainability Reporting, European Commission. Accessed October 15, 2023, https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en.
[190] De Pinieux, M. (2023). *Doing Business in Xinjiang.* https://www.elevenjournals.com/tijdschrift/ELR/2023/1/ELR-D-23-00012.pdf

against placing goods made with forced labor on the market is applicable to all economic operators. Furthermore, the proposal extends its reach to encompass every product.[191]

7.4.2 Norway

Drawing on Organization for Economic Cooperation and Development guidelines, the Norwegian Transparency Act, which took effect on July 1, 2022, obliges companies to conduct human rights and "decent working conditions" due diligence activities on both their internal operations and those of their suppliers.[192] Companies that meet two of the three criteria are subject to the law: (1) companies with at least 50 full-time employees, (2) companies with an annual turnover of approximately $8 million USD, or (3) companies with a balance sheet of at least $4 million USD. The Act requires companies to promote respect for human rights and decent working conditions (including the provision of a living wage) across their operations and supply chains. It covers companies in Norway and foreign companies that sell products and services in Norway. Companies must provide an annual accounting of due diligence practices and findings by June 30 each year to an easily accessible location, such as on a company website.[193]

7.4.3 Australia

The Australian Commonwealth Modern Slavery Act took effect on January 1, 2019.[194] The Act requires Australian entities and other entities conducting business in Australia with consolidated worldwide revenue of more than A$100 million to annually prepare a modern slavery statement and submit it for inclusion in a central government register. The statement is required to describe, among other things, the risks of modern slavery in the reporting entity's operations and supply chains and the actions taken to assess and address those risks. The Act does not require a reporting entity to engage in modern slavery due diligence and does not impose monetary penalties for non-compliance.[195] It also does not contain penalties that can be levied against Australian companies doing business in Xinjiang.[196] A bill addressing forced labor, initially targeting XUAR labor but later revised to be more general, passed the Australian Senate in August 2021. However, it did not become law due to the dissolution of Parliament in 2022.[197]

7.5 Mexico's Enforcement of Existing Laws

Chapter 23 of the United States-Mexico-Canada Agreement (USMCA) obligates the United States, Mexico, and Canada to adopt and maintain in law and practice labor rights as recognized by the

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[191] Ibid, pp. 66.
[192] English translation of the Transparency Act. Accessed October 15, 2023, https://www.regjeringen.no/contentassets/c33c3faf340441faa7388331a735f9d9/transparency-act-english-translation.pdf.
[193] EcoVadis. (2023). *Norwegian Supply Chain Transparency Act: What Norway's New Due Diligence Law Means for Your Business and How EcoVadis Can Help.* Accessed October 15, 2023, https://resources.ecovadis.com/blog/norwegian-supply-chain-transparency-act-what-norway-s-new-due-diligence-law-means-for-your-business-and-how-ecovadis-can-help#:~:text=Drawing%20on%20OECD%20guidelines%2C%20the,and%20those%20of%20their%20suppliers.
[194] Modern Slavery Act 2018. Accessed October 15, 2023, https://www.legislation.gov.au/Details/C2018A00153.
[195] Ropes & Gray. (2023). *Proposed Changes to Australia's Modern Slavery Act Would Introduce New Obligations for Multinationals.* Accessed October 15, 2023, https://www.ropesgray.com/en/insights/alerts/2023/06/proposed-changes-to-australias-modern-slavery-act-would-introduce-new-obligations-for-multinationals.
[196] Australian Companies Warned about Doing Business in China's Xinjiang. (2021, January 15). *Australian Financial Review.* https://www.afr.com/politics/federal/australian-companies-warned-about-doing-business-in-china-s-xinjiang-20210115-p56ubs.
[197] Kalinauskas, A. (2023, December 22). How Can Australia Stand up for Human Rights in Xinjiang? *The Diplomat.* Accessed December 26, 2023, https://thediplomat.com/2023/12/how-can-australia-stand-up-for-human-rights-in-xinjiang/.

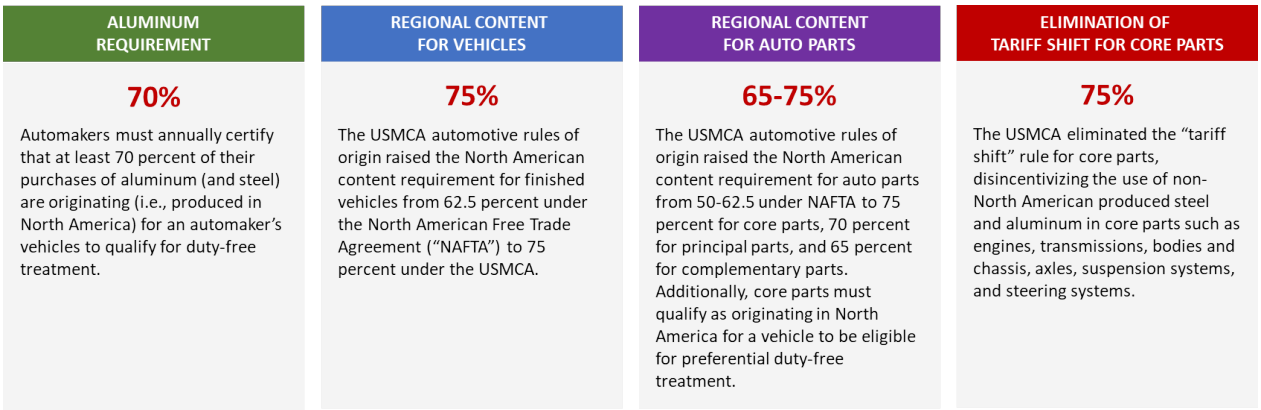
International Labour Organization, to effectively enforce its labor laws and not to waive or derogate from its labor laws.[198] The USMCA also includes new provisions that require the Parties to take measures to prohibit the importation of goods produced by forced labor, to address violence against workers exercising their labor rights, to address sex-based discrimination in the workplace, and to ensure that migrant workers are protected under labor laws.

On May 18, 2023, Mexico enacted new legal provisions to implement Article 23.6 of the USMCA,[199] which provides that the three Parties must prohibit the importation of goods into their territories from other sources produced in whole or in part by forced or compulsory labor. Specifically, the rules state that all goods found by the Ministry of Labor and Social Welfare to be produced with forced labor will be included on a finding list that will be published on the Ministry of Labor and Social Welfare's website; the effectiveness and implementation of this law are yet to be seen.[200]

7.6 USMCA Automotive Rules of Origin

The new USMCA automotive rules of origin—implemented in July 2020 with a three-to-five-year phase-in period—substantially raise the North American content-level requirements for vehicles and auto parts to be eligible for preferential duty-free treatment.[201] After they are fully implemented in July 2025, the new rules could significantly reduce imports of non-USMCA sourced aluminum and auto parts into the United States, Mexico, and Canada. Figure 7-1 presents the major changes to the automotive rules of origin that will require or incentivize the use of North American-sourced aluminum and auto parts.

Figure 7-1. USMCA automotive rules of origin requirements affecting aluminum and auto parts



Source: USMCA text, Annex 4-B (Provisions Related to the Product-specific Rules of Origin for Automotive Goods)

Under the USMCA, automakers must annually certify that at least 70% of their purchases of aluminum (and steel) originate in North America (i.e., are produced in North America) for an automaker's vehicles to qualify for duty-free treatment. In addition, the USMCA auto rules raised the North American content

[198] USMCA Chapter 23. Accessed October 15, 2023, https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/23-Labor.pdf. See also Labor Rights and the United States-Mexico-Canada Agreement, Bureau of International Labor Affairs, U.S. Department of Labor. Accessed October 15, 2023, https://www.dol.gov/agencies/ilab/our-work/trade/labor-rights-usmca.
[199] Diario Oficial de la Federación, February 17, 2023. Accessed October 15, 2023, https://www.dof.gob.mx/nota_detalle.php?codigo=5679955&fecha=17/02/2023#gsc.tab=0.
[200] Ludwikowski, M., Lopez, A., Alghazali, S., & Christensen, K. (2023, April 3). *Mexico Bans Importation of Goods Produced with Forced Labor.* Clark Hill. Accessed October 15, 2023, https://www.clarkhill.com/news-events/news/mexico-bans-importation-oE-goods-produced-with-forced-labor/.
[201] USMCA text, Annex 4-B (Provisions Related to the Product-specific Rules of Origin for Automotive Goods).

level of finished vehicles from 62.5% under the North American Free Trade Agreement to 75% under the USMCA and raised the regional content requirement for auto parts from 50%–62.5% to 75% for core parts, 70% for principal parts, and 65% for complementary parts. The new automotive rules of origin also require that core parts such as engines, transmissions, bodies and chassis, axles, suspension systems, and steering systems must be originating with 75% North American content, any many of these core parts must be composed of or contain aluminum. Finally, the USMCA eliminated the "tariff shift" rule for core parts, disincentivizing the use of non-North American produced steel and aluminum in core parts such as engines, transmissions, bodies and chassis, axles, suspension systems, and steering systems.[202]

7.7 Section 232 Tariffs on Aluminum

On March 8, 2018, President Trump exercised authority under Section 232 of the Trade Expansion Act of 1962 to impose a 10% tariff on imports of aluminum and derivative aluminum products, with exemptions for Canada and Mexico, to protect U.S. national security.[203] Imports of aluminum products from Australia and Argentina were subsequently exempted.[204] Beginning on January 1, 2022, the 10% tariff on aluminum and derivative aluminum products from the EU was replaced by tariff-rate quotas.[205] Effective March 10, 2023, U.S. imports of aluminum products from the Russian Federation are subject to a 200% ad valorem rate of duty.[206]

The President's Section 232 decision was the result of an investigation led by the Bureau of Industry and Security (BIS) at the U.S. Department of Commerce.[207] CBP began collecting the tariffs on March 23, 2018.[208] At the same time, the U.S. Department of Commerce established a process to provide relief, or exclusion, from the tariffs. Should BIS approve an exclusion request, the requester may import specific aluminum products up to the quantities granted without paying the additional 10% tariff on those imports.[209] From March 2018 through September 2021, BIS approved approximately 20,000 exclusion requests for aluminum products.[210]

7.8 China Section 301 Tariffs on Auto Parts

On March 22, 2018, pursuant to authority under Section 301 of the Trade Act of 1974, USTR issued a report regarding China's acts, policies, and practices with respect to technology transfer, intellectual

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[202] Ibid.

[203] Adjusting Imports of Aluminum Into the United States, Presidential Proclamation 9704 of March 8, 2018, 83 FR 11619, https://www.govinfo.gov/content/pkg/FR-2018-03-15/pdf/2018-05477.pdf.

[204] Adjusting Imports of Derivative Aluminum Articles and Derivative Steel Articles Into the United States, Presidential Proclamation 9980 of January 24, 2020, 85 FR 5281, https://www.govinfo.gov/content/pkg/FR-2020-01-29/pdf/2020-01806.pdf.

[205] Announcement of Actions on EU Imports Under Section 232, U.S. Department of Commerce, October 31, 2021, https://www.commerce.gov/sites/default/files/2021-10/US%20232%20EU%20Statement.pdf.

[206] Adjusting Imports of Aluminum Into the United States, Presidential Proclamation 10522 of February 24, 2023, 88 FR 13267, https://www.govinfo.gov/content/pkg/FR-2023-03-02/pdf/2023-04470.pdf.

[207] Section 232 Investigation on the Effect of Imports of Aluminum on U.S. National Security, U.S. Department of Commerce. Accessed October 15, 2023, https://www.commerce.gov/section-232-investigation-effect-imports-aluminum-us-national-security.

[208] Section 232 National Security Investigation of Aluminum Imports: Information on the Exclusion Process, Bureau of Industry and Security. Accessed October 15, 2023, https://www.bis.doc.gov/index.php/232-aluminum.

[209] The U.S. Department of Commerce publishes a list of Section 232 Steel and Aluminum exclusion requests. https://232app.azurewebsites.net/Index.

[210] U.S. Government Accountability Office. (2023). *Steel and Aluminum Tariffs: Agencies Should Ensure Section 232 Exclusion Requests Are Needed and Duties Are Paid.* https://www.gao.gov/assets/830/827779.pdf.

property, and innovation, and announced that the United States would take multiple steps to protect American technology and intellectual property from certain discriminatory and burdensome trade practices by China.[211] Effective July 6, 2018, USTR included motor vehicles on "List 1" and subjected approximately $34 billion USD of imports from China to a 25% ad valorem rate of duty.[212] Effective September 24, 2018, USTR included auto parts on "List 3" which initially subjected approximately $200 billion USD of imports from China to a 10% ad valorem rate of duty. The rate of duty for "List 3" goods was subsequently increased to 25% ad valorem effective January 1, 2019.[213] In 2021, automotive vehicles, parts, and engines accounted for 8.7% of the China Section 301 duties paid.[214]

On June 20, 2018, USTR announced procedures to request product-specific exclusions and subsequently granted a series of exclusions from December 2018 to August 2020.[215] However, no passenger vehicles or light trucks were granted exclusions, and it appears that very few, if any, auto parts exclusions were granted. USTR subsequently granted a series of extensions on most but not all exclusions. On May 5, 2022, USTR initiated a mandatory four-year review process.[216] A report from USTR is pending; however, there is no statutory deadline for the release of the four-year review.

7.9 Aluminum Import Monitoring and Analysis System

In May 2019, the United States established an Aluminum Import Monitoring and Analysis System, administered by the International Trade Administration of the U.S. Department of Commerce, that requires importers, customs brokers, or their agents involved in importing basic aluminum products to apply through system's website and obtain an import license for each entry of certain aluminum products into the United States; identify the country or countries where the largest and the second largest volume of primary aluminum used in the manufacture of the imported aluminum product was smelted (subject to certain exceptions); and identify the country where the aluminum product was most recently cast.[217] In addition, the United States and Canada, and the United States and Mexico, agreed to implement effective measures to prevent the transshipment of aluminum products made outside of the United States, Canada, and Mexico.[218] In the context of XUAR-origin aluminum, these measures can contribute to increased scrutiny and transparency in the supply chain; however, their impact has not been documented.

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[211] Memorandum on Actions by the United States Related to the Section 301 Investigation of China's Laws, Policies, Practices, or Actions Related to Technology Transfer, Intellectual Property, and Innovation, Administration of Donald J. Trump, March 22, 2018, https://www.govinfo.gov/content/pkg/DCPD-201800180/pdf/DCPD-201800180.pdf.

[212] Notice of Action and Request for Public Comment Concerning Proposed Determination of Action Pursuant to Section 301: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation, USTR, 83 FR 28710, June 20, 2018, https://ustr.gov/sites/default/files/2018-13248.pdf.

[213] Notice of Modification of Section 301 Action: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation, USTR, 83 FR 47974, September 21, 2018, https://ustr.gov/sites/default/files/enforcement/301Investigations/83%20FR%2047974.pdf.

[214] Lee, T., & Smith, T. (2023). *Section 301 China Tariffs by End Use.* American Action Forum. Accessed October 15, 2023, https://www.americanactionforum.org/research/section-301-china-tariffs-by-end-use/.

[215] China Section 301 Tariff Actions and Exclusion Process, USTR, https://ustr.gov/issue-areas/enforcement/section-301-investigations/tariff-actions.

[216] Initiation of Four-Year Review Process: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation, USTR, 87 FR 26797, May 5, 2022, https://ustr.gov/sites/default/files/301/2022-09688.pdf.

[217] Aluminum Import Monitoring and Analysis System, U.S. Department of Commerce, 85 FR 83803, December 23, 2020, https://www.govinfo.gov/content/pkg/FR-2020-12-23/pdf/2020-28166.pdf.

[218] Joint Statements by the United States and Canada and the United States and Mexico on Section 232 Duties on Steel and Aluminum, May 17, 2019, https://ustr.gov/sites/default/files/Joint_Statement_by_the_United_States_and_Canada.pdf; and https://ustr.gov/sites/default/files/Joint_Statement_by_the_United_States_and_Mexico.pdf.

7.10 Mexico's Tariffs on Non-FTA[219] Aluminum and Auto Parts

On August 15, 2023, Mexican President Andrés Manuel López Obrador issued a Presidential Decree[220] increasing import duties on 392 tariff items by between 5% and 25% ad valorem to products originating from countries that are not party to Mexico's free trade or tariff preferential agreements. Mexico has free trade agreements with 59 countries; however, Mexico does not have a free trade agreement with China, which accounts for nearly 18% of Mexico's imports and would be most affected.[221]

The list of covered products includes intermediate and finished products in strategic industries such as steel, aluminum, textiles, footwear, tires, plastics, glass, paper, cardboard, electrical equipment, and ceramic products. The new decree includes some auto parts classified as parts of bodies (HS 8708.29). The tariff increase applies from August 16, 2023, to July 31, 2025, replacing import duties established by decree in June 2022 under the Law on General Taxes on Import and Export.[222]

China is expected to be the most affected by the tariffs among Mexico's trading partners, given that the country has increasingly recognized Mexico as a pivotal export destination.[223] In response to U.S. trade policies, certain Chinese enterprises have opted to either relocate their manufacturing facilities to Mexico or designate it as a strategic transit point for re-exporting goods into the U.S. market. Trade experts emphasize an ongoing supply chain shift, in which China may consider adjusting the intermediate countries, such as Mexico before goods reach their final destination in the United States.[224] Although the effects of these tariffs on the aluminum and auto parts supply chain are yet to be seen, given that Mexico is now China's leading export market for aluminum and was the third-largest export market for auto parts in 2022, a supply chain shift in the sector is also expected.

With higher tariffs, businesses may face increased costs. This could significantly impact Mexico's sourcing, requiring strategic adaptation by businesses in the aluminum and auto parts sectors to reevaluate sourcing decisions, potentially leading to a shift in suppliers and a heightened focus on domestic or alternative trading partners other than China.

7.11 Antidumping Duty/Countervailing Duty Petition on Aluminum Extrusions from China

On October 4, 2023, the U.S. Aluminum Extruders Coalition and the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (United Steelworkers)[225] filed an antidumping duty (AD) petition on aluminum extrusions from China, Colombia,

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[219] Non-FTA refers to countries or entities that are not part of a Free Trade Agreement (FTA).
[220] Decree Amending the Tariff of the Law on General Import and Export Taxes (in Spanish), Diario Oficial de la Federación, August 15, 2023, https://www.dof.gob.mx/nota_detalle.php?codigo=5698661&fecha=15/08/2023#gsc.tab=0.
[221] Véjar, C., de Rosenzweig, F., & Scoles, S. (2023). *Mexico Imposes Temporary Import Duties Up To 25% on More Than 588 Non-FTA Tariff Items.* White & Case. Accessed October 15, 2023, https://www.whitecase.com/insight-alert/mexico-imposes-temporary-import-duties-25-more-588-non-fta-tariff-items.
[222] Ibid.
[223] Lo, K. (2023, September 21). China urged to alter approach as Mexico shifts trade posts, raises tariffs. *South China Morning Post.* https://www.scmp.com/economy/china-economy/article/3235268/mexico-shifts-trade-posts-and-raises-tariffs-china-urged-alter-its-own-approach-maintain-gains
[224] Ibid.
[225] The Coalition consists of 14 U.S. aluminum extruders: Alexandria Extrusion Company (Alexandria, MN); APEL Extrusions Inc. (Coburg, OR); Bonnell Aluminum (Newnan, GA); Brazeway (Adrian, MI); Custom Aluminum Products (South Elgin, IL); Extrudex Aluminum (North Jackson, OH); International Extrusions (Garden City, MI); Jordan Aluminum Company (Memphis, TN); M-D Building Products (Oklahoma City, OK); Merit Aluminum (Corona, CA); MI Metals (Oldsmar, FL); Pennex Aluminum (Wellsville, PA); Tower Extrusions (Olney, TX); and Western Extrusions (Carrollton, TX).

the Dominican Republic, Ecuador, India, Indonesia, Italy, Malaysia, Mexico, South Korea, Taiwan, Thailand, Türkiye, the United Arab Emirates, and Vietnam. The petitioners allege that imports of aluminum extrusions from these 15 countries are being sold in the United States at less than fair value (i.e., dumped). Table 7-1 presents the alleged dumping margins.

The petitioners also filed a countervailing duty (CVD) petition on aluminum extrusions from China, Indonesia, Mexico, and Türkiye, alleging that these countries are providing countervailable subsidies with respect to the manufacture, production, and export of aluminum extrusions. The alleged subsidy rates for all four countries are above de minimis.[226]

Table 7-1. Alleged dumping margins, by country

Country	Alleged Dumping Rates
	Percent
China	376.85
Colombia	165.25
Dominican Republic	28.29
Ecuador	42.79-63.21
India	39.05
Indonesia	88.53
Italy	41.67
Malaysia	25.89-27.51
Mexico	76.68-82.03
South Korea	43.56
Taiwan	60.25-67.86
Thailand	76.73
Turkey	48.43
United Arab Emirates	42.29
Vietnam	41.84

Source: U.S. Department of Commerce

The U.S. International Trade Commission (USITC) initiated the AD/CVD investigations on October 4, 2023.[227] The U.S. Department of Commerce initiated the AD/CVD investigations on October 25, 2023.[228] The USITC is required by statute to determine whether there is a reasonable indication that the domestic industry is materially injured as a result of the dumped and subsidized imports.

On November 21, 2023, the USITC made preliminary affirmative determinations in the AD/CVD investigations concerning aluminum extrusions from China, Colombia, Ecuador, India, Indonesia, Italy, Malaysia, Mexico, South Korea, Taiwan, Thailand, Türkiye, United Arab Emirates, and Vietnam. The USITC made a negative determination with respect to aluminum extrusions from the Dominican Republic.[229]

[226] *De minimis* is defined as less than 1% for developed countries and less than 2% for developing countries.
[227] Federal Register, 88 FR 71020, October 13, 2023, https://www.govinfo.gov/content/pkg/FR-2023-10-13/pdf/2023-22519.pdf.
[228] International Trade Administration. (n.d.). *Commerce Initiates Antidumping Duty and Countervailing Duty Investigation of Aluminum Extrusions from Fifteen Trading Partners.* Accessed October 29, 2023, https://www.trade.gov/initiation-ad-and-cvd-investigations-aluminum-extrusions-multiple-countries.
[229] Federal Register, 88 FR 82913, November 27, 2023, https://www.govinfo.gov/content/pkg/FR-2023-11-27/pdf/2023-26057.pdf.

On March 4, 2024, the U.S. Department of Commerce issued the preliminary CVD determinations concerning imports from China, Indonesia, Mexico, and Türkiye. The preliminary countervailing subsidy rates for China ranged from 15.41% ad valorem to 169.66% ad valorem. The preliminary countervailing subsidy rates for Mexico ranged from 0.19% ad valorem to 77.82% ad valorem.[230]The final CVD determinations are scheduled to be issued no later than July 15, 2024 The USITC is scheduled to make its final determinations by August 29, 2024.

Aluminum extrusions are produced and imported in a wide variety of shapes and forms, including, but not limited to, hollow profiles, other solid profiles, pipes, tubes, bars, and rods. Aluminum extrusions that are drawn subsequent to extrusion (drawn aluminum) are also included in the scope. The country of origin of the aluminum extrusion is determined by where the metal is extruded.[231] Imports of aluminum extrusions from these 15 countries accounted for approximately 68% of U.S. imports of aluminum extrusions in the first half of 2023. U.S. imports of subject aluminum extrusions from China in calendar year 2022 were 91,425 metric tons valued at $348.5 million USD.

The ongoing investigations by the USITC and the U.S. Department of Commerce could have impacts on the Xinjiang-linked aluminum supply chain because they may lead to the imposition of antidumping and countervailing duties. This could increase costs for aluminum extrusions from the implicated countries, including China, prompting companies to reassess their supply chain strategies.

7.12 Impediments to Shifting Automotive Supply Chains Out of China

Despite the existence of numerous policies aimed at redirecting aluminum supply chains away from China, tangible changes have been slow to materialize. This section delves into the challenges and factors contributing to the limited effectiveness of these policies. Understanding these complexities is crucial for discerning how meaningful transformations in the aluminum supply chain can be achieved.

7.12.1 Scale of Aluminum and Auto Parts Production in China

China is the largest supplier of aluminum globally and a major producer and exporter of auto parts, which creates considerable challenges for automakers and suppliers that need to shift supply chains to other global sources. This is particularly challenging when an entire industry—producing nearly 16 million motor vehicles in North America annually—needs to collectively shift sourcing away from the XUAR specifically and China more generally.

Approximately 5%–10% of the parts content of vehicles produced in North America is imported from China. However, based on KIIs with current and former automotive purchasing executives, as well as insights from another industry expert, it was consistently highlighted that imports of auto parts from China constitute less than 10% of the content in North American assembled vehicles. This percentage is observed to be decreasing due to disruptions in supply chains, elevated import tariffs imposed on auto

[230] Federal Register, 88 FR 84788, December 6, 2023, https://www.govinfo.gov/content/pkg/FR-2023-12-06/pdf/2023-26746.pdf.

[231] The petitioners described the scope of aluminum extrusion products as primarily classified under the Harmonized Tariff Schedule of the United States item numbers 04.10.1000, 7604.10.3000, 7604.10.5000, 7604.21.0010, 7604.21.0090, 7604.29.1010, 7604.29.1090, 7604.29.3060, 7604.29.3090, 7604.29.5050, 7604.29.5090, 7608.10.0030, 7608.10.0090, 7608.20.0030, 7608.20.0090, 7609.00.0000, 7610.10.0010, 7610.10.0020, 7610.10.0030, 7610.90.0040, and 7610.90.0080. However, the petitioners subsequently expanded the product scope to include additional downstream products containing extruded aluminum.

parts from China (under Section 301), and the imposition of more stringent automotive rules of origin requirements outlined in the USMCA.

7.12.2 Complexity of Automotive Supply Chains

The complexity and length of automotive supply chains creates significant challenges for automakers and automotive component producers when mapping their supply chains. Overall, key informants acknowledged businesses' active compliance efforts but emphasized challenges in supply chain tracing visibility. Gathering information becomes intricate when goods extend across diverse sectors and geographies. Restructuring complex supply chains will take time, given the involvement of numerous intermediaries in the production process.

There are more than 15,000 parts in the average new vehicle, and auto parts and components often pass through at least three tiers of suppliers to produce finished parts and components. On average, an auto manufacturer has around 250 tier 1 suppliers, but the number proliferates to 18,000 across the full value chain.[232] In addition, auto parts are sourced from around the world, with China accounting for approximately 12% of global exports. China also is taking active measures to hinder or obscure the origin of many Chinese-produced materials and parts to avoid scrutiny or sanctions. The *Asleep at the Wheel* report by Human Rights Watch underscores that companies encounter difficulties not only in navigating an opaque aluminum industry but also in facing the risk of reprisals from the Chinese government for investigating links to Xinjiang. As a result, many carmakers are unaware of the complete extent of their exposure to forced labor.[233]

7.12.3 Product Cycles and Procurement Practices

Automotive product cycles and model production runs typically span five to seven years, and procurement sourcing typically begins two to three years before the start of production and sale of new vehicle models. These lengthy procurement and production cycles make it particularly challenging for automakers and suppliers to suddenly shift suppliers, when auto parts, components, and systems need to meet stringent quality, performance, safety, reliability, and durability standards. Certification of parts and suppliers often takes a year or more. As seen during the COVID 19 pandemic, supply chains are quite fragile and lack redundancies and resiliencies. The volume of purchases also presents challenges to quickly finding and qualifying alternative suppliers.

8. Conclusion and Recommendations

8.1 Conclusion

There is clear evidence of forced labor in the XUAR's aluminum production. Horizon Advisory's report (2022) investigated the Xinjiang aluminum sector and identified forced labor risks at all eight major aluminum companies operating in the XUAR. These risks included involvement in government-led labor transfer programs targeting Uyghur populations, involvement in the XPCC, and being recognized as "ethnic policy" leaders due to their participation in programs aimed at increasing allegiance to the Chinese Communist Party among Indigenous peoples. There is also documented evidence of auto parts manufactured in the XUAR, with 96 mining, processing, or manufacturing companies relevant to the

[232] Baumgartner, T., Malik, Y., & Padhi, A. (2020). *Reimagining Industrial Supply Chains.* https://www.mckinsey.com/industries/industrials-and-electronics/our-insights/reimagining-industrial-supply-chains#/.
[233] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china.

automotive sector operating in the region, including at least 38 that have documented engagement in state-sponsored labor transfer programs. According to reports from Sheffield Hallam University and Horizon Advisory, more than 50 international automotive companies and more than 100 parts manufacturers exhibit multiple supply chain exposures to the Uyghur Region. Due to the absence of aluminum traceability and the substantial aluminum production in the XUAR, Chinese exports of aluminum and auto parts face the risk of being produced with forced labor in the XUAR. In addition, the aluminum and automotive part manufacturing industry is anticipated to keep growing in the region, as increased subsidies and development projects continue to expand.

Despite efforts such as the USMCA and the UFLPA, there is a clear risk that forced labor occurring in XUAR is finding its way into auto parts produced in China as well as auto parts and vehicles produced in Mexico and imported by the United States. Mexico is now China's leading export market for aluminum and was the third largest export market for auto parts in 2022. Relatedly, China was Mexico's second largest import source for auto parts after the United States, with brakes, body parts, road wheels, and engines being the leading categories, making them more susceptible to forced labor risks. The United States, in turn, imports approximately 85% of finished vehicles and auto parts exported by Mexico. Taken together, these findings outline a path through which products tainted with forced labor occurring in the XUAR can find their way to U.S. markets. As China's exports of aluminum and auto parts to Mexico increase, the risk of materials produced with forced labor entering Mexico's supply chain and, in turn, U.S. markets, becomes all the more salient, as does the need for responsible sourcing and improved traceability in the automotive industry.

Observations over the 16 months since the UFLPA's implementation indicate a need for amendments to grant CBP more adaptable tools for UFLPA enforcement, as suggested by two leading trade lawyers. However, the UFLPA has notably catalyzed increased transparency in manufactured goods supply chains and prompted shifts in sourcing behavior. In response to the compliance requirements of the UFLPA, automakers and automotive parts suppliers are actively investing to better comprehend the risks and vulnerabilities within their supply chains, as highlighted by several experts. In addition, the (USMCA automotive rules of origin and Mexico's implementation of USMCA Forced Labor import ban, once fully implemented, have the potential to disincentivize the importation and use of Chinese-made aluminum and auto parts in North American-produced vehicles and auto parts. However, the intricate nature of global supply chains, especially in the automotive sector, poses obstacles to effective enforcement. Addressing Mexico's recent surge in aluminum imports requires strategic partnerships with USMCA suppliers, rigorous supply chain transparency measures, and continuous monitoring. For companies operating in Mexico, particularly within top-imported, aluminum-intensive product categories like brakes, bodies, wheels, and engines, there is a pressing need to elevate due diligence efforts.

8.2 Recommendations

Based on extensive supply chain research and KIIs, the following are suggested actions that policymakers, private sector actors, and NGOs should consider in order to create a baseline understanding of current conditions, improve domestic enforcement, encourage greater private sector collaboration, and expand international efforts to combat international trade in forced labor goods.

- **Request an independent fact-finding investigation.** Under authority of Section 332 of the Tariff Act of 1930,[234] the President, Senate Committee on Finance, House Committee on Ways and

[234] See Section 332 of the Tariff Act of 1930, 19 U.S.C. 1332, https://www.govinfo.gov/content/pkg/USCODE-2017-title19/pdf/USCODE-2017-title19-chap4-subtitleII-partII-sec1332.pdf.

Means, or the USTR can request the USITC—an independent federal agency—to institute an investigation that includes the following:

- A review of the current market conditions related to the production, import, and use of forced labor in aluminum-based goods imported into the United States from China and other countries.
- An assessment of the impact and effectiveness of private sector actions being implemented to make aluminum/auto parts supply chains more transparent and accountable.
- A review of other countries' actions to address forced labor in internationally traded aluminum-based goods, specifically auto parts.
- An economic analysis of trade volumes and trade patterns of aluminum-based goods in response to enforcement measures adopted in the United States and other key markets.
- A comprehensive industry analysis for Mexico focused on identifying the sectors and industries using Chinese aluminum, including, but not limited to, the automotive sector, to understand the diverse applications of imported Chinese aluminum. This analysis will help elucidate the extent to which Chinese aluminum imports are contributing to various sectors of the Mexican economy, facilitating targeted interventions and policy adjustments where necessary.

Given the evolving dynamic, ongoing changes to trade policy, and implementation efforts against imports produced with forced labor in the XUAR, in the United States, Mexico, and other key markets, independent fact-finding investigations will keep policymakers updated on the effectiveness of trade policies and allow for analysis of changes to private sector sourcing of input materials.

- **Enhance supply chain transparency and collaboration for UFLPA compliance.** To effectively address challenges associated with compliance with the UFLPA, businesses should implement robust tracing and monitoring systems capable of providing real-time insight into subnational geographic restrictions, sanctioned entities, and factory labor conditions. Special assistance should be provided to lower-level (tier 3 and lower) suppliers that do not typically have the resources or expertise to meet rigorous reporting obligations. Given that most private sector initiatives addressing forced labor risks in the aluminum supply chain have been implemented at the company level due to the sensitivity of supply chain information, companies must actively collaborate with suppliers and intermediaries to ensure alignment with UFLPA requirements, which may require modifications to existing structures or the development of new ones to ensure compliance. This involves fostering partnerships that prioritize ethical sourcing practices and promote transparency at every stage of the supply chain. For instance, specific measures such as supporting the development of a blockchain supply chain consortium and reporting platform[235] could enhance compliance efforts. Furthermore, businesses should prioritize

[235] The construction of these systems is underway, presenting an opportune moment for the U.S. Government to collaborate with the automotive industry, helping broaden the scope of the platform to include and ensure alignment with labor and environmental standards. See more: Rio Tinto. (n.d.). *Rio Tinto launches START: The first sustainability label for aluminum using blockchain technology*. Accessed January 16, 2024, https://www.riotinto.com/en/news/releases/2021/rio-tinto-launches-start-the-first-sustainability-label-for-aluminium-using-blockchain-technology.

ongoing education and training programs for employees involved in supply chain management to ensure a comprehensive understanding of UFLPA regulations and compliance requirements.

- **Amend the UFLPA to allow for more flexible and effective enforcement.** Although there is overwhelming support for the UFLPA, there is an emerging consensus that its current framing, with a strong focus on interdiction, provides limited flexibility for CBP to expand its enforcement approaches. For example, the law should be amended to include specific seizure and penalty provisions. CBP has general authority to seize and issue penalties for importations contrary to law (see 19 USC 1595a), but there is disagreement as to whether CBP has authority to use these seizure and penalty provisions for goods that violate the UFLPA and Section 307. If CBP argues that seizing goods that violate the UFLPA would be too onerous on its ports of entry, the law should be amended to include penalty provisions only. Furthermore, although CBP has the authority to seize and issue penalties under its catch-all provision, currently it needs probable cause to seize or issue a penalty for a UFLPA violation, which is challenging, given importers' opaque supply chains.

- **Addressing CBP's de minimis challenges**. Regarding the de minimis exemption, it is suggested that Congress consider revising the threshold back to $200, as it was before the 2016 adjustment to $800,[236] or even lower. Proposed bills such as the *De Minimis* Reciprocity Act of 2023 and the Import Security and Fairness Act offer potential frameworks for addressing the challenges posed by the *de minimis* provision. By requiring additional information for entries and imposing restrictions on certain countries, these bills aim to strike a balance between facilitating trade and safeguarding against violations.

- **Enhance U.S. and Mexico due diligence efforts, especially within top-imported, aluminum-intensive product categories.** Mexican and U.S. companies will need to prioritize enhanced due diligence efforts, particularly focusing on the top imports within aluminum-intensive product categories, such as brakes, bodies, wheels, and engines. To leverage the benefits of the USMCA automotive rules of origin and Mexico's USMCA forced labor import ban, strategic partnerships with USMCA suppliers, rigorous supply chain transparency measures, and continuous monitoring need to be prioritized to ensure compliance with USMCA regulations. Given Mexico's current lack of targeted strategies to enforce its import ban, it is crucial for the country to develop effective interagency implementation measures, with a particular focus on the aluminum from Xinjiang. In addition, Mexico should enact legislation requiring companies to disclose their supply chains for commodities with a high potential for human rights violations, particularly forced labor in the XUAR. U.S. technical assistance could be valuable to support Mexico authorities in designing and implementing forced labor enforcement strategies.[237]

- **Incorporate forced labor mitigation into the scope of ongoing and future multilateral negotiating frameworks.** This includes frameworks such as the Indo-Pacific Economic Framework for Prosperity, Americas Partnership for Economic Prosperity, multilateral economic forums such as the G7 and G20, and future multilateral economic and trade negotiations. In

[236] The *de minimis* exemption is a statutory provision in which imported goods with an aggregate fair retail value in the country of shipment of not more than $800 can be imported by one person on one day without paying duties, taxes, or filing a formal entry process. No formal entry is filed, so CBP generally cannot/does not scrutinize these shipments as much as goods entered under formal or informal customs entry. *De minimis* was raised from $200 to $800 in 2016 in the Trade Facilitation Trade Enforcement Act, which may have contributed to the increased use of this provision. See more: https://www.cbp.gov/trade/trade-enforcement/tftea/section-321-programs.

[237] Wormington, J. (2024). *Asleep at the Wheel.* Human Rights Watch. https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china.

January 2022, the USTR initiated a process to develop a focused trade strategy to combat forced labor.[238] As part of this initiative, USTR should coordinate across the U.S. Government and in cooperation with the private sector to develop and negotiate effective agreements that support greater supply chain transparency and prohibit trade in goods and services produced with forced labor.

[238] Office of the U.S. Trade Representative. (2022). *USTR Announces the Development of a Focused Trade Strategy to Combat Forced Labor.* https://ustr.gov/about-us/policy-offices/press-office/press-releases/2022/january/ustr-announces-development-focused-trade-strategy-combat-forced-labor. See also Federal Register notice 87 FR 40332, July 6, 2022, https://www.govinfo.gov/content/pkg/FR-2022-07-06/pdf/2022-14355.pdf.

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Appendix B: Final Research Instruments

Supply Chain Qualitative Research Instrument Protocol: Aluminum/Mexico Auto Parts

KII (Key Informant Interview) Protocol

INTERVIEWER INSTRUCTIONS:

Foster a dynamic environment conducive to gathering good data by first breaking the ice by discussing general issues relevant to the respondent. The interview should have the relaxed feel of a conversation. Set the tone by using a slow pace in your speech.

Ask one question at a time. Give the respondent ample time to reflect and fully respond before moving to the next. Try not to interrupt, and do not answer on their behalf.

Let the respondent know you would like to record the interview by asking for permission to record. If the respondent agrees to be recorded, give them your full attention. Make note of any follow-up questions you want to remember to ask, but otherwise focus on the respondent rather than your paper.

Probe for more depth, particularly when responses are brief. Use phrases such as, "Tell me more about that" and "Can you give me an example?" Aim to get specific instances, in considerable detail, whenever possible.

You do not have to ask each question verbatim, but at least broach all the topics covered that are relevant to the key informant. Adapt the flow and questions to make them relevant to the respondent.

For each item, ask the general question first, and then probe the sub-items that have not been addressed spontaneously.

NOTE:

As this study covers multiple countries and the global aluminum/auto parts industry as a whole, for instances where questions state "**Target Country"** interviewer should insert the specific country that pertain to the interviewee's area of expertise and knowledge.

ABBREVIATIONS:

XUAR Xinjiang Uyghur Autonomous Region

INFORMATION SHEET

Interviewer:	Date (DD/MM/YY)
Location of interview:	
Name of Interviewee (Code not real name):	Sex:
Profession (if applicable):	
Position (if applicable):	
Field of Work: ____ NGO ____ Aluminum/auto parts industry (buyer, transporter, processor, etc.) ____ Aluminum/auto parts Association ____ Union ____ Academia ____ Other _____	
Employer/Affiliated Institution/Organization (if applicable):	
Contact information (office address, phone number, email):	
Time interview started:	
Time interview ended:	
Interviewee agreed to be recorded: ___ Yes ___ No	

INTRODUCTORY QUESTIONS

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(2) Private Industry including manufacturers and suppliers in China
(3) Automotive Manufacturers and Suppliers in Mexico
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. Could you please tell me your role and your background/experience?

2. Could you share any additional experiences you might have in the aluminum/auto parts industry or related industry? Can you describe your organization's/company's work directly in the aluminum/auto parts industry?
    a. What kind of specific activities and specific products in this area do you and your organization/company undertake?
    b. [If the organization is not directly involved ask] If your work is not directly related, how are you familiar with issues regarding the aluminum/auto parts industry?

TO INTERVIEWER:

If respondent indicates that they work in the following professions/industries:

- Union Representatives
- NGO'S
- Institutions That Work to Prevent and Address Labor Exploitation
- Academics
- Organization that is part of the aluminum/auto parts supply chain

Ask questions 1 and 2 from the supply chain section before moving on to the forced labor questions section. If respondent works for an organization that is outside the supply chain but has in depth supply chain knowledge in relation to questions 1-2 you may return to ask more supply chain questions if time allows.

GENERAL SUPPLY CHAIN

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations

1. How does the aluminum/auto parts industry in Mexico work with China XUAR and related supply chains? Probe for how the China-Mexico supply chain connection influences this industry.
2. What laws and regulations govern the industry?
    a. Probe for specific/applicable industry, trade and labor laws.
    b. Have any industry laws or regulations been implemented in response to conditions in China/XUAR? Probe for regulations regarding aluminum coming from XUAR.

3. Who are the major stakeholders and influencers in the aluminum/auto parts industry (ex: local and international NGO's, trade associations, unions, informal business networks, owners, buyers, traders, foreign investors, or companies)?
4. Please describe the production process of aluminum/auto parts from the beginning to the end?
    a. How are these goods transported or traded?
    b. Probe for specifics on how goods from XUAR are transported and or traded.
5. After aluminum/auto parts is smelted in the XUAR, what additional processing occurs within China?
    a. What other goods, byproducts, or downstream goods are produced in-country?
    b. Are these consumed domestically or exported?
6. Is there any list or mapping of manufacturers in China/Mexico? How would someone access the list?
7. Is there any list or mapping of suppliers in China/Mexico?
    a. How would someone access the list?
    b. What type of entity/organization performs this mapping? Are they law enforcement, government, NGO, etc.?
8. Is there any list or mapping of processing facilities in the XUAR? How would someone access the list?
9. What type of products do aluminum/auto parts from the XUAR end up in, considering both intermediary goods and finished/end goods?
10. Could you clarify the destination of these aluminum/auto parts, whether they are primarily distributed within China, Mexico, or on a global scale?
11. How have current or former trade policies impacted the aluminum/auto parts sector? Probe for the role of the international community in regulating the aluminum/auto parts industry coming from XUAR?
    a. What laws, regulations, or policies have been implemented to address imports of goods from XUAR and how have they been implemented?
    b. How can Mexican aluminum buyers and other global aluminum buyers effectively implement such policies to prevent the importation of goods from XUAR?
12. Have there been any socio-political or economic events that have impacted the aluminum/auto parts supply chain? Probe for specifics/examples of these events, including the implementation of the Uyghur Forced Labor Prevention Act.
13. What can you tell us about the labor standards in the aluminum/auto parts industry?
    a. What are the labor standards and regulations that apply to aluminum/auto parts?
    b. What are the primary concerns across the industry when it comes to labor standards and labor regulations?
    c. Who has oversight for ensuring laws that prevent importation of aluminum for use in the auto parts industry or aluminum auto parts from XUAR are followed? Probe for different actors that are involved in oversight, their responsibilities, and the actions being taken.
    d. What are the different certifications available for companies in the supply chain?
        i. Is it common for companies to have these certifications?
        ii. What are the strengths of weaknesses of these certifications, according to your assessment? Probe for the degree they cover forced labor, unannounced auditing, penalties for noncompliance, etc.
14. Are you aware of any ongoing supply chain traceability initiatives in the sector?
    a. Probe for specifics on what the initiatives are and who is promoting them (e.g., government, international corporations, domestic companies.)

b. Probe for specific initiatives aimed at addressing potential challenges that may arise in Mexico concerning illegal importation operations related to the new forced labor import ban.

15. Are you aware of any ongoing due diligence efforts being made in the aluminum/auto parts sector in China and Mexico related to sourcing goods produced with forced labor from XUAR?
    a. In your opinion, how have such efforts been successful and what areas need improvement?
    b. Probe for information of certain efforts/campaigns and who is involved in the development and enforcement of due diligence efforts.
16. In your opinion, what supply chains are most at risk of importing aluminum from XUAR?

CHINA DOMESTIC USE

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(2) Private Industry including manufacturers and suppliers in China

1. Can you tell me if aluminum/auto parts produced in XUAR are used domestically? If so, in what domestic industries and in what downstream products are aluminum/auto parts used in?
    a. What percentage of aluminum/auto parts are utilized domestically?
    b. What are the major downstream goods produced domestically?
        i. Probe for variation in the primary destination (domestic use or export) based on specific downstream goods identified previously by respondent.
        ii. Are any downstream aluminum/auto parts goods produced domestically exported?
2. At what stage do aluminum/auto parts produced in XUAR become aggregated with domestically- and internationally produced aluminum/auto parts?

CHINA EXPORTS

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(3) Automotive Manufacturers and Suppliers in Mexico

1. What can you tell me about the export of aluminum/auto parts from China?
    a. What percentage of Chinese-processed aluminum/auto parts are exported?
    b. What industries are most commonly importing aluminum/auto parts from China?
    c. What does the aluminum/auto parts export process look like? Probe for specific storage, packaging and transportation methods involved.

MEXICO ALUMINUM/AUTO PARTS

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(3) Automotive Manufacturers and Suppliers in Mexico

1. Does Mexico produce aluminum/auto parts domestically?
    a. How have changes in domestic production impacted/changed imports of aluminum/auto parts?
    b. Does Mexico import meaningful quantities of aluminum/auto parts from countries besides China?
2. At what stage do aluminum/auto parts imports become aggregated with domestically produced aluminum/auto parts?
3. Does the downstream use of aluminum/auto parts imported from China differ from the downstream use of domestically (or North American) produced aluminum/auto parts?
    a. What are the major downstream goods produced in Mexico utilizing aluminum/auto parts produced in the XUAR? Probe for variation in the primary destination (domestic use or export) based on specific downstream goods identified previously by respondent.
4. Are you aware of what companies in Mexico use aluminum/auto parts from China? Probe for specifics.
5. Who are the major trading partners for aluminum/auto parts that are exported? Have there been any shifts in major trading patterns or partners with China in recent years?
6. Have there been any major changes in the volume, value, or types of exports? Probe for examples if not already specified.

SUPPLY CHAIN LABOR EXPLOITATION

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations

1. How might one track aluminum/auto parts made in the XUAR through the domestic supply chain?
    a. Probe for specifics based on the supply chain of corporate/large industry players versus small-scale manufacturers.
    b. Is there a point in the supply chain where you anticipate tracking would no longer be possible? Probe for specifics on what stakeholder the traceability ends with, ex: intermediary buyer, exporter, etc. (Specific probe: When does the aggregation of aluminum/auto parts from different sites occur, how does aggregation occur)?
2. What is your overall impression of working conditions in the aluminum/auto parts industry in the XUAR?
    a. What are the factors that make a worker in this sector more vulnerable to forced labor?
        i. Probe for specifics on demographics – age range, gender, migratory status.
        ii. How does forced labor within the aluminum production in the XUAR manifest into the downstream products of aluminum auto parts in Mexico and within China?
    b. Are you aware of any industries or occupations in which workers are working on an involuntary basis or are otherwise unable to leave their jobs?

3. During which stages of the aluminum/auto parts supply chain are risks for forced labor most prevalent?
    a. What are the risk factors at each stage of aluminum production (particularly smelting)
    b. Which specific aluminum auto parts, such as aluminum wheels, aluminum decals, or other components, are at risk of being produced with forced labor in XUAR are imported into Mexico? In what segments of the industry and its supply chain are the risks most present?
    c. To what degree do aluminum byproducts, such as gallium, face these risks? (IF RESPONDENT INDICATED FORCED LABOR PRESENCE) Who are the main stakeholders in the aluminum/auto parts industry of China/Mexico involved in the sale and processing of aluminum/auto parts using forced labor?
    d. (IF RESPONDENT INDICATED FORCED LABOR PRESENCE) What types of downstream good(s) are being produced from aluminum/auto parts obtained through forced labor?
    e. How can aluminum buyers (probe for specifics in Mexico) effectively implement traceability measures and enforce existing government laws to prevent the importation of goods produced with forced labor?
4. How do you anticipate the implementation of Mexico's Forced Labor Regulation, effective May 18, 2023, will impact the importation of goods produced with forced Labor?

FORCED LABOR

Questions for the following KII group types:
(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. (IF NOT ALREADY ASKED IN SUPPLY CHAIN QUESTIONS) What is your overall impression of working conditions in the aluminum/auto parts industry in the XUAR?
    a. What are the main issue areas you are aware of?
    b. What factors make a worker in this sector more vulnerable to forced labor? Probe for specifics on demographics – age range, gender, migratory status.
2. What do you think of worker-employer relations in the industry? Probe for relative power dynamics (e.g., how do workers exert their influence on the sector, if at all)?

INTERVIEWER:

For respondents with limited insights on labor conditions from questions 1 and 2 rely on skip logic notes below.

RECRUITMENT

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. In your understanding, how do individuals become employed in the aluminum/auto parts sector in the XUAR?
2. How common is employment through labor transfer programs? To what degree do aluminum/auto parts manufacturers participate in the labor transfer program

What are the specific recruitment methods used and do they differ among types of employers?

INTERVIEWER: IF RESPONDENT DOES NOT HAVE INSIGHTS INTO RECRUITMENT BASED ON THIS INITIAL QUESTION MOVE ONTO NEXT SECTION.

3. Are promises made to workers a part of the recruitment methods used? If so what kinds of promises?
    a. If so, who is the one making the promises?
    b. In your opinion/experience are those promises being met?
    c. IF NOT ALREADY MENTIONED, have there been cases where threats to families have been used to coerce individuals into labor activities? Can you provide any insights into this aspect?
    d. How common is recruitment in the XUAR through poverty alleviation programs?
4. Based on your understanding/experience who are people recruited to work in the XUAR?
5. Do workers in the aluminum/auto parts sector in the XUAR typically have a contract?
6. Are contracts typically verbal or written? If written, do workers usually understand the contents of the contract? (Probe: written in a language the worker can understand; worker is literate or allowed to have someone read it; worker is given sufficient time to examine the contract).
7. Are you aware of any reports of anyone being sold or taken by force to work in the aluminum/auto parts sector in the XUAR?

EARNINGS, HOURS, BENEFITS, AND DEBT

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. In your experience, what are the key issues that workers face in terms of their wages and benefits in the aluminum/auto parts sector?
    a. Do workers get paid regularly and on time? How and how often are they paid?
    b. Do workers encounter situations of withheld wages or wage deductions?
    c. Do workers typically receive more or less than the minimum wage? If less, are you aware of coercive practices used to set a worker's wage?

INTERVIEWER: IF RESPONDENT DOES NOT HAVE INSIGHTS INTO WAGES AND PAY BASED ON THIS INITIAL QUESTION MOVE ONTO NEXT SECTION.

2. How many hours does a worker typically work? Are they paid for all hours worked?
    a. How often do employees work overtime or past their agreed hours?
    b. What happens to a worker if they refuse to work overtime or past their agreed hours?
    c. Are workers paid the legally required overtime rate? (If applicable)
3. Is it common for workers in the aluminum/auto parts sector to be in debt to employers or recruiters?
    a. What kinds of borrowing and pay-back arrangements have you seen?
    b. How often are workers unable to leave their jobs because of debt to an employer or recruiter? Could you give me a sense of the percentage of workers who experience this?

WORKING CONDITIONS, HAZARDOUS WORK, AND COERCION

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. Regarding labor practices in the XUAR, are there any indications of closed pre-job training sessions that raise concerns about forced labor involvement? Could you provide examples or instances of such training programs? (CONTEXT FOR INTERVIEWER/INTERVIEWEE IF NEEDED: The Chinese government calls the facilities “vocational education and training centers;” the most common terms used by international media organizations and researchers are reeducation camps, internment camps, and detention camps.)
2. Among aluminum/auto parts companies in China, to what degree is the workforce exposed to coercion (e.g., threats, detention, etc.), in the context of forced labor in the XUAR?
3. What are the most common labor abuses workers tend to face in the aluminum/auto parts sector in the XUAR?
4. How many Uyghurs and other mostly Muslim minorities have been arbitrarily detained in China's Xinjiang Uyghur Autonomous Region, and what are the conditions they face in re-education camps, particularly regarding the aluminum/auto parts sector?
5. In your understanding, are there sufficient health and safety standards in place in the aluminum/auto parts sector in the XUAR?
6. What types of coercion or threats do workers face from their employers in the aluminum/auto parts sector?
    a. Probe for specifics about situations when this is common (e.g., not meeting quota, when worker wants to quit, etc.) plus factors that make a worker more likely to experience this (e.g., gender, migration status, race, religion, age, etc.)
    b. Probe for abuse of vulnerability.
    c. Could you provide an estimated percentage of workers who experience this?
7. Can workers in the aluminum/auto parts sector in the XUAR leave their jobs if they choose?
    a. If not, why and in what situations? Probe about workers in debt.
    b. Do workers who leave or attempt to leave their job face any consequences?

SURVEILLANCE AND LIVING CONDITIONS

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. What kind of involvement do employers in the aluminum/auto parts sector have in workers' lives outside of work?
2. What are the specific abuses and discriminatory practices faced by Uyghur workers in the internment camps?
3. How do workers access goods and services to meet their basic needs?
4. Who provides the living arrangements for workers?
5. By your estimation, what proportion of workers live in employer-provided housing in the aluminum/auto parts sector? For those living in provided housing, can they come and go freely outside of working hours?

INTERVIEWER: IF RESPONDENT HAS NOT SHOWN INSIGHTS INTO LIVING CONDITIONS BY THIS STAGE, MOVE ONTO NEXT SECTION.

6. How does the vast surveillance state in Xinjiang and the threat of detention impact the ability of individuals to make choices about their labor conditions in the aluminum/auto parts sector?
7. Can you describe the living conditions of those living in employer-provided housing? Probe for specifics on access to water, building material of homes, typical number of people to a dwelling/number of families to a dwelling, etc.
8. Is housing provided free of charge or is there a fee? If there is a fee how much is it and how/when does the worker pay?
9. Do employers monitor / limit the communications of their workers? If so, how?
10. Are you aware of workers being locked in or under guard while they are working?
11. Who holds the workers' identity documents?
12. How can workers access or regain procession of their documents?

GRIEVANCE PROCEDURES AND INDUSTRY/GOVERNMENT INITIATIVES

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. In your experience, what understanding do workers in the aluminum/auto parts in the XUAR typically have of their rights? What are the areas in which worker awareness is low?

INTERVIEWER: IF RESPONDENT HAS NOT SHOWN INSIGHTS INTO WORKERS RIGHTS BASED ON THE INITIAL QUESTION, MOVE ONTO NEXT SECTION.

2. What mechanisms are available for submitting grievances? Have you heard of or observed any retaliation for submission of grievances?
3. Are you aware of any efforts by NGOs or international entities or others to improve labor conditions in the aluminum/auto parts sector?
    a. If so, please explain.
    b. In your opinion, how effective are policies and practices from the international community and/or industry in terms of workers' rights and working conditions? (Probe for gaps.)

CONCLUSION

Questions for the following KII group types:

(1) Global Experts on the Aluminum Industry and Experts on Auto Parts Supply Chain
(2) Private Industry including manufacturers and suppliers in China
(3) Automotive Manufacturers and Suppliers in Mexico
(4) Voluntary Sustainable Standards and Certification Program Organizations
(5) National Trade Union or Labor Organization (Aluminum/Automotive Industry or Labor Rights)

1. Could you suggest any organizations or individuals that are well informed about the aluminum/auto parts sector supply chain or forced labor in the industry that we could interview?
    a. What about any publicly available industry reports/publications?
    b. Is there anything else you would like to add?

Appendix C: Forced Labor Definitions

Key Concepts and Definitions[239]

Forced labor: The International Labour Organization Forced Labour Convention, 1930 (No. 29) defines, in its Article 2, forced or compulsory labor for the purposes of the Convention as "all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily." For statistical purposes, a person is classified as being in forced labor if engaged in any work that is both under the threat of menace of a penalty and involuntary.

- **Menace of Penalty**: Threat and menace of any penalty are the means of coercion used to impose work on a worker against a person's will.
  - Workers can be:
    - actually subjected to coercion, or
    - verbally threatened by these elements of coercion, or
    - be witness to coercion imposed on other co-workers in relation to involuntary work
  - Elements of coercion may include, inter alia:
    - threats or violence against workers or workers' families and relatives, or close associates;
    - restrictions on workers' movement
    - debt bondage or manipulation of debt
    - withholding of wages or other promised benefits
    - withholding of valuable documents (such as identity documents or residence permits)
    - abuse of workers' vulnerability through the denial of rights or privileges, threats of dismissal or deportation

- **Involuntariness:** Involuntary work refers to any work taking place without the free and informed consent of the worker.
  - Circumstances that may give rise to involuntary work, when undertaken under deception or uninformed, include, inter alia:
    - unfree recruitment at birth or through transaction such as slavery or bonded labor
    - situations in which the worker must perform a job of different nature from that specified during recruitment without a person's consent
    - abusive requirements for overtime or on-call work that were not previously agreed with the employer
    - work in hazardous conditions to which the worker has not consented, with or without compensation or protective equipment
    - work with very low or no wages
    - in degrading living conditions imposed by the employer, recruiter, or other third-party
    - work for other employers than agreed
    - work for longer period of time than agreed
    - work with no or limited freedom to terminate work contract

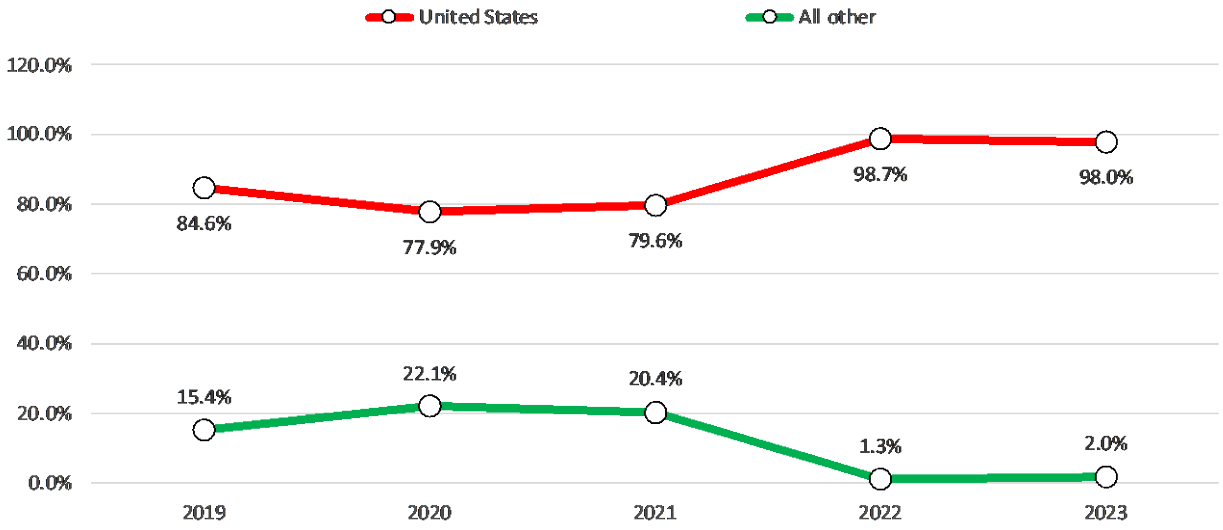
[239] From 20th International Conference of Labour Statisticians Geneva, 10-19 October 2018. Guidelines concerning the measurement of forced labour. Available from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648619.pdf.

Appendix D: Additional Export Tables and Data

Mexico's Aluminum Exports to the World

Figure D-1 presents data on Mexico's leading export markets. Mexico is not a significant producer or exporter of aluminum.[240] Mexico ranked as the 43rd largest exporter of aluminum in 2022 (latest comparison year available). Mexico's exports of aluminum increased by 67.5% between 2019 to 2023, from $272 million USD in 2019 to $455 million USD in 2023. The United States was Mexico's largest market, accounting for 98.07% of Mexico's exports of aluminum in 2023.[241]

Figure D-1. Aluminum:[1] Mexico's leading export markets, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Table D-11 in below presents data on Mexico's exports of aluminum by HS6 subheading from 2019 to 2023. In 2023, Mexico's top aluminum exports by HS6 subheading were as follows:

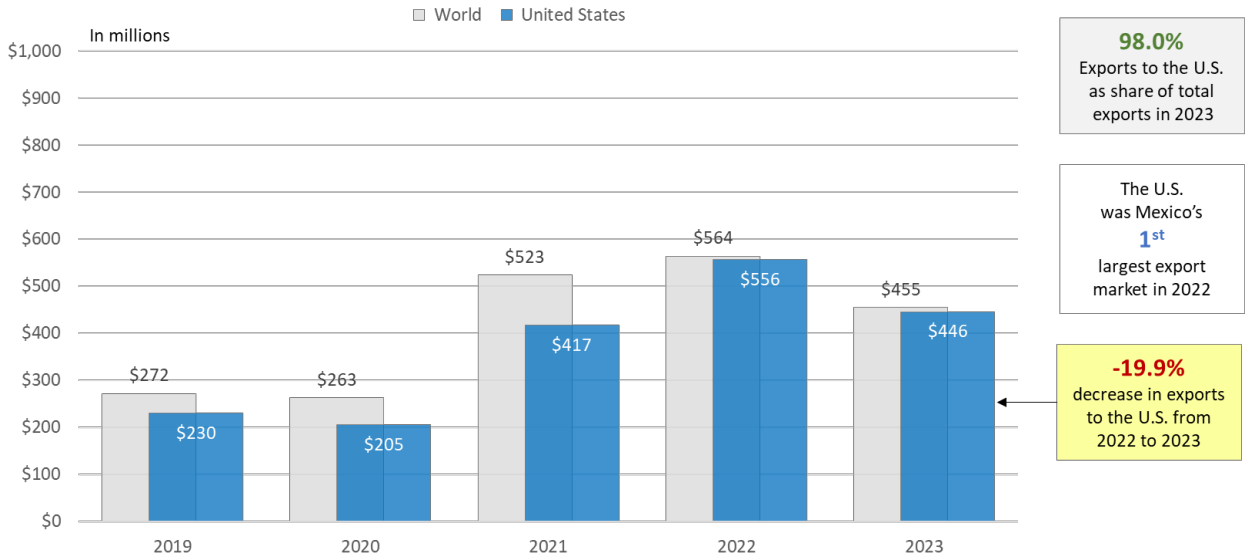
[240] Table D-9 in Appendix D presents data on Mexico's exports of aluminum to the world by market from 2018 to 2022.
[241] Trade Data Monitor.

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	7604.29	Aluminum alloy bars, rods, and profiles	$179.5	39.5
2	7604.21	Aluminum alloy hollow profiles	$110.6	24.3
3	7606.20	Aluminum alloy tubes and pipes	$81.7	18.0
4	7608.12	Aluminum alloy plates, sheets, and strip, rectangular	$27.7	6.1
5	7601.20	Unwrought aluminum alloys	$26.2	5.8
		Subtotal	**$425.7**	**93.6**

Mexico's Aluminum Exports to the United States

Figure D-2 presents data on Mexico's exports of aluminum by market and market share from 2019 to 2023.[242] Mexico's exports to the United States increased by 94% between 2019 to 2023 but decreased by 19.9% from 2022 to 2023.[243]

Figure D-2. Aluminum:[1] Mexico's exports to the United States and the world, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00
Source: Mexico National Institute of Statistics, Ministry of Economy

[242] Table D-13 in Appendix D presents data on Mexico's exports of aluminum to the United States from 2018 to 2022.
[243] Mexico National Institute of Statistics, Ministry of Economy

In 2023, Mexico's top five exports of aluminum to the United States by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of exports Percentage
1	7604.29	Aluminum alloy bars, rods, and profiles	$178.6	40.1
2	7604.21	Aluminum alloy hollow profiles	$109.2	24.5
3	7606.20	Aluminum alloy tubes and pipes	$80.08	187.1
4	7608.12	Aluminum alloy plates, sheets, and strip, rectangular	$27.0	6.1
5	7601.20	Unwrought aluminum alloys	$23.0	5.2
		Subtotal	**$418.6**	**93.9**

Table D-1. Aluminum:[1] Global exports, by partner, 2018–2022

	Partner	2018	2019	2020	2021	2022	2022 Share	▲ 2021-22	▲ 2018-22
				U.S. Dollars				*Percent*	
1	China	12,112,861,736	11,197,621,308	9,245,438,934	14,278,036,870	19,260,658,910	12.1%	34.9%	59.0%
2	Netherlands	7,770,604,175	6,290,315,998	5,018,475,461	9,240,448,055	12,016,462,115	7.6%	30.0%	54.6%
3	Germany	9,468,675,596	8,796,287,868	7,585,199,131	10,016,011,660	11,567,587,302	7.3%	15.5%	22.2%
4	Canada	8,031,266,459	6,491,291,828	6,636,486,970	9,791,753,146	11,396,279,671	7.2%	16.4%	41.9%
5	India	4,758,651,401	4,199,695,590	4,414,994,973	7,810,137,900	8,384,117,905	5.3%	7.3%	76.2%
6	United States	6,846,429,753	5,696,264,300	4,398,509,899	5,128,791,435	6,687,472,427	4.2%	30.4%	-2.3%
7	Bahrain	1,869,721,687	1,886,153,317	2,634,942,715	4,259,118,176	6,546,357,458	4.1%	53.7%	250.1%
8	Malaysia	2,953,326,202	2,555,315,703	2,906,477,094	5,984,798,916	6,147,873,763	3.9%	2.7%	108.2%
9	Norway	3,690,648,575	3,445,095,336	3,151,663,741	5,036,335,240	6,130,348,785	3.9%	21.7%	66.1%
10	Italy	3,343,359,146	3,040,142,307	2,750,542,714	3,964,762,487	5,084,793,341	3.2%	28.2%	52.1%
	All other	51,763,319,847	47,033,940,042	43,499,234,291	65,485,078,581	65,851,043,961	41.4%	0.6%	27.2%
	TOTAL	112,608,864,577	100,632,123,597	92,241,965,923	140,995,272,466	159,072,995,638	100.0%	12.8%	41.3%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Trade Data Monitor.

Table D-2. Auto parts:[1] Global exports, by partner, 2018–2022

	Partner	2018	2019	2020	2021	2022	2022 Share	▲ 2021-22	▲ 2018-22
				U.S. Dollars				*Percent*	
1	Germany	76,235,763,884	72,432,652,977	62,309,160,964	73,949,002,573	69,353,077,228	15.9%	-6.2%	-9.0%
2	China	39,159,653,902	37,431,920,150	35,884,034,459	49,231,440,813	50,854,652,894	11.7%	3.3%	29.9%
3	United States	51,321,132,919	49,408,897,777	38,787,034,639	41,069,882,533	44,918,250,240	10.3%	9.4%	-12.5%
4	Mexico	37,849,997,136	38,640,475,529	32,983,475,098	37,407,529,042	44,150,838,550	10.1%	18.0%	16.6%
5	Japan	43,091,875,613	39,101,592,733	32,109,027,317	37,509,982,000	33,051,895,409	7.6%	-11.9%	-23.3%
6	Poland	17,555,701,795	17,517,574,350	15,648,570,227	17,279,240,689	18,361,367,342	4.2%	6.3%	4.6%
7	South Korea	14,885,880,545	14,822,559,897	12,073,395,853	14,664,399,815	15,182,641,296	3.5%	3.5%	2.0%
8	Italy	14,484,026,155	13,616,856,815	11,841,254,399	14,445,216,017	13,811,222,780	3.2%	-4.4%	-4.6%
9	Czech Republic	15,905,620,035	15,217,718,564	12,811,751,386	13,935,783,450	13,432,986,714	3.1%	-3.6%	-15.5%
10	France	17,023,962,420	14,948,431,358	12,901,233,198	13,515,764,757	12,493,746,357	2.9%	-7.6%	-26.6%
	All other	126,420,428,809	121,121,306,698	104,177,586,941	121,739,795,653	120,348,252,201	27.6%	-1.1%	-4.8%
	TOTAL	453,934,043,213	434,259,986,848	371,526,524,481	434,748,037,342	435,958,931,011	100.0%	0.3%	-4.0%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Trade Data Monitor.

Table D-3. Aluminum:[1] China's exports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				*Percent*	
1	Mexico	876,993,228	842,059,445	1,460,357,203	2,200,858,940	1,535,772,619	10.9%	-30.2%	75.1%
2	South Korea	714,067,327	636,533,886	929,669,402	1,425,719,876	1,271,011,776	9.0%	-10.9%	78.0%
3	Vietnam	749,987,222	609,572,089	906,699,866	1,238,413,837	933,291,178	6.6%	-24.6%	24.4%
4	Japan	875,801,782	488,131,211	560,235,103	692,423,002	677,968,549	4.8%	-2.1%	-22.6%
5	Thailand	490,949,835	402,901,100	679,785,752	932,175,296	642,280,697	4.6%	-31.1%	30.8%
6	United States	603,338,050	467,738,351	806,680,374	1,166,289,289	597,447,647	4.2%	-48.8%	-1.0%
7	Australia	374,235,442	374,182,079	639,353,141	740,666,653	595,145,610	4.2%	-19.6%	59.0%
8	Canada	289,744,380	339,211,163	689,878,019	647,651,029	544,245,901	3.9%	-16.0%	87.8%
9	Malaysia	413,139,503	270,430,992	512,570,724	582,352,601	516,029,459	3.7%	-11.4%	24.9%
10	India	364,250,469	208,371,406	367,316,200	570,520,939	512,975,169	3.6%	-10.1%	40.8%
	All other	5,445,114,070	4,606,307,212	6,725,491,086	9,019,973,120	6,281,299,555	44.5%	-30.4%	15.4%
	TOTAL	11,197,621,308	9,245,438,934	14,278,036,870	19,217,044,582	14,107,468,160	100.0%	-26.6%	26.0%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: China Customs Statistics.

Table D-4. Auto parts:[1] China's exports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				*Percent*	
1	United States	10,039,662,868	8,991,367,681	12,033,214,691	11,943,259,141	11,026,379,239	20.6%	-7.7%	9.8%
2	Japan	3,420,937,979	2,709,897,811	3,596,931,258	3,636,101,424	4,317,943,441	8.1%	18.8%	26.2%
3	Mexico	2,113,884,318	2,002,941,126	2,955,813,117	3,351,581,677	3,819,418,119	7.1%	14.0%	80.7%
4	South Korea	1,635,967,897	1,776,799,100	2,312,142,934	2,355,372,775	2,670,849,266	5.0%	13.4%	63.3%
5	Germany	1,891,208,254	1,790,861,099	2,574,791,525	2,368,247,703	2,499,321,742	4.7%	5.5%	32.2%
6	Russia	1,379,080,852	1,286,338,201	1,865,374,165	1,562,973,478	2,465,650,855	4.6%	57.8%	78.8%
7	United Arab Emirates	395,569,027	486,122,385	748,194,376	1,211,993,014	1,631,288,024	3.0%	34.6%	312.4%
8	Thailand	1,049,619,360	993,174,259	1,571,739,228	1,496,819,766	1,340,156,719	2.5%	-10.5%	27.7%
9	Iran	355,270,604	545,010,380	603,303,545	964,819,603	1,220,010,796	2.3%	26.4%	243.4%
10	United Kingdom	950,078,564	833,747,044	1,124,589,857	1,163,388,386	1,215,727,329	2.3%	4.5%	28.0%
	All other	14,200,640,427	14,467,775,373	19,845,346,117	20,503,927,557	21,337,962,587	39.9%	4.1%	50.3%
	TOTAL	37,431,920,150	35,884,034,459	49,231,440,813	50,558,484,524	53,544,708,117	100.0%	5.9%	43.0%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: China Customs Statistics.

Table D-5. Aluminum:[1] China's exports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
		U.S. Dollars					Percent		
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	4,639,139,432	4,356,378,694	7,592,385,807	10,806,140,019	6,956,561,104	49.3%	-35.6%	50.0%
760421	Aluminum alloy hollow profiles	1,541,489,569	1,459,246,491	1,885,287,498	1,988,099,406	1,856,917,582	13.2%	-6.6%	20.5%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	1,411,337,072	1,095,556,046	1,509,850,381	1,685,083,178	1,583,385,522	11.2%	-6.0%	12.2%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	1,303,874,741	804,046,371	1,208,624,771	1,656,136,596	1,106,060,770	7.8%	-33.2%	-15.2%
760120	Aluminum alloys, unwrought	958,007,583	400,327,848	392,621,448	689,285,199	650,860,340	4.6%	-5.6%	-32.1%
760820	Aluminum alloy tubes and pipes	386,178,604	356,291,108	531,474,533	536,564,952	529,371,401	3.8%	-1.3%	37.1%
760900	Aluminum tube or pipe fittings	256,318,100	229,317,913	331,114,921	379,878,994	376,867,611	2.7%	-0.8%	47.0%
760110	Aluminum, not alloyed, unwrought	142,525,271	18,737,508	24,295,537	623,351,669	341,929,382	2.4%	-45.1%	139.9%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	199,468,617	164,741,063	292,836,076	350,259,530	311,543,588	2.2%	-11.1%	56.2%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	183,125,807	188,707,394	247,871,292	240,090,508	171,838,759	1.2%	-28.4%	-6.2%
760529	Aluminum alloy wire, 7mm or less	58,103,193	67,312,836	98,444,723	92,258,415	75,526,812	0.5%	-18.1%	30.0%
760810	Aluminum tubes and pipes, not alloyed	45,789,852	49,946,189	69,312,419	71,252,917	67,231,664	0.5%	-5.6%	46.8%
760521	Aluminum alloy wire, over 7mm	18,953,034	18,767,096	40,441,274	50,833,185	39,180,944	0.3%	-22.9%	106.7%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	19,485,258	20,474,300	29,224,053	26,739,117	18,850,350	0.1%	-29.5%	-3.3%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	18,154,693	10,038,717	13,647,992	9,400,727	11,874,578	0.1%	26.3%	-34.6%
760410	Aluminum bars, rods and profiles, not alloyed	15,670,482	5,549,360	10,604,145	11,670,170	9,467,753	0.1%	-18.9%	-39.6%
	TOTAL	11,197,621,308	9,245,438,934	14,278,036,870	19,217,044,582	14,107,468,160	100.0%	-26.6%	26.0%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: China Customs Statistics.

Table D-6. Auto parts:[1] China's exports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
		U.S. Dollars					Percent		
870829	Parts of bodies	5,542,760,472	6,637,703,657	9,507,926,874	7,826,973,640	8,624,675,238	16.1%	10.2%	55.6%
870830	Brakes	5,471,388,807	4,938,704,065	6,253,551,860	7,603,862,502	7,527,469,776	14.1%	-1.0%	37.6%
870870	Road wheels	5,615,857,856	4,863,117,104	6,631,090,974	6,736,321,749	6,715,435,646	12.5%	-0.3%	19.6%
840991	Engine parts (spark-ignition)	3,315,158,324	3,122,645,088	4,412,163,633	4,678,346,447	5,085,121,827	9.5%	8.7%	53.4%
870880	Suspensions	2,859,269,355	2,756,873,008	3,837,731,203	4,307,183,297	4,459,818,747	8.3%	3.5%	56.0%
940199	Parts of seats	0	0	0	4,374,330,208	4,368,879,513	8.2%	-0.1%	–
840999	Engine parts (compression-ignition)	2,388,051,511	2,082,275,345	2,938,950,063	3,334,112,389	3,489,492,010	6.5%	4.7%	46.1%
870894	Steering systems	2,054,415,635	1,876,856,636	2,473,889,316	2,827,368,858	3,406,791,004	6.4%	20.5%	65.8%
870840	Gearboxes (transmissions)	1,604,290,309	1,613,131,222	2,355,647,771	2,534,871,303	3,115,187,297	5.8%	22.9%	94.2%
870891	Radiators	1,368,777,654	1,262,927,782	1,782,382,006	2,068,510,841	2,149,930,704	4.0%	3.9%	57.1%
870850	Drive axles	1,059,298,433	1,179,567,764	1,786,786,966	1,908,208,970	2,004,094,444	3.7%	5.0%	89.2%
840734	Engines (spark-ignition over 1,000cc)	1,293,338,211	966,478,976	1,267,620,416	946,152,041	1,034,528,501	1.9%	9.3%	-20.0%
840820	Engines (compression-ignition)	460,165,008	370,582,379	534,647,097	654,998,750	782,465,669	1.5%	19.5%	70.0%
940120	Seats of a kind used for motor vehicles	157,262,142	164,338,968	254,767,561	291,990,520	344,850,050	0.6%	18.1%	119.3%
840732	Engines (spark-ignition over 50cc but not over 250cc)	215,819,846	242,809,783	299,636,497	315,809,263	306,486,135	0.6%	-3.0%	42.0%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	113,497,941	111,397,508	161,773,821	149,443,746	129,481,556	0.2%	-13.4%	14.1%
940190	Parts of seats, not elsewhere specified	3,912,568,646	3,694,625,174	4,732,874,755	0	0	0.0%	–	-100.0%
	TOTAL	37,431,920,150	35,884,034,459	49,231,440,813	50,558,484,524	53,544,708,117	100.0%	5.9%	43.0%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: China Customs Statistics.

Table D-7. Aluminum:[1] China's exports to Mexico, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	680,148,364	662,706,030	1,163,866,464	1,811,589,911	1,113,577,154	72.5%	-38.5%	63.7%
760820	Aluminum alloy tubes and pipes	37,922,110	46,154,652	64,238,608	89,075,045	81,008,391	5.3%	-9.1%	113.6%
760421	Aluminum alloy hollow profiles	39,272,492	46,343,025	64,583,266	85,863,429	77,117,489	5.0%	-10.2%	96.4%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	39,312,566	33,974,383	58,547,365	66,169,511	77,050,920	5.0%	16.4%	96.0%
760120	Aluminum alloys, unwrought	9,437,962	882,612	1,973,582	21,927,665	58,476,889	3.8%	166.7%	519.6%
760900	Aluminum tube or pipe fittings	29,639,688	29,006,979	45,432,972	47,636,710	49,428,491	3.2%	3.8%	66.8%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	18,524,450	12,439,784	32,465,128	32,540,774	32,446,889	2.1%	-0.3%	75.2%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	5,267,764	2,288,582	10,556,901	24,776,524	26,706,919	1.7%	7.8%	407.0%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	8,477,306	3,274,031	6,585,484	8,746,563	11,717,527	0.8%	34.0%	38.2%
760810	Aluminum tubes and pipes, not alloyed	2,438,980	2,139,393	4,353,185	4,743,269	3,816,857	0.2%	-19.5%	56.5%
760529	Aluminum alloy wire, 7mm or less	4,971,952	1,855,155	5,265,511	5,266,728	2,103,022	0.1%	-60.1%	-57.7%
760521	Aluminum alloy wire, over 7mm	1,148,450	260,554	1,280,393	1,319,289	1,380,606	0.1%	4.6%	20.2%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	46,214	96,696	355,660	595,394	388,682	0.0%	-34.7%	741.0%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	78,955	237,248	294,932	400,032	266,015	0.0%	-33.5%	236.9%
760110	Aluminum, not alloyed, unwrought	0	0	0	0	236,954	0.0%	–	–
760410	Aluminum bars, rods and profiles, not alloyed	305,975	400,321	557,752	208,096	49,814	0.0%	-76.1%	-83.7%
	TOTAL	876,993,228	842,059,445	1,460,357,203	2,200,858,940	1,535,772,619	100.0%	-30.2%	75.1%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: China Customs Statistics.

Table D-8. Auto parts:[1] China's exports to Mexico, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870870	Road wheels	450,017,375	352,630,710	493,154,685	567,924,955	673,469,307	17.6%	18.6%	49.7%
870829	Parts of bodies	362,749,946	440,643,353	646,426,420	588,710,699	615,217,519	16.1%	4.5%	69.6%
870830	Brakes	300,433,982	251,246,105	380,426,712	456,839,498	467,590,063	12.2%	2.4%	55.6%
840991	Engine parts (spark-ignition)	191,850,347	209,120,068	295,969,672	377,885,313	467,357,247	12.2%	23.7%	143.6%
870880	Suspensions	171,015,246	172,826,901	265,022,228	334,103,344	391,928,259	10.3%	17.3%	129.2%
870894	Steering systems	164,678,054	155,306,042	214,504,967	271,401,181	321,739,579	8.4%	18.5%	95.4%
940199	Parts of seats	0	0	0	286,932,147	311,779,492	8.2%	8.7%	–
870891	Radiators	65,106,266	63,646,470	98,367,915	129,688,053	175,053,074	4.6%	35.0%	168.9%
870840	Gearboxes (transmissions)	111,602,423	79,026,858	107,590,560	111,374,571	154,910,672	4.1%	39.1%	38.8%
870850	Drive axles	57,080,215	37,851,679	73,474,894	92,046,577	112,208,012	2.9%	21.9%	96.6%
840999	Engine parts (compression-ignition)	72,294,896	60,788,356	94,318,363	107,804,462	98,888,100	2.6%	-8.3%	36.8%
840820	Engines (compression-ignition)	5,528,339	2,117,315	4,191,198	6,810,834	9,571,239	0.3%	40.5%	73.1%
940120	Seats of a kind used for motor vehicles	2,457,862	6,430,502	5,389,296	10,740,436	7,790,099	0.2%	-27.5%	216.9%
840732	Engines (spark-ignition over 50cc but not over 250cc)	3,311,716	1,614,157	2,312,678	5,850,113	7,146,844	0.2%	22.2%	115.8%
840734	Engines (spark-ignition over 1,000cc)	463,795	1,016,678	505,305	2,067,196	4,227,403	0.1%	104.5%	811.5%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	10,246	22,453	25,971	1,402,298	541,210	0.0%	-61.4%	5182.2%
940190	Parts of seats, not elsewhere specified	155,333,610	168,653,479	274,132,253	0	0	0.0%	–	-100.0%
	TOTAL	2,113,884,318	2,002,941,126	2,955,813,117	3,351,581,677	3,819,418,119	100.0%	14.0%	80.7%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: China Customs Statistics.

Table D-9. Aluminum:[1] Mexico's exports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				*Percent*	
1	United States	229,824,867	204,666,368	416,571,925	556,352,088	445,795,203	98.0%	-19.9%	94.0%
2	Ecuador	110,105	63,589	122,888	27,669	3,179,957	0.7%	11392.9%	2788.1%
3	Canada	1,562,001	1,623,448	4,888,056	3,285,616	1,872,116	0.4%	-43.0%	19.9%
4	Guatemala	563,026	1,178,992	1,332,291	658,974	1,356,072	0.3%	105.8%	140.9%
5	Colombia	5,877,223	2,582,952	6,341,800	756,153	740,350	0.2%	-2.1%	-87.4%
6	China	3,225,159	6,993,692	5,757,374	308,892	689,234	0.2%	123.1%	-78.6%
7	Costa Rica	1,276,131	1,755,705	1,560,468	1,032,891	629,240	0.1%	-39.1%	-50.7%
8	Belize	66,905	96,935	284,375	142,812	162,630	0.0%	13.9%	143.1%
9	El Salvador	1,397,264	1,568,258	5,693,004	825,804	141,157	0.0%	-82.9%	-89.9%
10	Honduras	1,096,282	815,590	1,288,707	36,407	113,163	0.0%	210.8%	-89.7%
	All other	26,621,002	41,253,680	79,242,457	345,251	166,250	0.0%	-51.8%	-99.4%
	TOTAL	271,619,965	262,599,209	523,083,345	563,772,557	454,845,372	100.0%	-19.3%	67.5%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table D-10. Auto parts:[1] Mexico's exports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				*Percent*	
1	United States	30,954,098,472	27,262,036,091	31,849,783,623	37,238,849,100	40,644,334,703	87.6%	9.1%	31.3%
2	Canada	3,941,395,593	2,312,993,296	2,241,751,903	2,589,060,514	2,979,923,748	6.4%	15.1%	-24.4%
3	China	644,533,232	747,718,803	823,332,180	2,388,087,609	878,681,797	1.9%	-63.2%	36.3%
4	Brazil	855,790,813	575,826,083	521,758,288	565,002,213	549,624,249	1.2%	-2.7%	-35.8%
5	South Korea	334,866,464	621,287,315	389,798,844	412,438,604	327,897,662	0.7%	-20.5%	-2.1%
6	Japan	362,453,788	302,261,243	309,984,652	233,140,639	206,551,080	0.4%	-11.4%	-43.0%
7	Germany	321,075,518	228,636,491	214,285,963	168,105,648	177,665,216	0.4%	5.7%	-44.7%
8	Spain	189,659,916	209,832,143	222,832,518	91,503,334	108,407,606	0.2%	18.5%	-42.8%
9	Argentina	49,822,406	41,759,438	95,265,280	85,842,476	106,615,196	0.2%	24.2%	114.0%
10	France	52,250,775	43,954,106	50,998,776	55,108,038	78,622,738	0.2%	42.7%	50.5%
	All other	934,528,552	637,170,089	687,737,015	323,700,375	355,365,250	0.8%	9.8%	-62.0%
	TOTAL	38,640,475,529	32,983,475,098	37,407,529,042	44,150,838,550	46,413,689,245	100.0%	5.1%	20.1%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table D-11. Aluminum:1 Mexico's exports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	112,140,415	98,145,976	160,455,964	227,577,412	179,496,955	39.5%	-21.1%	60.1%
760421	Aluminum alloy hollow profiles	27,001,798	38,176,514	74,518,955	117,189,463	110,634,329	24.3%	-5.6%	309.7%
760820	Aluminum alloy tubes and pipes	46,812,634	40,109,055	69,112,830	82,259,021	81,695,717	18.0%	-0.7%	74.5%
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	22,411,205	26,799,268	81,393,529	99,995,580	27,700,179	6.1%	-72.3%	23.6%
760120	Aluminum alloys, unwrought	14,666,331	23,330,218	82,878,264	4,397,847	26,173,337	5.8%	495.1%	78.5%
760900	Aluminum tube or pipe fittings	23,405,353	16,281,529	18,762,247	21,082,546	22,668,033	5.0%	7.5%	-3.2%
760410	Aluminum bars, rods and profiles, not alloyed	5,112,856	6,231,247	6,746,639	8,765,344	4,401,845	1.0%	-49.8%	-13.9%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	360,086	767,053	595,904	239,594	814,065	0.2%	239.8%	126.1%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	169,300	244,178	383,580	444,278	559,309	0.1%	25.9%	230.4%
760810	Aluminum tubes and pipes, not alloyed	4,134,006	489,458	699,695	406,154	296,033	0.1%	-27.1%	-92.8%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	1,918,388	893,032	422,488	1,021,763	292,333	0.1%	-71.4%	-84.8%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	5,718,752	6,087,856	6,243,933	23,386	71,720	0.0%	206.7%	-98.7%
760110	Aluminum, not alloyed, unwrought	7,462,935	4,351,105	20,236,607	104,880	31,282	0.0%	-70.2%	-99.6%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	57,502	285,815	483,487	79,566	10,235	0.0%	-87.1%	-82.2%
760521	Aluminum alloy wire, over 7mm	79,428	7,685	4,026	0	0	0.0%	–	-100.0%
760529	Aluminum alloy wire, 7mm or less	168,976	399,220	145,197	185,723	0	0.0%	-100.0%	-100.0%
	TOTAL	271,619,965	262,599,209	523,083,345	563,772,557	454,845,372	100.0%	-19.3%	67.5%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table D-12. Auto parts:[1] Mexico's exports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870829	Parts of bodies	6,360,787,844	5,604,807,951	6,620,749,602	9,458,623,960	8,721,211,944	18.8%	-7.8%	37.1%
940199	Parts of seats, not elsewhere specified	0	0	0	165,769,843	6,142,313,911	13.2%	3605.3%	–
870840	Gearboxes (transmissions)	4,593,415,069	4,111,386,742	4,511,748,402	5,255,388,439	5,529,248,964	11.9%	5.2%	20.4%
870830	Brakes	3,030,479,201	2,777,524,208	3,441,844,347	4,152,461,421	4,518,205,467	9.7%	8.8%	49.1%
840991	Engine parts (spark-ignition)	2,977,987,842	2,462,160,458	3,114,978,643	3,380,668,983	3,719,276,957	8.0%	10.0%	24.9%
840734	Engines (spark-ignition over 1,000cc)	4,264,609,832	3,366,917,791	3,257,045,789	3,235,360,259	3,353,317,276	7.2%	3.6%	-21.4%
870894	Steering systems	2,460,205,166	2,158,329,697	2,367,321,434	2,676,141,501	3,333,142,133	7.2%	24.6%	35.5%
870850	Drive axles	3,592,959,953	2,824,949,873	2,586,435,303	2,872,922,259	3,124,279,805	6.7%	8.7%	-13.0%
870880	Suspensions	1,564,758,907	1,457,012,671	1,853,201,774	2,204,590,908	2,430,361,409	5.2%	10.2%	55.3%
870870	Road wheels	1,250,137,493	1,085,113,884	1,457,019,384	1,678,864,462	1,735,131,675	3.7%	3.4%	38.8%
840999	Engine parts (compression-ignition)	1,299,211,761	1,085,714,789	1,448,929,558	1,701,280,923	1,600,477,928	3.4%	-5.9%	23.2%
840820	Engines (compression-ignition)	1,455,665,995	1,187,274,959	1,311,714,724	1,273,436,393	1,362,882,741	2.9%	7.0%	-6.4%
870891	Radiators	312,162,821	275,575,148	289,933,573	445,317,323	455,204,855	1.0%	2.2%	45.8%
940120	Seats of a kind used for motor vehicles	203,645,842	178,137,338	211,034,488	280,285,067	299,970,500	0.6%	7.0%	47.3%
940190	Parts of seats	5,246,782,380	4,367,450,132	4,861,626,501	5,369,726,809	71,321,266	0.2%	-98.7%	-98.6%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	27,663,987	41,109,647	73,943,520	0	17,342,414	0.0%	–	-37.3%
840732	Engines (spark-ignition over 50cc but not over 250cc)	1,436	9,810	2,000	0	0	0.0%	–	-100.0%
	TOTAL	38,640,475,529	32,983,475,098	37,407,529,042	44,150,838,550	46,413,689,245	100.0%	5.1%	20.1%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table D-13. Aluminum:[1] Mexico's exports to the United States, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760429	Aluminum alloy bars, rods and profiles, other than hollow profiles	106,603,819	87,728,917	144,739,511	224,464,135	178,572,471	40.1%	-20.4%	67.5%
760421	Aluminum alloy hollow profiles	19,986,197	21,797,621	51,887,028	115,999,603	109,190,267	24.5%	-5.9%	446.3%
760820	Aluminum alloy tubes and pipes	44,214,097	37,794,082	65,137,616	81,182,789	80,772,792	18.1%	-0.5%	82.7%
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	19,598,821	24,979,857	79,633,250	99,686,688	27,010,945	6.1%	-72.9%	37.8%
760120	Aluminum alloys, unwrought	4,182,716	5,542,081	47,482,216	4,397,847	23,044,823	5.2%	424.0%	451.0%
760900	Aluminum tube or pipe fittings	21,204,149	14,614,627	16,703,909	19,398,932	20,787,901	4.7%	7.2%	-2.0%
760410	Aluminum bars, rods and profiles, not alloyed	4,193,425	5,464,431	6,373,248	8,716,750	4,380,548	1.0%	-49.7%	4.5%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	303,109	350,852	410,482	239,594	814,065	0.2%	239.8%	168.6%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	164,962	242,819	378,148	444,278	559,309	0.1%	25.9%	239.1%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	1,710,905	772,296	330,046	1,021,763	292,333	0.1%	-71.4%	-82.9%
760810	Aluminum tubes and pipes, not alloyed	3,866,655	468,296	485,529	406,154	256,512	0.1%	-36.8%	-93.4%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	3,274,591	4,345,586	2,223,504	23,386	71,720	0.0%	206.7%	-97.8%
760110	Aluminum, not alloyed, unwrought	318,602	104,920	270,565	104,880	31,282	0.0%	-70.2%	-90.2%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	42,928	246,689	439,104	79,566	10,235	0.0%	-87.1%	-76.2%
760521	Aluminum alloy wire, over 7mm	74,275	592	4,026	0	0	0.0%	–	-100.0%
760529	Aluminum alloy wire, 7mm or less	85,616	212,702	73,743	185,723	0	0.0%	-100.0%	-100.0%
	TOTAL	229,824,867	204,666,368	416,571,925	556,352,088	445,795,203	100.0%	-19.9%	94.0%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table D-14. Auto parts:[1] Mexico's exports to the United States, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870829	Parts of bodies	5,556,164,089	4,938,881,874	5,938,050,949	7,139,626,772	7,870,135,311	19.4%	10.2%	41.6%
940199	Parts of seats, not elsewhere specified	0	0	0	152,203,019	5,753,582,343	14.2%	3680.2%	–
870830	Brakes	2,769,494,676	2,578,257,433	3,229,696,077	3,888,843,731	4,220,904,907	10.4%	8.5%	52.4%
870840	Gearboxes (transmissions)	2,729,006,432	2,677,088,621	3,182,057,903	4,018,251,326	4,213,250,528	10.4%	4.9%	54.4%
870894	Steering systems	2,224,006,820	1,970,737,418	2,186,718,881	2,489,675,414	3,048,727,892	7.5%	22.5%	37.1%
840991	Engine parts (spark-ignition)	2,201,435,716	1,820,531,154	2,394,571,454	2,718,922,359	2,952,279,962	7.3%	8.6%	34.1%
870850	Drive axles	2,953,844,435	2,263,325,154	2,142,788,228	2,466,502,976	2,692,566,847	6.6%	9.2%	-8.8%
840734	Engines (spark-ignition over 1,000cc)	2,073,662,676	2,034,047,007	2,059,728,118	2,214,017,347	2,350,552,365	5.8%	6.2%	13.4%
870880	Suspensions	1,340,000,816	1,282,179,672	1,666,667,625	1,959,724,944	2,183,582,663	5.4%	11.4%	63.0%
870870	Road wheels	1,151,451,810	1,023,336,028	1,377,693,224	1,589,248,932	1,682,435,019	4.1%	5.9%	46.1%
840999	Engine parts (compression-ignition)	1,150,395,697	966,280,525	1,289,531,848	1,586,200,716	1,496,839,155	3.7%	-5.6%	30.1%
840820	Engines (compression-ignition)	1,417,639,247	1,167,941,589	1,278,925,103	1,273,436,393	1,362,882,741	3.4%	7.0%	-3.9%
870891	Radiators	298,529,842	257,511,304	264,484,429	388,351,463	437,449,250	1.1%	12.6%	46.5%
940120	Seats of a kind used for motor vehicles	190,678,231	173,546,343	206,514,527	275,089,698	290,482,040	0.7%	5.6%	52.3%
940190	Parts of seats	4,876,241,744	4,078,119,466	4,570,107,514	5,078,754,010	71,321,266	0.2%	-98.6%	-98.5%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	21,546,241	30,251,475	62,245,778	0	17,342,414	0.0%	–	-19.5%
840732	Engines (spark-ignition over 50cc but not over 250cc)	0	1,028	1,965	0	0	0.0%	–	–
	TOTAL	30,954,098,472	27,262,036,091	31,849,783,623	37,238,849,100	40,644,334,703	100.0%	9.1%	31.3%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Mexico National Institute of Statistics, Ministry of Economy.

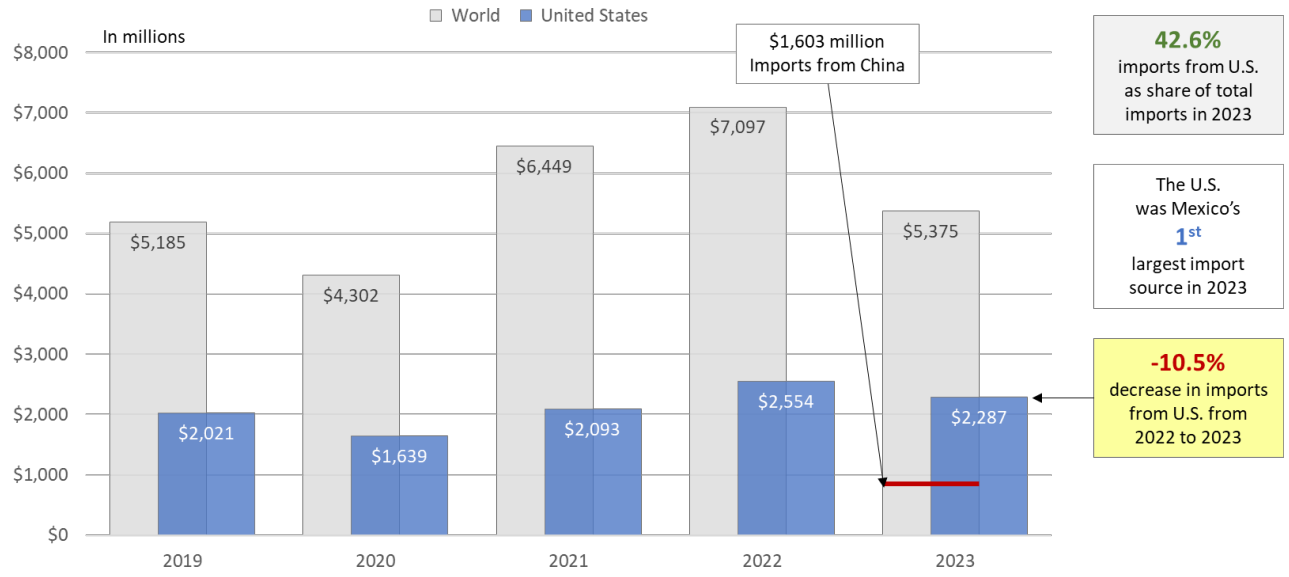
Appendix E: Additional Import Tables and Data

Mexico's Imports of aluminum from the United States

The United States was Mexico's leading import source of aluminum in 2023. In 2022, Mexico imported $2.5 billion USD of aluminum from both the United States and China. However, in 2023, Mexico imported $2.3 billion USD of aluminum from the United States and only $1.6 billion USD from China, representing a significant decline in aluminum imports from China.[244] Mexico's imports of aluminum from the United States decreased by 10.5% from 2022 to 2023; however, Mexico's imports from China decreased by 37.1% during the same period.

The U.S. share of Mexico's imports of aluminum increased from 26% in 2022 to 42.6% in 2023. China's share of Mexico's imports of aluminum decreased from 35.9% in 2022 to 29.8% in 2023. Figure 4-15 presents Mexico's imports of aluminum from the United States from 2019 to 2023.

Figure E-1. Aluminum:[1] Mexico's imports from the United States and the world, 2019–2023



[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00

Source: Mexico National Institute of Statistics, Ministry of Economy

[244] Mexico National Institute of Statistics, Ministry of Economy

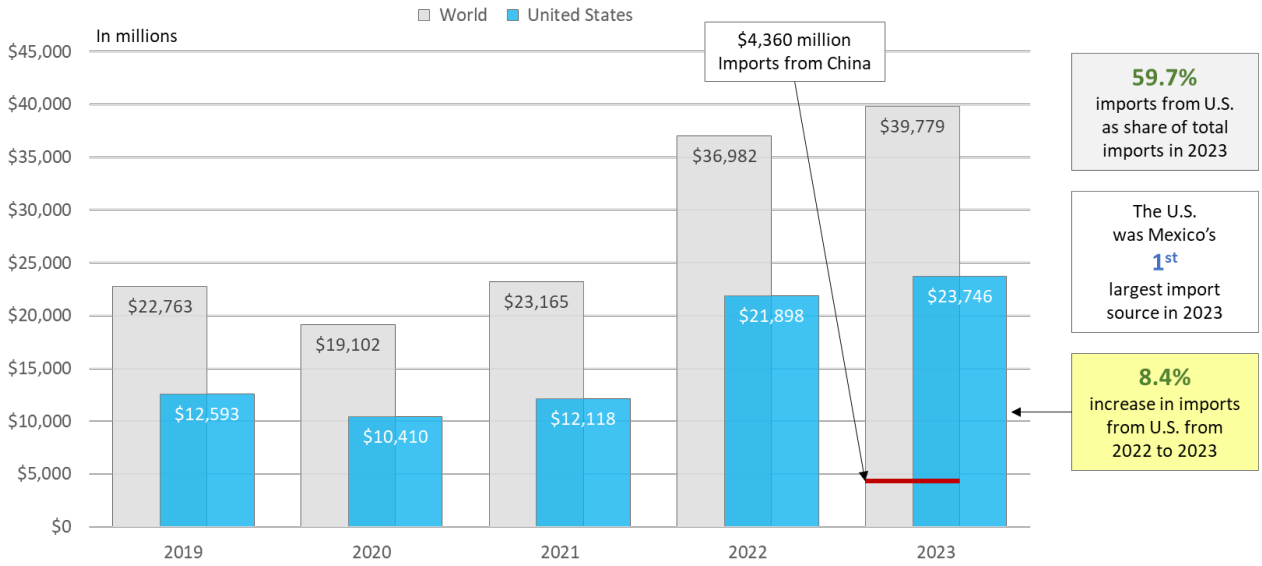
In 2023, Mexico's top five imports of aluminum from the United States by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	7606.12	Aluminum alloy plates, sheets, and strip	$854.0	37.3
2	7601.20	Unwrought aluminum alloys	$530.2	23.2
3	7604.29	Aluminum alloy bars, rods, non-hollow profiles	$365.6	16.0
4	7608.20	Aluminum alloy tubes and pipes	$168.5	7.4
5	7609.00	Aluminum tube and pipe fittings	$75.3	3.3
		Subtotal	**$1,993.6**	**87.2**

Mexico's Imports of Auto Parts from the United States

Figure E-2 presents Mexico's imports of auto parts from the world and the United States from 2019 to 2023.[245] The United States was Mexico's largest import source of auto parts during 2019 to 2023, accounting for 59.7% of Mexico's imports of auto parts in 2023.

Figure E-2. Auto parts:[1] Mexico's imports from the United States and the world, 2019–2023



[1] Based on HS subheadings 8407.32, 8407.33, 8407.34, 8408.20, 8409.91, 8409.99, 8708.29, 8708.30, 8708.40, 8708.50, 8708.70, 8708.80, 8708.91, 8708.94, 9401.20, 9401.90, 9401.99. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

[245] Table E-10 in Appendix E presents data on Mexico's imports of auto parts from the United States from 2018 to 2022.

In 2022, Mexico's top five imports of auto parts from the United States by HS6 subheading were as follows:

Rank	HS6	Description	Value Million USD	Share of imports Percentage
1	8408.20	Engines (compression-ignition)	$6,175.3	26.0
2	8708.40	Gearboxes (transmissions)	$3,596.4	15.1
3	8708.29	Parts of bodies	$2,770.7	11.7
4	8407.34	Engines (spark-ignition over 1,000cc)	$2,288.6	9.6
5	8708.50	Drive axles	$1,856.0	7.8
		Subtotal	**$16,687.0**	**70.3**

Table E-1. Aluminum:[1] Global imports, by partner, 2018–2022

	Item	2018	2019	2020	2021	2022	2022 Share	▲ 2021-22	▲ 2018-22
		U.S. Dollars					*Percent*		
1	United States	16,077,211,074	14,462,448,011	10,954,127,559	17,472,933,339	23,535,171,963	13.7%	34.7%	46.4%
2	Germany	12,299,041,436	10,502,663,516	8,677,602,544	13,114,738,615	17,658,311,962	10.3%	34.6%	43.6%
3	Netherlands	8,245,816,707	5,943,541,276	5,658,035,754	8,723,341,093	12,197,184,314	7.1%	39.8%	47.9%
4	Japan	7,065,013,019	5,669,130,177	4,300,654,916	6,953,608,539	7,965,927,379	4.6%	14.6%	12.8%
5	Italy	4,684,983,916	4,062,416,053	3,303,562,007	5,331,249,588	7,459,245,539	4.3%	39.9%	59.2%
6	Mexico	5,316,839,839	5,185,118,809	4,301,797,495	6,449,078,069	7,097,125,643	4.1%	10.0%	33.5%
7	China	2,027,265,053	1,839,586,259	5,205,555,224	8,334,378,879	6,590,476,794	3.8%	-20.9%	225.1%
8	Turkey	3,701,236,511	3,069,771,826	2,807,295,828	5,610,842,728	6,458,869,112	3.8%	15.1%	74.5%
9	South Korea	4,831,346,860	4,298,800,165	3,699,096,194	5,385,857,089	6,319,350,978	3.7%	17.3%	30.8%
10	France	4,406,115,821	4,007,782,796	3,232,747,515	4,817,134,976	5,802,587,027	3.4%	20.5%	31.7%
	All other	51,584,768,523	50,735,275,091	44,151,938,320	61,501,040,306	70,838,772,547	41.2%	15.2%	37.3%
	TOTAL	120,239,638,759	109,776,533,979	96,292,413,356	143,694,203,221	171,923,023,258	100.0%	19.6%	43.0%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Trade Data Monitor.

Table E-2. Auto parts:[1] Global imports, by partner, 2018–2022

	Item	2018	2019	2020	2021	2022	2022 Share	▲ 2021-22	▲ 2018-22
		U.S. Dollars					*Percent*		
1	United States	81,070,865,444	78,414,938,943	66,734,818,587	81,125,405,336	91,878,976,941	21.1%	13.3%	13.3%
2	Germany	51,605,576,590	47,260,577,728	40,442,754,879	44,408,031,608	45,681,842,712	10.5%	2.9%	-11.5%
3	Mexico	35,087,216,639	22,763,342,398	19,102,036,186	23,164,756,251	36,981,738,346	8.5%	59.6%	5.4%
4	China	31,222,939,881	26,715,679,512	26,574,581,674	29,595,713,949	24,500,625,991	5.6%	-17.2%	-21.5%
5	Canada	23,502,133,112	23,262,957,938	17,494,687,641	16,919,943,883	19,429,258,722	4.5%	14.8%	-17.3%
6	Slovakia	12,891,834,123	13,619,586,081	12,328,236,465	13,448,798,776	13,394,990,715	3.1%	-0.4%	3.9%
7	United Kingdom	18,814,951,586	16,106,185,990	11,083,068,562	12,446,870,256	13,269,087,693	3.1%	6.6%	-29.5%
8	France	17,675,246,976	15,156,160,962	10,499,553,861	12,681,042,677	12,667,106,319	2.9%	-0.1%	-28.3%
9	Czech Republic	13,358,524,831	12,907,184,261	11,289,262,335	12,389,720,210	12,540,459,310	2.9%	1.2%	-6.1%
10	Spain	14,212,198,566	13,500,775,509	11,491,793,508	11,706,139,689	12,396,665,742	2.9%	5.9%	-12.8%
	All other	157,434,618,341	154,653,706,817	144,239,105,985	162,730,059,773	151,870,538,415	34.9%	-6.7%	-3.5%
	TOTAL	456,876,106,089	424,361,096,139	371,279,899,683	420,616,482,408	434,611,290,906	100.0%	3.3%	-4.9%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Trade Data Monitor.

Table E-3. Aluminum:[1] Mexico's imports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				*Percent*	
1	United States	2,020,779,704	1,638,626,960	2,093,499,745	2,554,297,793	2,287,000,492	42.6%	-10.5%	13.2%
2	China	1,011,983,899	959,324,053	1,541,784,177	2,548,779,327	1,602,543,302	29.8%	-37.1%	58.4%
3	United Arab Emirates	350,868,368	245,002,004	357,383,887	281,127,275	299,475,832	5.6%	6.5%	-14.6%
4	India	197,850,299	86,565,142	518,772,467	633,880,507	269,790,572	5.0%	-57.4%	36.4%
5	Bahrain	35,218,390	56,372,362	109,350,302	132,703,092	237,087,062	4.4%	78.7%	573.2%
6	Germany	109,941,684	122,105,845	118,375,312	129,961,981	110,543,781	2.1%	-14.9%	0.5%
7	South Korea	145,392,822	127,942,113	154,471,210	111,121,891	105,008,250	2.0%	-5.5%	-27.8%
8	Canada	373,018,885	251,310,643	369,783,068	159,959,510	86,653,577	1.6%	-45.8%	-76.8%
9	Vietnam	91,953,411	70,445,082	131,286,679	78,832,039	84,308,455	1.6%	6.9%	-8.3%
10	Malaysia	29,284,907	20,252,096	46,214,546	10,005,435	68,490,868	1.3%	584.5%	133.9%
	All other	818,826,440	723,851,195	1,008,156,676	456,456,793	223,932,932	4.2%	-50.9%	-72.7%
	TOTAL	5,185,118,809	4,301,797,495	6,449,078,069	7,097,125,643	5,374,835,123	100.0%	-24.3%	3.7%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-4. Auto parts:[1] Mexico's imports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				*Percent*	
1	United States	12,593,098,946	10,410,153,204	12,117,569,203	21,898,466,151	23,746,207,658	59.7%	8.4%	88.6%
2	China	2,308,652,079	2,111,538,821	3,061,853,524	4,192,982,348	4,360,403,428	11.0%	4.0%	88.9%
3	Germany	1,483,419,254	1,339,059,755	1,883,624,580	2,792,230,464	2,912,499,268	7.3%	4.3%	96.3%
4	Japan	1,057,604,487	1,017,466,489	1,176,864,691	1,752,419,452	1,993,853,222	5.0%	13.8%	88.5%
5	Canada	1,012,059,986	916,049,810	868,404,283	1,303,511,189	1,493,334,396	3.8%	14.6%	47.6%
6	South Korea	1,204,292,249	824,505,703	959,270,275	1,229,967,899	1,255,011,294	3.2%	2.0%	4.2%
7	Italy	241,721,673	185,513,073	263,524,492	564,401,714	663,391,351	1.7%	17.5%	174.4%
8	India	288,949,431	232,107,922	394,458,306	479,220,306	571,684,536	1.4%	19.3%	97.8%
9	Brazil	220,510,203	215,053,220	241,576,716	418,183,104	475,071,859	1.2%	13.6%	115.4%
10	Spain	241,881,809	178,361,153	209,644,261	320,002,149	295,698,276	0.7%	-7.6%	22.2%
	All other	2,111,152,281	1,672,227,036	1,987,965,920	2,030,353,570	2,011,371,928	5.1%	-0.9%	-4.7%
	TOTAL	22,763,342,398	19,102,036,186	23,164,756,251	36,981,738,346	39,778,527,216	100.0%	7.6%	74.7%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-5. Aluminum:[1] Mexico's imports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	2,106,604,660	1,930,170,079	2,599,427,516	3,414,492,232	2,401,610,638	44.7%	-29.7%	14.0%
760120	Aluminum alloys, unwrought	1,565,233,377	1,153,117,227	1,863,000,158	1,554,890,503	1,353,687,443	25.2%	-12.9%	-13.5%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	329,473,693	246,609,599	387,797,171	528,663,808	453,068,529	8.4%	-14.3%	37.5%
760110	Aluminum, not alloyed, unwrought	471,897,557	402,035,621	835,390,835	763,304,665	313,938,157	5.8%	-58.9%	-33.5%
760820	Aluminum alloy tubes and pipes	163,316,337	113,084,027	165,748,084	190,094,173	205,453,341	3.8%	8.1%	25.8%
760421	Aluminum alloy hollow profiles	83,680,261	83,539,882	124,560,777	166,513,942	166,329,383	3.1%	-0.1%	98.8%
760900	Aluminum tube or pipe fittings	117,620,374	100,464,577	124,565,691	145,851,872	163,106,469	3.0%	11.8%	38.7%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	110,317,768	65,740,847	100,303,555	93,827,696	100,223,727	1.9%	6.8%	-9.1%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	68,490,812	72,574,881	85,052,058	69,188,056	76,537,990	1.4%	10.6%	11.7%
760810	Aluminum tubes and pipes, not alloyed	70,066,063	66,680,221	63,711,314	80,951,896	65,020,873	1.2%	-19.7%	-7.2%
760410	Aluminum bars, rods and profiles, not alloyed	39,327,675	26,745,833	35,736,259	45,244,923	34,214,017	0.6%	-24.4%	-13.0%
760529	Aluminum alloy wire, 7mm or less	13,913,605	9,295,841	15,914,111	16,303,048	18,407,177	0.3%	12.9%	32.3%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	8,909,197	7,699,599	11,392,790	10,698,281	11,082,562	0.2%	3.6%	24.4%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	21,856,868	11,481,143	19,014,430	10,293,525	6,764,195	0.1%	-34.3%	-69.1%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	6,023,046	7,226,685	8,544,601	4,517,929	3,417,312	0.1%	-24.4%	-43.3%
760521	Aluminum alloy wire, over 7mm	8,387,516	5,331,433	8,918,719	2,289,094	1,973,310	0.0%	-13.8%	-76.5%
	TOTAL	5,185,118,809	4,301,797,495	6,449,078,069	7,097,125,643	5,374,835,123	100.0%	-24.3%	3.7%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-6. Auto parts:[1] Mexico's imports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870840	Gearboxes (transmissions)	2,651,005,561	2,379,085,497	2,996,166,789	5,777,115,285	6,763,961,580	17.0%	17.1%	155.1%
840820	Engines (compression-ignition)	1,905,360,699	1,429,838,677	2,096,108,569	6,190,345,263	6,383,661,047	16.0%	3.1%	235.0%
870829	Parts of bodies	3,906,008,339	3,311,857,585	3,860,664,630	5,265,818,756	5,567,352,113	14.0%	5.7%	42.5%
870850	Drive axles	2,208,267,191	1,702,323,222	1,808,771,522	2,787,822,050	3,133,230,387	7.9%	12.4%	41.9%
870830	Brakes	1,965,017,452	1,702,639,935	2,150,880,496	2,872,365,446	3,021,446,696	7.6%	5.2%	53.8%
840991	Engine parts (spark-ignition)	1,897,957,079	1,637,511,446	1,822,647,673	2,822,567,625	2,998,335,932	7.5%	6.2%	58.0%
840734	Engines (spark-ignition over 1,000cc)	1,791,067,070	1,692,582,073	1,845,453,731	2,688,436,331	2,750,880,423	6.9%	2.3%	53.6%
870894	Steering systems	1,682,527,368	1,371,866,884	1,619,782,651	1,960,088,590	2,141,197,200	5.4%	9.2%	27.3%
870880	Suspensions	1,356,551,389	1,144,142,636	1,518,976,341	1,976,917,863	2,069,119,242	5.2%	4.7%	52.5%
940199	Parts of seats	0	0	0	53,733,756	1,505,331,165	3.8%	2701.5%	–
840999	Engine parts (compression-ignition)	782,908,885	643,105,394	818,831,202	1,282,782,219	1,411,975,607	3.5%	10.1%	80.3%
870870	Road wheels	683,451,936	552,496,560	794,829,262	1,099,707,116	1,166,034,608	2.9%	6.0%	70.6%
870891	Radiators	273,309,376	200,904,706	273,801,700	367,891,356	394,108,469	1.0%	7.1%	44.2%
840732	Engines (spark-ignition over 50cc but not over 250cc)	32,735,729	45,518,230	89,971,528	100,502,695	238,537,815	0.6%	137.3%	628.7%
940120	Seats of a kind used for motor vehicles	219,101,100	173,267,114	176,047,671	209,906,892	227,569,584	0.6%	8.4%	3.9%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	8,054,045	4,693,386	10,720,361	2,535,205	5,534,408	0.0%	118.3%	-31.3%
940190	Parts of seats, not elsewhere specified	1,400,019,179	1,110,202,841	1,281,102,125	1,523,201,898	250,940	0.0%	-100.0%	-100.0%
	TOTAL	22,763,342,398	19,102,036,186	23,164,756,251	36,981,738,346	39,778,527,216	100.0%	7.6%	74.7%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-7. Aluminum:[1] Mexico's imports from China, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	815,941,905	799,798,196	1,292,941,517	2,209,413,574	1,321,580,682	82.5%	-40.2%	62.0%
760421	Aluminum alloy hollow profiles	36,084,032	50,467,781	82,309,102	104,699,088	84,949,865	5.3%	-18.9%	135.4%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	29,215,373	31,145,353	40,838,535	57,416,931	49,542,528	3.1%	-13.7%	69.6%
760900	Aluminum tube or pipe fittings	34,675,245	22,712,546	31,692,424	44,494,288	40,676,258	2.5%	-8.6%	17.3%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	14,518,052	12,708,059	27,375,999	31,156,027	29,722,875	1.9%	-4.6%	104.7%
760820	Aluminum alloy tubes and pipes	14,683,732	13,073,681	14,638,212	26,210,125	27,029,361	1.7%	3.1%	84.1%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	22,347,351	11,391,729	20,440,736	29,940,684	26,072,785	1.6%	-12.9%	16.7%
760410	Aluminum bars, rods and profiles, not alloyed	4,980,883	3,313,933	4,726,246	9,768,343	6,981,700	0.4%	-28.5%	40.2%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	5,074,921	3,323,836	6,524,545	8,717,081	6,471,777	0.4%	-25.8%	28.8%
760810	Aluminum tubes and pipes, not alloyed	4,170,251	3,433,987	5,259,508	8,672,291	5,182,141	0.3%	-40.2%	24.3%
760529	Aluminum alloy wire, 7mm or less	5,833,948	3,095,726	7,364,754	5,875,212	2,882,053	0.2%	-50.9%	-50.6%
760120	Aluminum alloys, unwrought	22,751,757	4,112,022	4,611,597	10,794,407	579,817	0.0%	-94.6%	-97.5%
760521	Aluminum alloy wire, over 7mm	1,134,681	216,867	1,081,873	671,332	499,863	0.0%	-25.5%	-55.9%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	151,352	164,458	1,126,180	949,944	371,597	0.0%	-60.9%	145.5%
760110	Aluminum, not alloyed, unwrought	412,987	174,357	565,410	0	0	0.0%	–	-100.0%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	57,429	192,022	287,539	0	0	0.0%	–	-100.0%
	TOTAL	1,011,983,899	959,324,053	1,541,784,177	2,548,779,327	1,602,543,302	100.0%	-37.1%	58.4%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-8. Auto parts:[1] Mexico's imports from China, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870829	Parts of bodies	410,517,771	375,165,173	520,212,707	688,987,153	711,412,264	16.3%	3.3%	73.3%
870830	Brakes	401,679,143	361,172,611	493,095,560	689,070,613	626,239,022	14.4%	-9.1%	55.9%
870870	Road wheels	289,708,785	239,369,563	382,383,216	627,074,128	594,664,312	13.6%	-5.2%	105.3%
870880	Suspensions	207,923,813	221,425,564	328,479,429	440,240,480	454,553,349	10.4%	3.3%	118.6%
840991	Engine parts (spark-ignition)	206,328,505	261,183,212	309,292,871	418,953,117	453,985,584	10.4%	8.4%	120.0%
940199	Parts of seats	0	0	0	9,368,527	348,665,466	8.0%	3621.7%	–
870894	Steering systems	183,013,348	149,208,830	217,489,174	284,242,584	299,569,847	6.9%	5.4%	63.7%
870850	Drive axles	202,551,972	139,294,223	187,098,769	237,645,785	271,992,122	6.2%	14.5%	34.3%
840732	Engines (spark-ignition over 50cc but not over 250cc)	22,248,243	32,231,849	62,340,289	82,884,071	214,571,537	4.9%	158.9%	864.4%
870840	Gearboxes (transmissions)	53,683,275	40,952,012	85,380,871	89,636,281	131,367,473	3.0%	46.6%	144.7%
870891	Radiators	51,455,425	42,549,067	81,062,561	99,679,163	114,126,340	2.6%	14.5%	121.8%
840999	Engine parts (compression-ignition)	57,379,876	44,643,954	72,976,386	108,516,745	95,100,038	2.2%	-12.4%	65.7%
840734	Engines (spark-ignition over 1,000cc)	17,571,656	9,170,854	4,597,652	3,931,934	22,959,337	0.5%	483.9%	30.7%
840820	Engines (compression-ignition)	4,420,905	1,449,009	3,928,929	6,567,796	9,396,148	0.2%	43.1%	112.5%
940120	Seats of a kind used for motor vehicles	2,692,705	3,222,652	6,588,724	7,197,987	7,295,311	0.2%	1.4%	170.9%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	125,230	315,622	456,925	1,149,746	4,278,040	0.1%	272.1%	3316.1%
940190	Parts of seats, not elsewhere specified	197,351,427	190,184,626	306,469,461	397,836,238	227,238	0.0%	-99.9%	-99.9%
	TOTAL	2,308,652,079	2,111,538,821	3,061,853,524	4,192,982,348	4,360,403,428	100.0%	4.0%	88.9%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-9. Aluminum:[1] Mexico's imports from the United States, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	935,345,806	806,245,256	908,396,496	938,493,205	853,987,379	37.3%	-9.0%	-8.7%
760120	Aluminum alloys, unwrought	384,897,768	310,431,229	445,709,048	693,628,810	530,246,552	23.2%	-23.6%	37.8%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	269,165,270	188,002,648	309,821,385	414,732,430	365,636,300	16.0%	-11.8%	35.8%
760820	Aluminum alloy tubes and pipes	128,978,892	86,447,305	130,468,037	153,944,942	168,450,242	7.4%	9.4%	30.6%
760900	Aluminum tube or pipe fittings	59,304,193	57,084,460	63,544,482	70,728,875	75,315,286	3.3%	6.5%	27.0%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	51,535,066	31,427,681	53,379,555	63,426,832	73,853,331	3.2%	16.4%	43.3%
760810	Aluminum tubes and pipes, not alloyed	63,707,591	60,691,798	55,095,094	71,163,051	59,126,284	2.6%	-16.9%	-7.2%
760421	Aluminum alloy hollow profiles	33,907,860	21,466,983	28,841,281	42,723,772	49,875,733	2.2%	16.7%	47.1%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	27,582,149	27,637,941	36,755,348	32,919,113	38,973,117	1.7%	18.4%	41.3%
760410	Aluminum bars, rods and profiles, not alloyed	28,298,946	21,492,911	26,702,640	31,870,964	23,099,758	1.0%	-27.5%	-18.4%
760110	Aluminum, not alloyed, unwrought	14,844,720	12,255,706	15,003,474	20,577,796	22,278,450	1.0%	8.3%	50.1%
760529	Aluminum alloy wire, 7mm or less	4,715,588	3,435,384	4,858,613	7,348,536	12,835,662	0.6%	74.7%	172.2%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	11,601,432	4,602,462	6,918,877	6,473,588	5,247,874	0.2%	-18.9%	-54.8%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	2,440,402	1,615,721	2,183,657	1,979,316	4,610,114	0.2%	132.9%	88.9%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	3,226,068	4,583,670	4,528,347	2,668,801	1,990,963	0.1%	-25.4%	-38.3%
760521	Aluminum alloy wire, over 7mm	1,227,953	1,205,855	1,293,411	1,617,762	1,473,447	0.1%	-8.9%	20.0%
	TOTAL	2,020,779,704	1,638,626,960	2,093,499,745	2,554,297,793	2,287,000,492	100.0%	-10.5%	13.2%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-10. Auto parts:[1] Mexico's imports from the United States, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
840820	Engines (compression-ignition)	1,590,337,619	1,212,801,327	1,773,412,976	5,970,187,776	6,175,311,737	26.0%	3.4%	288.3%
870840	Gearboxes (transmissions)	1,308,512,833	1,178,839,042	1,414,665,580	2,988,862,783	3,596,417,869	15.1%	20.3%	174.8%
870829	Parts of bodies	1,983,517,645	1,641,839,878	1,774,181,594	2,541,170,039	2,770,715,309	11.7%	9.0%	39.7%
840734	Engines (spark-ignition over 1,000cc)	1,204,257,054	1,100,137,322	1,354,430,056	2,132,560,953	2,288,569,845	9.6%	7.3%	90.0%
870850	Drive axles	1,187,456,627	994,007,590	1,056,998,875	1,766,381,209	1,856,029,289	7.8%	5.1%	56.3%
870830	Brakes	993,569,250	887,836,234	1,041,716,851	1,447,215,456	1,626,737,793	6.9%	12.4%	63.7%
840991	Engine parts (spark-ignition)	1,057,949,539	846,036,991	785,691,085	1,313,143,828	1,362,538,097	5.7%	3.8%	28.8%
870894	Steering systems	861,302,569	716,346,582	821,405,683	970,665,592	1,055,229,076	4.4%	8.7%	22.5%
870880	Suspensions	618,873,140	477,601,039	581,404,465	811,005,338	852,410,356	3.6%	5.1%	37.7%
840999	Engine parts (compression-ignition)	379,206,447	298,090,326	371,326,883	575,502,005	678,940,705	2.9%	18.0%	79.0%
940199	Parts of seats	0	0	0	24,819,582	650,672,860	2.7%	2521.6%	–
870870	Road wheels	278,299,396	218,360,453	313,116,203	382,139,425	477,816,127	2.0%	25.0%	71.7%
940120	Seats of a kind used for motor vehicles	207,055,241	161,168,708	162,735,589	198,108,550	207,674,526	0.9%	4.8%	0.3%
870891	Radiators	135,721,196	98,489,749	109,874,858	148,163,391	146,703,753	0.6%	-1.0%	8.1%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	3,842,735	2,634,044	767,375	1,148,770	428,159	0.0%	-62.7%	-88.9%
840732	Engines (spark-ignition over 50cc but not over 250cc)	37,447	43,264	62,559	16,228	8,208	0.0%	-49.4%	-78.1%
940190	Parts of seats, not elsewhere specified	783,160,208	575,920,655	555,778,571	627,375,226	3,949	0.0%	-100.0%	-100.0%
	TOTAL	12,593,098,946	10,410,153,204	12,117,569,203	21,898,466,151	23,746,207,658	100.0%	8.4%	88.6%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: Mexico National Institute of Statistics, Ministry of Economy.

Table E-11. Aluminum:[1] U.S. imports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
		U.S. Dollars					*Percent*		
1	Canada	5,588,908,328	5,582,642,436	9,142,034,260	10,934,571,495	9,207,079,151	53.5%	-15.8%	64.7%
2	United Arab Emirates	1,256,555,117	795,208,315	1,268,790,622	1,774,715,926	1,480,720,228	8.6%	-16.6%	17.8%
3	Australia	573,341,627	154,510,008	317,936,999	692,789,887	569,063,307	3.3%	-17.9%	-0.7%
4	Bahrain	706,121,234	338,096,745	724,905,896	1,134,238,925	532,754,691	3.1%	-53.0%	-24.6%
5	South Africa	384,617,091	318,324,931	466,397,958	455,017,464	518,293,110	3.0%	13.9%	34.8%
6	China	487,839,539	387,746,509	617,824,323	937,257,338	464,791,065	2.7%	-50.4%	-4.7%
7	Argentina	410,784,127	317,317,580	339,580,976	605,237,383	450,328,348	2.6%	-25.6%	9.6%
8	Mexico	152,584,325	154,246,791	342,748,163	559,042,077	441,713,200	2.6%	-21.0%	189.5%
9	South Korea	189,836,341	101,964,736	178,860,375	604,389,902	379,027,214	2.2%	-37.3%	99.7%
10	India	527,986,850	273,621,896	297,740,894	688,578,910	317,121,695	1.8%	-53.9%	-39.9%
	All other	4,183,873,432	2,530,447,612	3,776,112,873	5,149,332,656	2,844,353,153	16.5%	-44.8%	-32.0%
	TOTAL	14,462,448,011	10,954,127,559	17,472,933,339	23,535,171,963	17,205,245,162	100.0%	-26.9%	19.0%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: U.S. Census Bureau.

Table E-12. Auto parts:[1] U.S. imports, by partner, 2019–2023

	Partner	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
		U.S. Dollars					*Percent*		
1	Mexico	31,512,186,865	26,882,694,542	31,364,667,598	36,480,671,384	40,252,597,876	42.2%	10.3%	27.7%
2	Canada	10,113,771,813	8,306,250,606	9,339,329,304	10,781,591,124	12,040,765,248	12.6%	11.7%	19.1%
3	China	9,155,179,018	7,592,446,851	9,506,339,996	10,571,516,661	9,191,851,480	9.6%	-13.1%	0.4%
4	Germany	5,917,678,025	5,462,987,684	6,963,602,136	7,262,932,070	8,081,866,117	8.5%	11.3%	36.6%
5	Japan	7,412,363,418	5,735,054,946	7,015,663,532	7,672,880,884	6,849,078,026	7.2%	-10.7%	-7.6%
6	South Korea	4,048,245,473	3,581,267,928	4,670,184,872	5,673,130,628	5,725,689,231	6.0%	0.9%	41.4%
7	India	1,242,093,202	913,555,908	1,464,359,640	1,752,040,903	1,852,195,118	1.9%	5.7%	49.1%
8	Austria	820,566,283	845,029,303	1,133,805,433	1,210,212,409	1,371,072,031	1.4%	13.3%	67.1%
9	Taiwan	1,118,724,307	1,113,824,165	1,281,446,908	1,431,483,362	1,190,978,420	1.2%	-16.8%	6.5%
10	United Kingdom	868,350,675	656,235,785	796,117,512	872,480,121	982,707,661	1.0%	12.6%	13.2%
	All other	6,205,779,864	5,645,470,869	7,589,888,405	8,170,037,395	7,821,131,550	8.2%	-4.3%	26.0%
	TOTAL	78,414,938,943	66,734,818,587	81,125,405,336	91,878,976,941	95,359,932,758	100.0%	3.8%	21.6%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: U.S. Census Bureau.

Table E-13. Aluminum:[1] U.S. imports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760110	Aluminum, not alloyed, unwrought	3,893,510,026	3,529,978,246	5,202,381,607	6,941,245,741	6,351,103,922	36.9%	-8.5%	63.1%
760120	Aluminum alloys, unwrought	4,817,546,834	3,269,352,153	6,161,018,174	8,010,123,704	5,228,669,283	30.4%	-34.7%	8.5%
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	3,750,594,604	2,213,267,350	3,119,664,591	4,619,765,852	2,707,132,121	15.7%	-41.4%	-27.8%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	531,161,795	518,759,963	763,887,370	1,049,871,418	808,541,501	4.7%	-23.0%	52.2%
760421	Aluminum alloy hollow profiles	359,416,722	380,529,848	677,579,699	981,093,102	741,051,657	4.3%	-24.5%	106.2%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	467,543,410	523,281,856	699,763,717	759,543,157	696,809,242	4.0%	-8.3%	49.0%
760820	Aluminum alloy tubes and pipes	120,294,954	107,570,182	153,545,111	226,671,661	208,187,756	1.2%	-8.2%	73.1%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	120,081,080	93,478,027	130,937,450	264,460,120	130,222,323	0.8%	-50.8%	8.4%
760521	Aluminum alloy wire, over 7mm	99,280,921	69,317,919	149,298,694	186,238,498	108,457,888	0.6%	-41.8%	9.2%
760900	Aluminum tube or pipe fittings	84,178,219	70,114,341	90,549,829	115,758,174	103,504,524	0.6%	-10.6%	23.0%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	102,118,437	64,676,816	193,767,413	275,447,632	36,084,648	0.2%	-86.9%	-64.7%
760410	Aluminum bars, rods and profiles, not alloyed	20,307,019	19,012,120	23,057,880	33,627,244	31,361,612	0.2%	-6.7%	54.4%
760529	Aluminum alloy wire, 7mm or less	28,749,333	19,630,780	26,550,708	30,775,609	27,153,956	0.2%	-11.8%	-5.5%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	10,681,975	13,957,518	21,129,918	20,570,620	13,838,536	0.1%	-32.7%	29.6%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	51,752,814	54,836,599	52,486,018	12,989,672	7,938,099	0.0%	-38.9%	-84.7%
760810	Aluminum tubes and pipes, not alloyed	5,229,868	6,363,841	7,315,160	6,989,759	5,188,094	0.0%	-25.8%	-0.8%
	TOTAL	14,462,448,011	10,954,127,559	17,472,933,339	23,535,171,963	17,205,245,162	100.0%	-26.9%	19.0%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: U.S. Census Bureau.

Table E-14. Auto parts:[1] U.S. imports, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870829	Parts of bodies	14,299,315,932	12,457,838,214	15,580,992,217	17,934,894,072	19,406,936,586	20.4%	8.2%	35.7%
870840	Gearboxes (transmissions)	9,210,076,467	7,813,301,595	9,525,365,535	11,144,841,862	11,700,864,940	12.3%	5.0%	27.0%
940199	Parts of seats	0	0	0	9,641,809,933	9,876,297,678	10.4%	2.4%	–
840734	Engines (spark-ignition over 1,000cc)	8,490,049,734	7,726,575,909	8,133,896,084	8,703,068,027	9,791,740,380	10.3%	12.5%	15.3%
840991	Engine parts (spark-ignition)	6,184,302,409	5,031,701,933	6,589,895,985	7,184,205,216	6,952,165,974	7.3%	-3.2%	12.4%
870830	Brakes	5,547,601,056	4,791,117,410	5,710,880,509	7,208,295,901	6,924,962,264	7.3%	-3.9%	24.8%
870850	Drive axles	4,636,870,701	3,985,367,829	5,239,654,848	5,948,446,013	6,115,827,771	6.4%	2.8%	31.9%
870880	Suspensions	3,970,625,495	3,546,907,339	4,506,602,374	5,456,197,524	5,643,279,600	5.9%	3.4%	42.1%
870870	Road wheels	3,953,545,761	3,503,833,160	4,593,540,343	5,102,420,431	5,065,542,434	5.3%	-0.7%	28.1%
870894	Steering systems	4,427,960,448	3,688,077,213	4,141,984,887	4,452,084,877	4,842,572,136	5.1%	8.8%	9.4%
840999	Engine parts (compression-ignition)	3,254,433,399	2,418,709,769	3,412,753,913	4,032,510,328	4,204,799,053	4.4%	4.3%	29.2%
840820	Engines (compression-ignition)	3,196,618,179	2,591,788,084	3,142,304,372	2,937,863,812	2,856,755,881	3.0%	-2.8%	-10.6%
870891	Radiators	887,735,079	784,789,286	869,024,066	1,240,718,173	1,192,361,086	1.3%	-3.9%	34.3%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	371,834,370	349,839,469	433,999,204	538,582,630	453,262,215	0.5%	-15.8%	21.9%
940120	Seats of a kind used for motor vehicles	253,510,238	243,727,980	234,473,595	317,298,908	291,866,046	0.3%	-8.0%	15.1%
840732	Engines (spark-ignition over 50cc but not over 250cc)	11,266,703	20,471,676	31,308,324	35,739,234	40,698,714	0.0%	13.9%	261.2%
940190	Parts of seats, not elsewhere specified	9,719,192,972	7,780,771,721	8,978,729,080	0	0	0.0%	–	-100.0%
	TOTAL	78,414,938,943	66,734,818,587	81,125,405,336	91,878,976,941	95,359,932,758	100.0%	3.8%	21.6%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: U.S. Census Bureau.

Table E-15. Aluminum:[1] U.S. imports from China, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	356,709,284	290,809,846	479,316,428	795,833,643	373,433,225	80.3%	-53.1%	4.7%
760900	Aluminum tube or pipe fittings	31,929,011	25,116,872	35,897,714	43,571,640	36,587,021	7.9%	-16.0%	14.6%
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	10,662,569	24,666,943	14,111,397	11,562,773	10,219,003	2.2%	-11.6%	-4.2%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	6,249,889	6,025,337	16,405,358	20,653,862	8,614,970	1.9%	-58.3%	37.8%
760421	Aluminum alloy hollow profiles	11,369,350	4,586,947	11,645,869	6,707,905	6,322,523	1.4%	-5.7%	-44.4%
760820	Aluminum alloy tubes and pipes	4,139,551	5,279,878	11,061,949	9,014,860	5,742,141	1.2%	-36.3%	38.7%
760120	Aluminum alloys, unwrought	31,076,946	2,410,813	7,345,911	8,128,361	4,579,326	1.0%	-43.7%	-85.3%
760410	Aluminum bars, rods and profiles, not alloyed	1,847,702	1,787,419	3,350,488	5,330,474	3,991,193	0.9%	-25.1%	116.0%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	15,600,917	14,674,202	25,836,272	22,258,309	2,960,350	0.6%	-86.7%	-81.0%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	4,150,523	6,017,336	5,115,070	5,197,079	2,852,368	0.6%	-45.1%	-31.3%
760529	Aluminum alloy wire, 7mm or less	7,306,246	1,657,556	3,058,130	2,389,039	2,809,124	0.6%	17.6%	-61.6%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	4,352,629	2,689,070	2,082,969	3,824,036	2,253,244	0.5%	-41.1%	-48.2%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	263,275	332,839	144,692	309,336	2,115,763	0.5%	584.0%	703.6%
760810	Aluminum tubes and pipes, not alloyed	1,478,692	1,087,291	1,224,961	1,295,551	1,016,968	0.2%	-21.5%	-31.2%
760521	Aluminum alloy wire, over 7mm	443,508	781,430	742,772	863,404	830,921	0.2%	-3.8%	87.4%
760110	Aluminum, not alloyed, unwrought	259,447	322,730	484,343	317,066	462,925	0.1%	46.0%	78.4%
	TOTAL	487,839,539	387,746,509	617,824,323	937,257,338	464,791,065	100.0%	-50.4%	-4.7%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: U.S. Census Bureau.

Table E-16. Auto parts:[1] U.S. imports from China, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870870	Road wheels	1,902,644,048	1,483,324,732	1,797,327,597	1,757,899,381	1,767,300,262	19.2%	0.5%	-7.1%
870830	Brakes	1,570,549,272	1,357,953,851	1,504,337,955	2,173,646,247	1,652,490,411	18.0%	-24.0%	5.2%
870829	Parts of bodies	1,407,431,857	1,278,650,019	1,613,773,646	1,622,818,479	1,445,023,781	15.7%	-11.0%	2.7%
870880	Suspensions	737,828,939	687,376,742	863,168,574	1,028,883,258	927,848,675	10.1%	-9.8%	25.8%
840991	Engine parts (spark-ignition)	585,620,791	502,944,899	728,284,452	877,958,167	756,154,863	8.2%	-13.9%	29.1%
940199	Parts of seats	0	0	0	1,016,469,696	725,313,488	7.9%	-28.6%	–
840999	Engine parts (compression-ignition)	425,398,320	315,654,599	462,663,955	553,303,620	491,144,857	5.3%	-11.2%	15.5%
870850	Drive axles	375,068,513	340,359,546	415,807,333	452,994,520	444,186,304	4.8%	-1.9%	18.4%
870894	Steering systems	358,442,092	305,151,263	420,023,688	395,950,470	396,542,793	4.3%	0.1%	10.6%
870891	Radiators	262,275,875	209,445,469	246,822,188	360,669,996	277,771,828	3.0%	-23.0%	5.9%
870840	Gearboxes (transmissions)	130,247,727	114,353,548	152,353,764	172,294,663	180,933,539	2.0%	5.0%	38.9%
840820	Engines (compression-ignition)	47,398,651	29,744,733	61,258,569	76,668,445	53,772,009	0.6%	-29.9%	13.4%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	26,551,910	9,690,837	22,000,178	35,182,414	28,847,454	0.3%	-18.0%	8.6%
940120	Seats of a kind used for motor vehicles	46,955,989	33,620,845	45,451,669	30,415,654	24,667,242	0.3%	-18.9%	-47.5%
840734	Engines (spark-ignition over 1,000cc)	7,493,377	3,248,876	6,435,091	11,468,014	12,100,395	0.1%	5.5%	61.5%
840732	Engines (spark-ignition over 50cc but not over 250cc)	7,044,895	2,915,737	4,129,178	4,893,637	7,753,579	0.1%	58.4%	10.1%
940190	Parts of seats, not elsewhere specified	1,264,226,762	918,011,155	1,162,502,159	0	0	0.0%	#DIV/0!	-100.0%
	TOTAL	9,155,179,018	7,592,446,851	9,506,339,996	10,571,516,661	9,191,851,480	100.0%	-13.1%	0.4%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.

Source: U.S. Census Bureau.

Table E-17. Aluminum:[1] U.S. imports from Mexico, by HS6 subheading, 2019–2023

Table E-17
Aluminum: U.S. imports from Mexico, by HS6 subheading, 2019-2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
760429	Aluminum alloy bars, rods and profiles, not hollow profiles	45,546,036	60,262,276	101,944,746	171,172,483	128,355,347	29.1%	-25.0%	181.8%
760120	Aluminum alloys, unwrought	1,620,898	2,097,640	50,063,269	79,460,907	108,414,100	24.5%	36.4%	6588.5%
760421	Aluminum alloy hollow profiles	29,540,340	25,601,240	55,810,384	120,868,373	96,870,078	21.9%	-19.9%	227.9%
760820	Aluminum alloy tubes and pipes	37,631,426	32,833,567	60,777,140	86,737,296	78,290,243	17.7%	-9.7%	108.0%
760900	Aluminum tube or pipe fittings	11,702,980	8,898,228	9,692,018	14,551,501	15,086,576	3.4%	3.7%	28.9%
760612	Aluminum alloy plates, sheets, and strip, rectangular, over 0.2mm	15,310,991	17,800,513	60,210,343	83,130,716	10,846,171	2.5%	-87.0%	-29.2%
760410	Aluminum bars, rods and profiles, not alloyed	1,719,584	724,789	295,586	543,007	1,809,570	0.4%	233.2%	5.2%
760611	Aluminum nonalloyed plates, sheets, and strip, rectangular over 0.2mm	404,211	1,118,167	1,177,327	1,195,623	1,027,390	0.2%	-14.1%	154.2%
760511	Aluminum wire of nonalloyed aluminum, over 7mm	3,170,974	4,342,624	2,187,718	358,779	376,839	0.1%	5.0%	-88.1%
760691	Aluminum nonalloyed plates, sheets, and strip, other, over 0.2mm	60,922	11,746	79,777	96,129	151,636	0.0%	57.7%	148.9%
760519	Aluminum wire of nonalloyed aluminum, 7mm or less	42,441	57,941	11,670	128,251	143,938	0.0%	12.2%	239.1%
760810	Aluminum tubes and pipes, not alloyed	185,154	81,627	357,705	263,928	141,861	0.0%	-46.3%	-23.4%
760692	Aluminum alloy plates, sheets or strip, other, over 0.2 mm	5,576,429	284,210	135,256	114,435	115,726	0.0%	1.1%	-97.9%
760110	Aluminum, not alloyed, unwrought	21,448	0	5,224	417,749	50,337	0.0%	-88.0%	134.7%
760529	Aluminum alloy wire, 7mm or less	50,491	132,223	0	2,900	26,037	0.0%	797.8%	-48.4%
760521	Aluminum alloy wire, over 7mm	0	0	0	0	7,351	0.0%	–	–
	TOTAL	152,584,325	154,246,791	342,748,163	559,042,077	441,713,200	100.0%	-21.0%	189.5%

[1] Based on HS subheadings 7601.10, 7601.20, 7604.10, 7604.21, 7604.29, 7605.11, 7605.19, 7605.21, 7605.29, 7606.11, 7606.12, 7606.91, 7606.92, 7608.10, 7608.20, and 7609.00.

Source: U.S. Census Bureau.

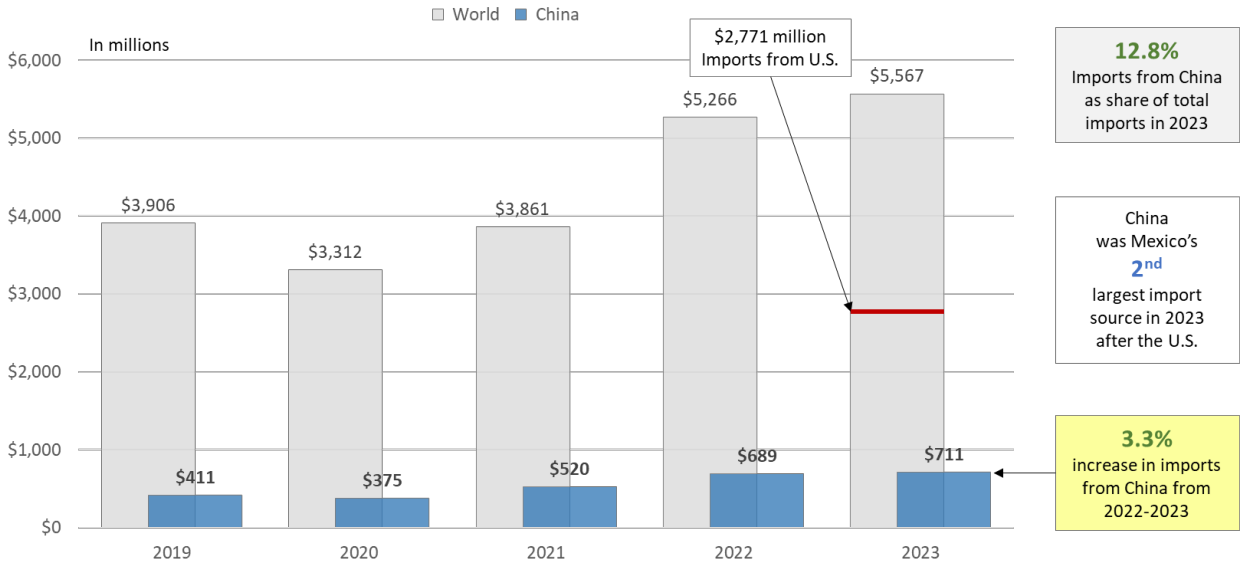
Table E-18. Auto parts:[1] U.S. imports from Mexico, by HS6 subheading, 2019–2023

HS6	Description	2019	2020	2021	2022	2023	2023 Share	▲ 2022-23	▲ 2019-23
				U.S. Dollars				Percent	
870829	Parts of bodies	5,532,148,267	4,680,793,774	5,797,761,091	6,816,147,665	7,997,845,498	19.9%	17.3%	44.6%
940199	Parts of seats	0	0	0	5,970,991,347	6,630,536,722	16.5%	11.0%	–
870840	Gearboxes (transmissions)	3,319,839,489	2,962,186,393	3,015,087,020	3,705,008,195	3,978,503,147	9.9%	7.4%	19.8%
840734	Engines (spark-ignition over 1,000cc)	3,442,099,503	2,829,649,395	2,852,003,336	3,155,936,364	3,312,764,516	8.2%	5.0%	-3.8%
870830	Brakes	2,041,838,066	1,828,008,654	2,299,630,943	2,877,903,146	3,221,321,534	8.0%	11.9%	57.8%
870894	Steering systems	2,455,779,891	2,141,148,268	2,285,297,821	2,652,374,625	3,046,345,570	7.6%	14.9%	24.0%
840991	Engine parts (spark-ignition)	2,277,692,269	1,803,506,257	2,501,441,393	2,731,388,308	2,870,435,619	7.1%	5.1%	26.0%
870850	Drive axles	1,595,961,835	1,369,505,430	1,732,390,530	2,122,960,260	2,337,790,390	5.8%	10.1%	46.5%
870880	Suspensions	1,321,788,638	1,275,779,075	1,695,369,021	2,000,240,011	2,160,871,071	5.4%	8.0%	63.5%
870870	Road wheels	1,091,683,592	983,813,575	1,364,163,508	1,577,868,967	1,613,001,964	4.0%	2.2%	47.8%
840820	Engines (compression-ignition)	1,442,544,197	1,155,648,059	1,261,623,964	1,246,341,004	1,360,645,142	3.4%	9.2%	-5.7%
840999	Engine parts (compression-ignition)	631,748,701	543,609,578	719,317,810	900,472,524	961,891,223	2.4%	6.8%	52.3%
870891	Radiators	313,315,890	282,072,073	282,750,256	428,659,032	464,656,699	1.2%	8.4%	48.3%
940120	Seats of a kind used for motor vehicles	143,953,306	146,786,336	100,950,581	173,845,784	169,223,826	0.4%	-2.7%	17.6%
840733	Engines (spark-ignition over 250cc but not over 1,000cc)	21,383,025	30,205,100	65,636,886	120,530,702	126,753,215	0.3%	5.2%	492.8%
840732	Engines (spark-ignition over 50cc but not over 250cc)	0	4,740	7,450	3,450	11,740	0.0%	240.3%	–
940190	Parts of seats, not elsewhere specified	5,880,410,196	4,849,977,835	5,391,235,988	0	0	0.0%	–	-100.0%
	TOTAL	31,512,186,865	26,882,694,542	31,364,667,598	36,480,671,384	40,252,597,876	100.0%	10.3%	27.7%

[1] Based on HS subheadings 840732, 840733, 840734, 840820, 840991, 840999, 870829, 870830, 870840, 870850, 870870, 870880, 870891, 870894, 940120, 940190, 940199. Due to limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: U.S. Census Bureau.

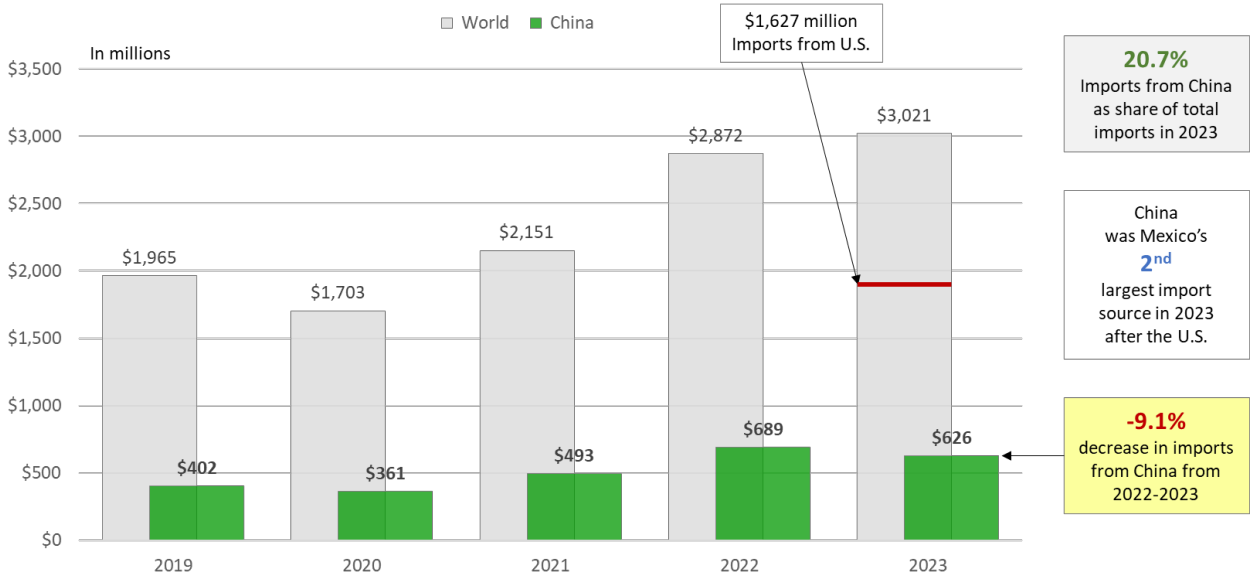
Appendix F: Import Figures

Figure F-1. Parts of bodies:[1] Mexico's imports, by source, 2019–2023



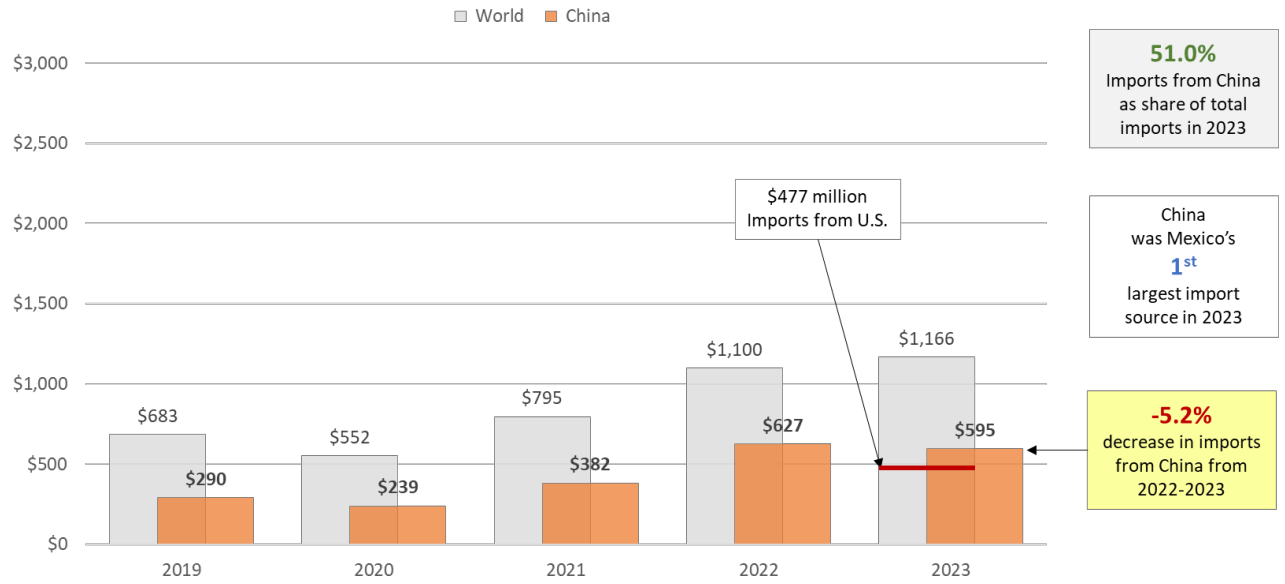
[1] Based on HS 8708.29. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-2. Brakes:[1] Mexico's imports, by source, 2019–2023



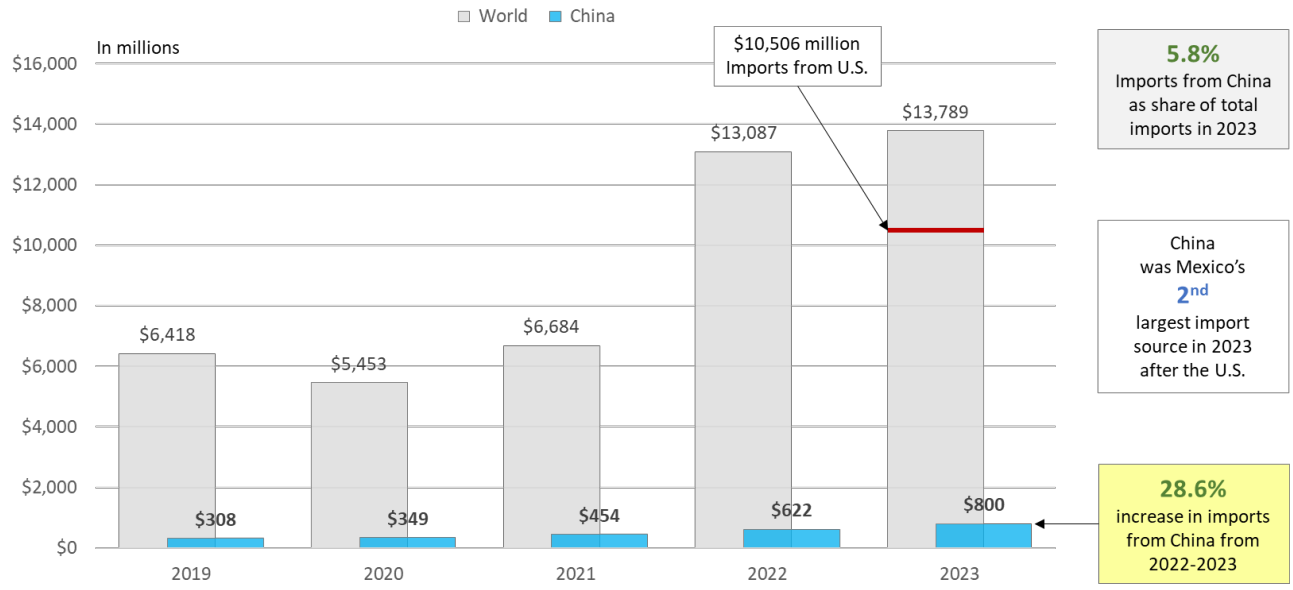
[1] Based on HS 8708.30. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-3. Road wheels:[1] Mexico's imports, by source, 2019–2023



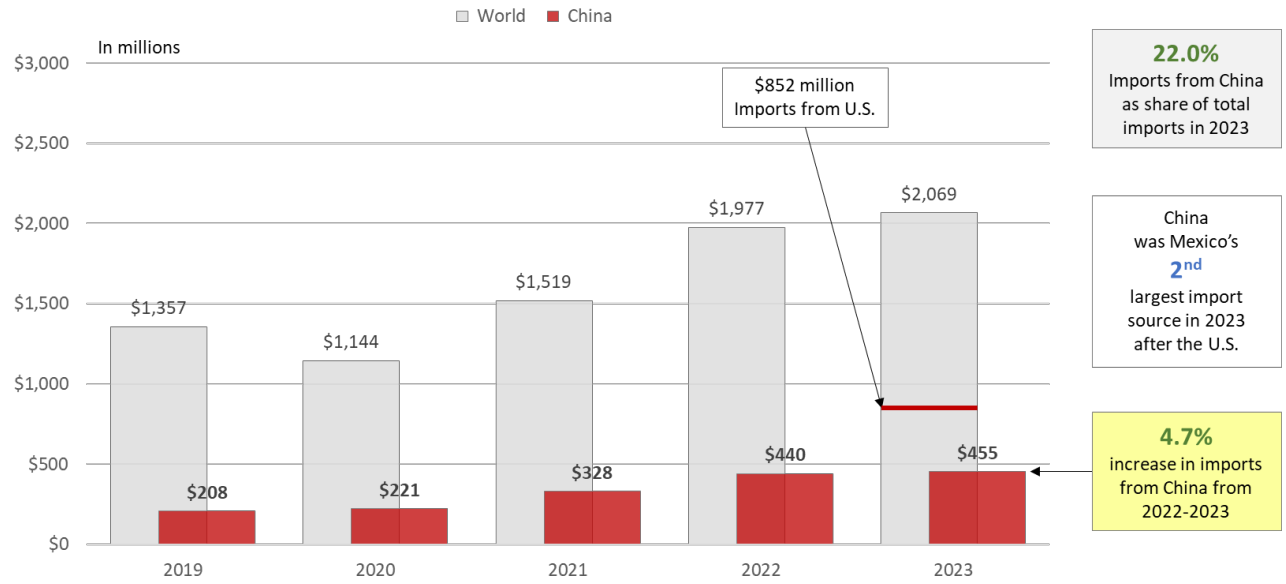
[1] HS 8708.70. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-4. Engines:[1] Mexico's imports, by source, 2019–2023



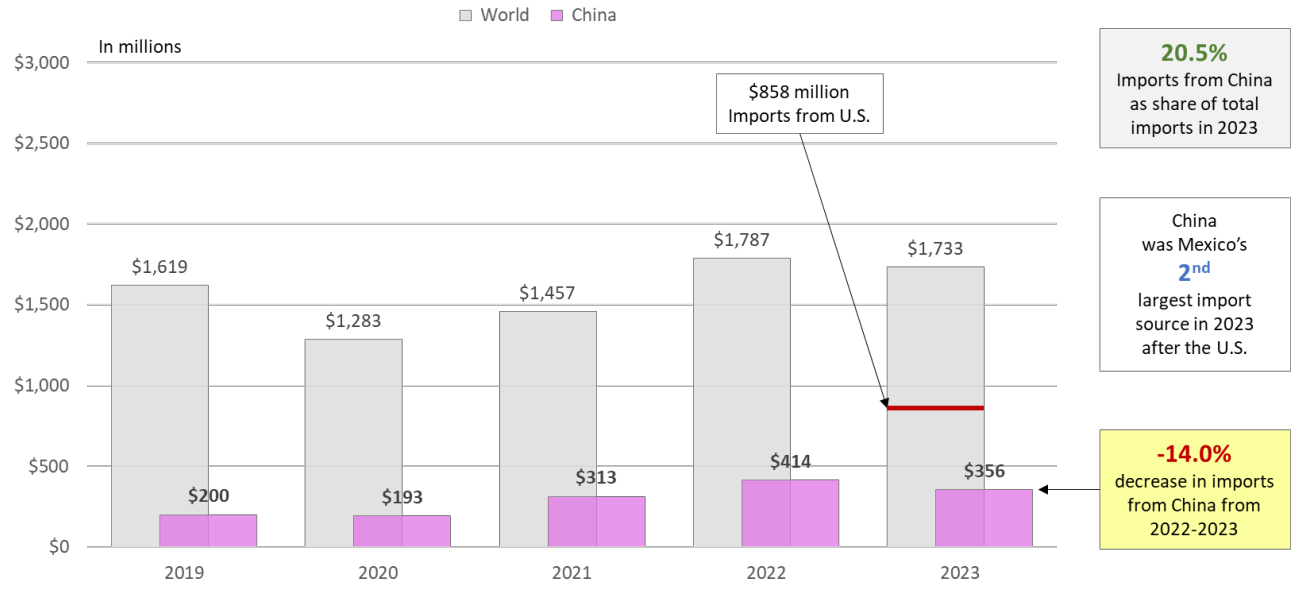
[1] Based on HS 8407.32, 8407.33, 8407.34, 8408.20, 8409.91 and 8409.99. Because of limitations in the HS nomenclature, data may include some non-aluminum parts and non-automotive engine parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-5. Suspensions:[1] Mexico's imports, by source, 2019–2023



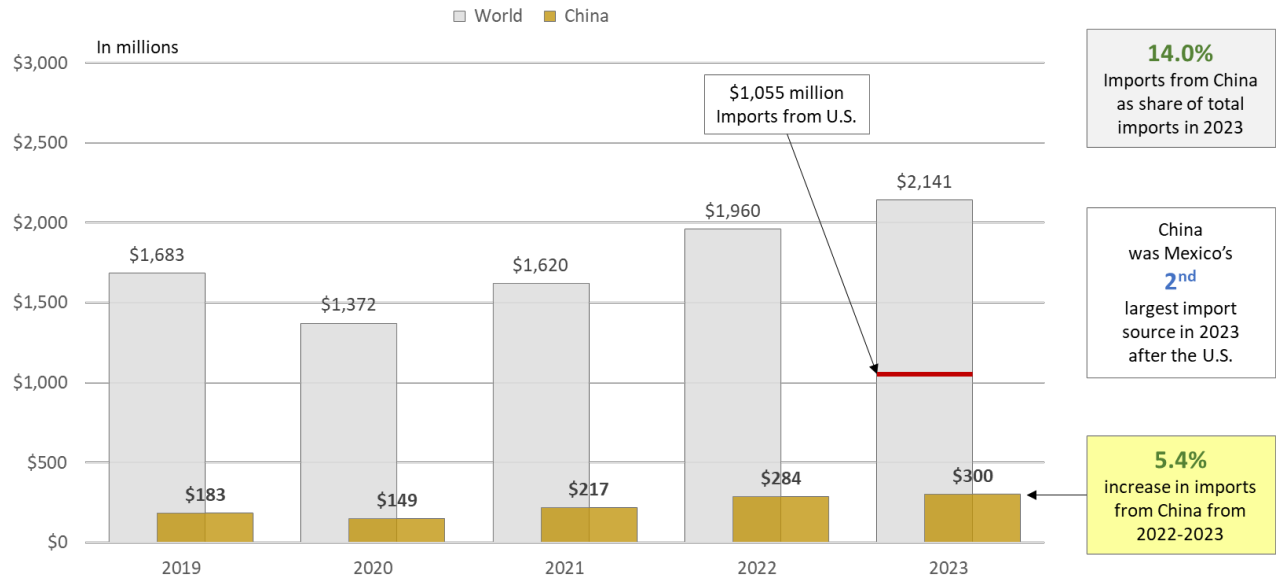
[1] Based on HS 8708.80. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-6. Seats:[1] Mexico's imports, by source, 2019–2023



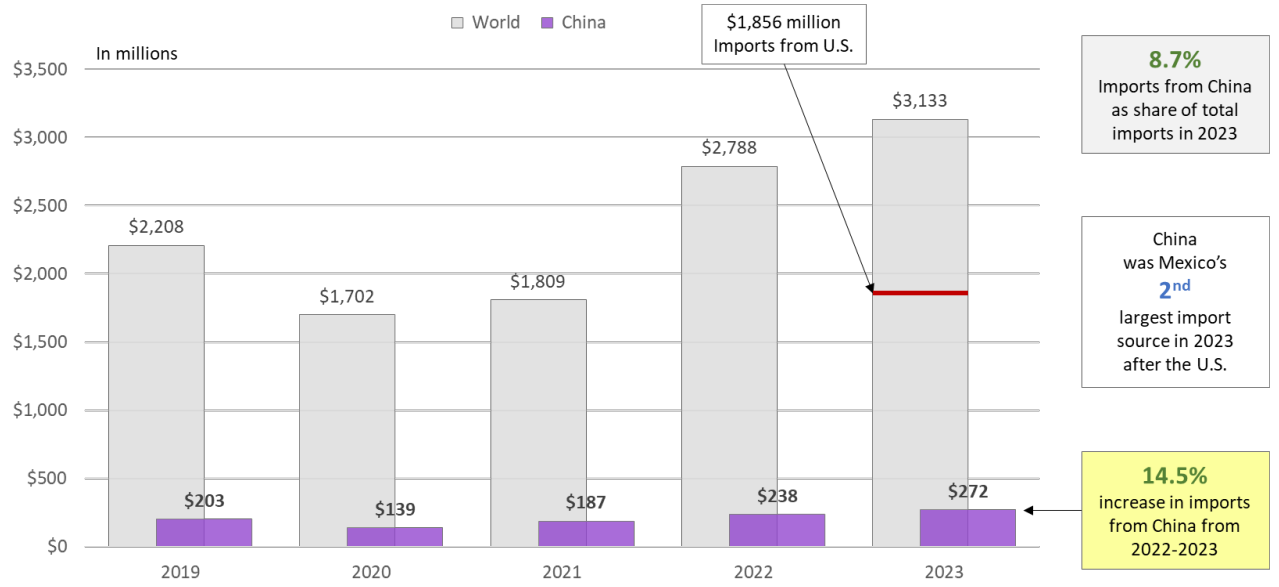
[1] Based on HS 9401.20, 9401.90, and 9401.99. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-7. Steering systems:[1] Mexico's imports, by source, 2019–2023



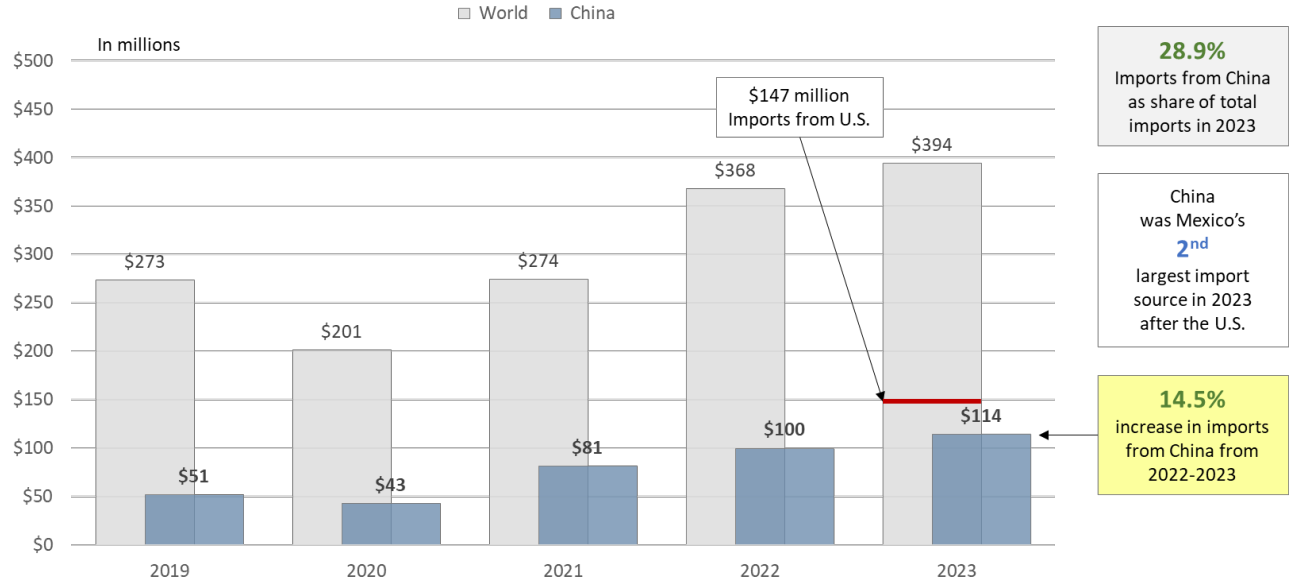
[1] Based on HS 8708.94. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-8. Drive axles:[1] Mexico's imports, by source, 2019–2023



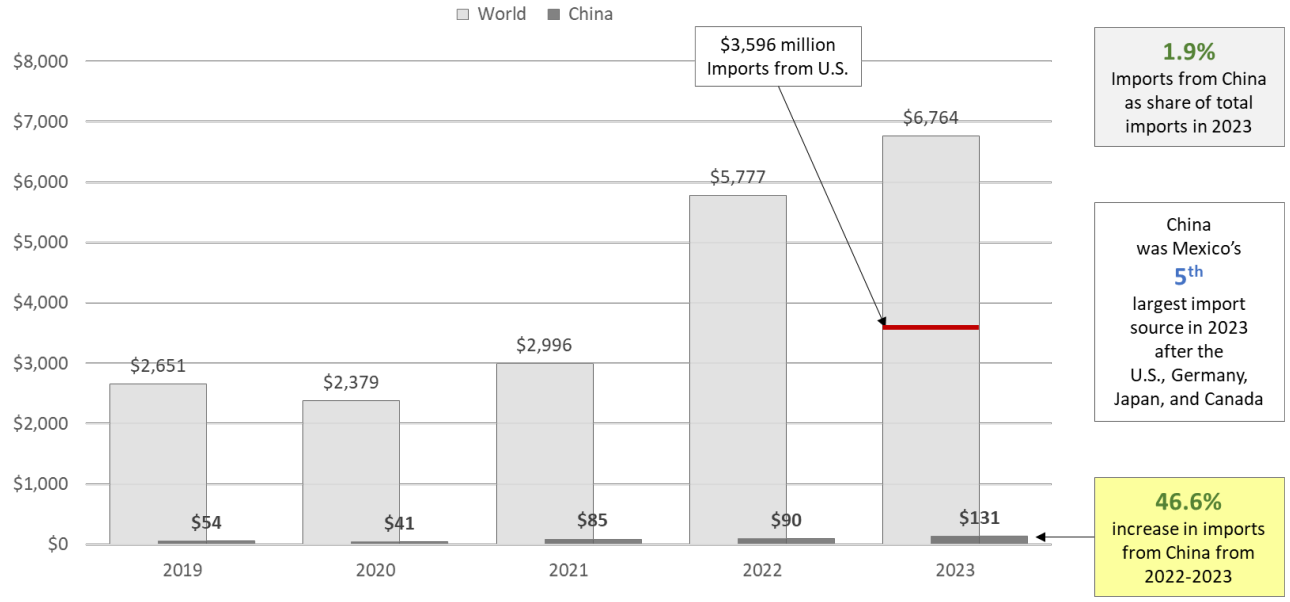
[1] Based on HS 8708.50. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-9. Radiators:[1] Mexico's imports, by source, 2019–2023



[1] Based on HS 8708.91. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy

Figure F-10. Transmissions:[1] Mexico's imports, by source, 2019–2023



[1] Based on HS 8708.40. Because of limitations in the HS nomenclature, data may include some non-aluminum parts.
Source: Mexico National Institute of Statistics, Ministry of Economy