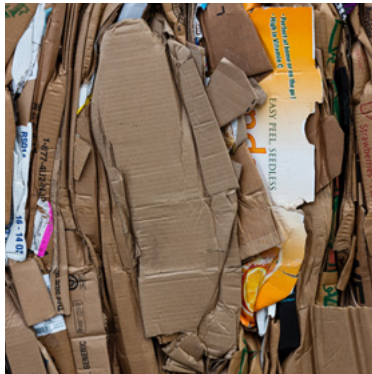


Calendar Year 2018 California Exports of Recyclable Materials

September 16, 2019



California Department of Resources Recycling and Recovery

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Executive Summary

This report details the recyclable materials exports from California (CA) ports in 2018 and highlights international recycling market trends. Characterizing the California waste stream is a significant factor in meeting California's recycling goals and local jurisdiction waste diversion mandates. The export of recyclable materials from California is a necessary component in understanding California's waste stream.

In 2018, California's ports exported 15.4 million tons of recyclable materials to international markets, a 6 percent increase from 2017. The increased total recyclable tonnage was primarily due to increased imports by Taiwan, Malaysia, Vietnam, and Indonesia in 2018. The materials had a vessel value of \$5.6 billion USD, a 9 percent increase from 2017 as California increase exports of higher value recyclables such as ferrous metals and OCC. China purchased 42 percent of all recyclable materials shipped overseas from California ports, equating to about 6.5 million tons. This is a negative 19 percent change from 2017. Over the last few years, China has implemented stringent import inspection restrictions, many of which were enacted in 2018. These restrictions greatly contributed to China's overall reduction in recyclable exports last year.

International import restrictions had a significant effect on plastic scrap and fiber imports. The fiber category consists of OCC (Old Corrugated Cardboard), unsorted mixed paper, and other miscellaneous paper. Historically, China imported substantial quantities of these materials as demand for recycled material and remanufacturing in China grew. As material bans and contamination restrictions took effect in China, Southeast Asian countries began importing more paper and plastic scrap. These countries did not have the available infrastructure to handle the global surplus previously destined for China. Eventually, many countries levied their own restrictions to slow the importation of recyclable materials.

As a result of reduced demand, the scrap value of unsorted mixed paper decreased in 2018, while mixed plastics 3-7 fell to a negative value. Additional import restrictions established throughout Southeast Asia caused markets for these materials to become increasingly hard to find. Old corrugated cardboard (OCC) exports increased in 2018, but its scrap value declined throughout the year.

In response, material recovery facilities (MRFs) are investing in more technology and labor to clean the recycling stream and produce the higher quality bales demanded by international and domestic markets.

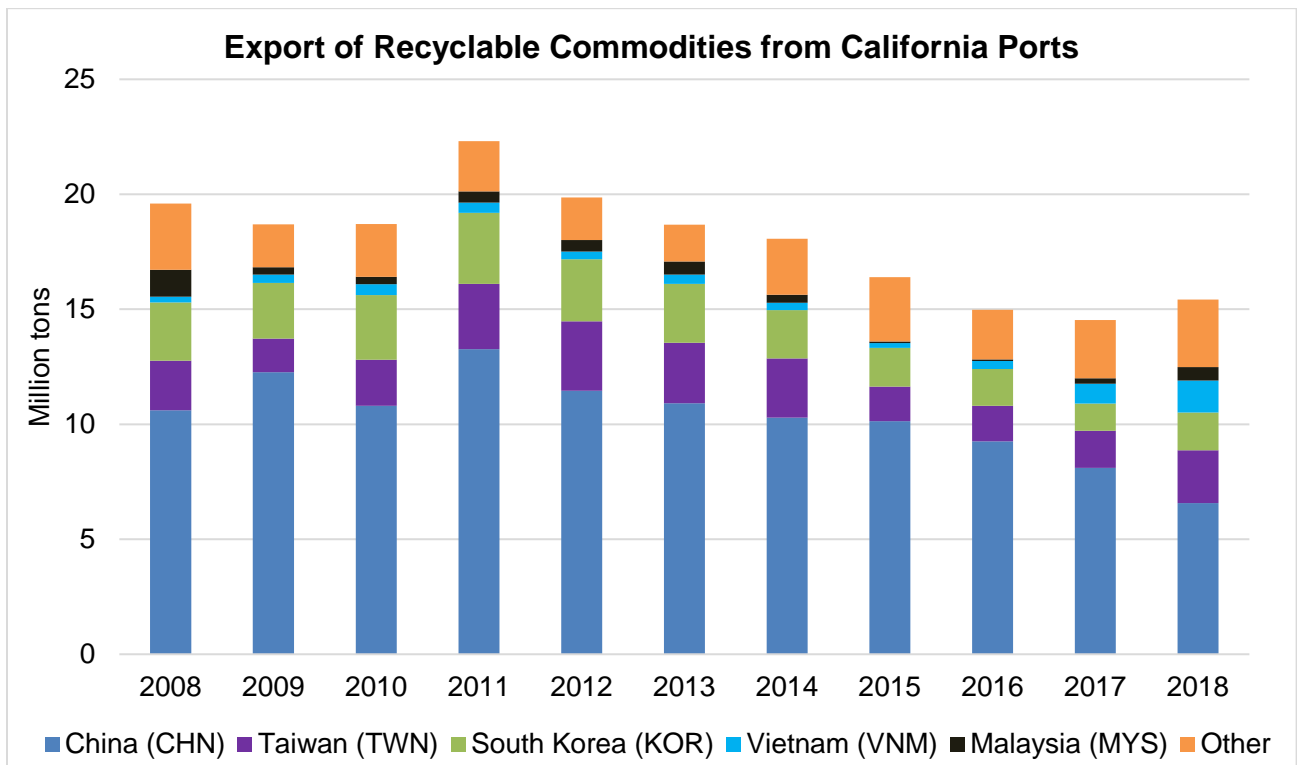
Declining revenue from recyclable material has made curbside collection a cost for some local governments. Many California jurisdictions are increasing their efforts to educate residents and businesses about international recycling challenges. These efforts focus on the importance of keeping contamination out of curbside bins.

The global trade of recyclable scrap remains important and beneficial to California's recycling system. As international trade partners work to regulate and reduce the negative impacts of recycling, California must take responsibility for cleaning up its recycling stream and reducing the export of materials that will never be recycled.

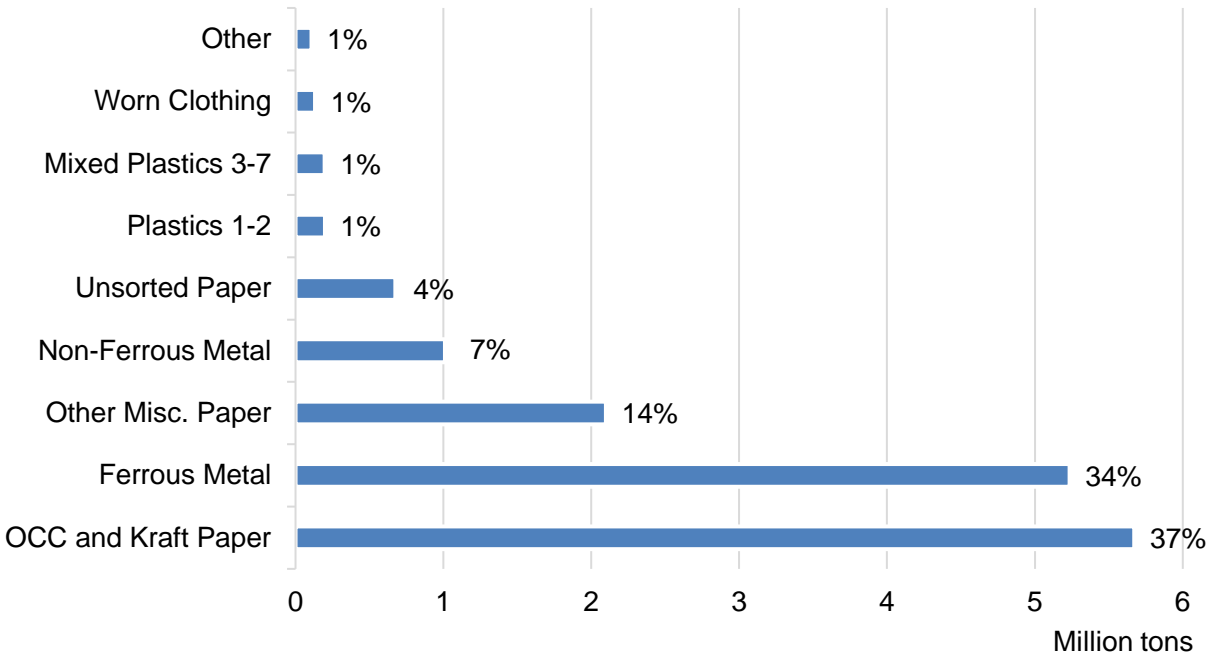
California must increase its efforts to produce cleaner bales of scrap material in order to meet the changing policies of the overseas markets. We must also develop more in-state infrastructure to process these raw materials that no longer have international demand. Recycling locally avoids shifting the environmental burden of our recyclables to other countries, reduces the environmental impacts associated with the transport of our recyclables and drives job creation locally.

At A Glance

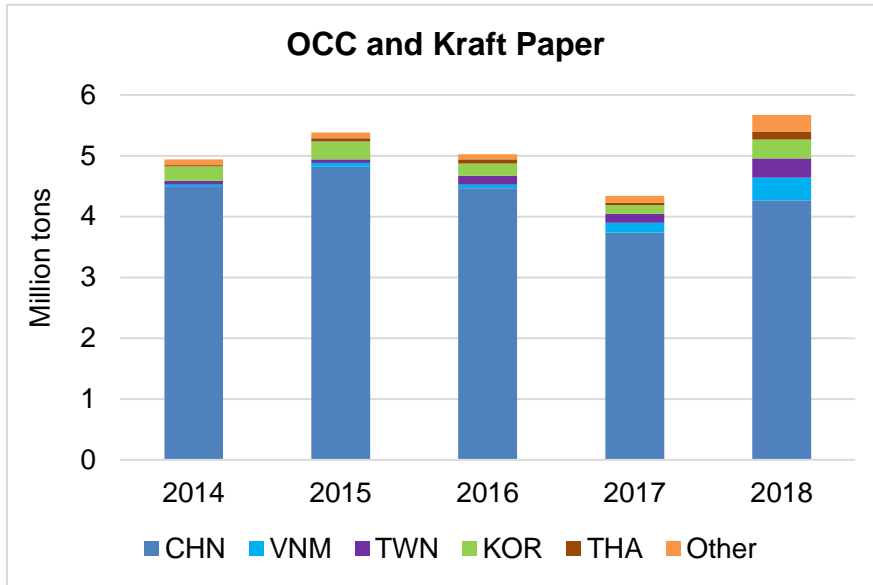
This section summarizes the key statistics from this report. For additional details, analysis, and accessible versions of this content, please see the body of the report. California exported 15.4 million tons of recyclable material from seaports in 2018, a 6 percent increase from 2017. The total vessel value of recyclable exports was \$5.6 billion dollars, over a 9 percent increase from 2017. China (CHN) imported 42 percent of seaborne recyclable exports, a decrease from the 55 percent of California's recyclable material the country imported in 2017.



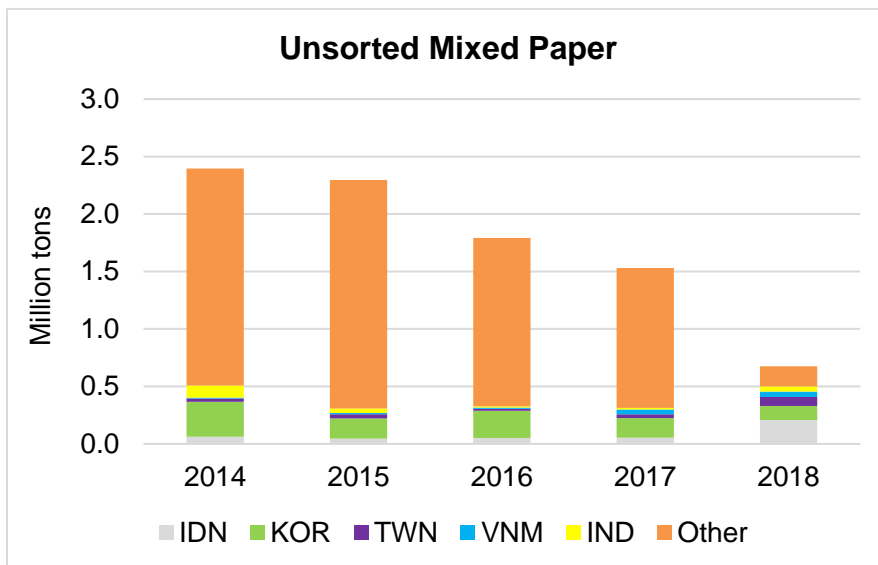
Top Exported Recyclable Materials in 2018
(% as portion of all recyclable material exported)



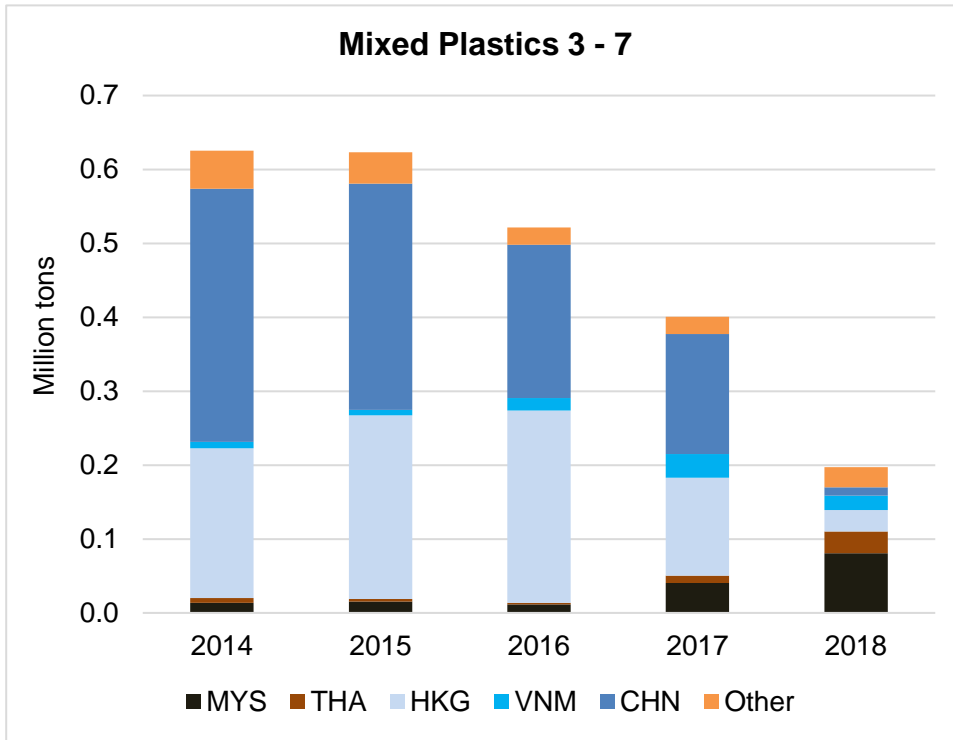
Materials of Interest



Exports of OCC & Kraft Paper increased by 30% in 2018. China imported 75% of all California OCC exports. Exports to China increased in the last quarter of 2018 as Chinese importers attempted to purchase as much material as possible before new quotas took effect in 2019.



Exports of Unsorted Mixed Paper declined 56 percent in 2018. China's contamination restrictions and regulations on paper scrap caused a 96.5 percent reduction in imports to the country compared to 2017. China is no longer one of the five largest importers of this material.



Exports of Mixed Plastics 3-7 declined by 50 percent in 2018. China reduced imports by 93 percent, Hong Kong by 77 percent, and Vietnam by 39 percent. Import restrictions, temporary bans and stricter inspection standards in China, Vietnam, Thailand, Malaysia, Indonesia, and Taiwan contributed to the significant reduction in exports of Mixed Plastics 3-7.

All graphics and data can be found in the following report and Appendix 5.

Background

Assembly Bill (AB) 341 (Chesbro, Chapter 476, Statutes of 2011) established a statewide goal of 75 percent recycling, composting, or source reduction of solid waste by 2020. Examining recyclable exports helps California better understand how exports and global markets play a critical role in meeting this statewide recycling goal. Sufficient markets for these materials are currently in question, as increasingly stringent global import policies impact the flow of materials.

California has a strong recyclable material collection and sorting infrastructure, but limited domestic markets. These markets process only some of the recyclable materials we collect. California does not have sufficient local markets to accommodate all recyclable materials collected within the state.

This report addresses the following questions:

- How many tons of recyclable materials did California ports export in 2018?
- What types of recyclable materials did California ports export in 2018?
- What was the vessel value of these exported recyclable materials?
- Where did the exported materials go?
- How has the export of recyclable materials from California changed over time?
- How did international policy changes affect California exports?
- What are the impacts of shifting export markets on California's recycling industry and jurisdictions?
- What are the impacts of shifting export markets on the countries importing California recyclables?

Methods

The data presented in this report comes primarily from WISERTrade, the *World Institute for Strategic Economic Research Database* unless otherwise noted.¹ The most common mode of international export of recyclable materials from California has been via container vessels. These vessels backhaul recyclable materials to Asia after delivering goods to American markets. WISERTrade also includes some information regarding materials exported by air, but this is not a typical means for exporting recyclable materials. This report only includes data available for seaborne recyclable materials exports.

WISERTrade includes data on all material exports from California ports. Recyclable commodities were identified and extracted from the database by examining each commodity's harmonized system (HS) code. The HS system is an international standard that assigns numeric codes to traded commodities. Specific recyclable commodities were combined into custom groups to represent common recyclable categories by type or particular interest for the purpose of this exports report. All weights shown are in short tons, equivalent to 2,000 lbs.

Table 1 provides examples of the material types that are found within each recyclable material category.

The material categories used in this report differ from the categories used prior to the 2017 Exports Report. The change provides more details on material flows that were impacted by international policies and restrictions. The mixed paper category previously reported (which included unsorted mixed paper, OCC cardboard, paperboard, and other paper-based materials) has been divided into three reportable material categories. These new categories, also collectively referred to as fiber, are old corrugated cardboard (OCC), unsorted mixed paper, and other miscellaneous mixed paper. Plastics resin categories were previously reported as plastics 1, 2, and 4, and other plastics 3, 5, and 7. These categories have been changed to plastics 1-2; and mixed plastics 3-7. This restructuring provides additional details on materials markedly impacted by recent changes to recyclable material import policies.

This report also includes select material value data from *Fastmarkets* (RISI).²

The WISERTrade data for this report was downloaded on April 15, 2019. The WISERTrade database continually updates, so some weight and vessel value data may have changed since April 15, 2019.

Note: All data in the tables and charts were collected from the WISERTrade database unless otherwise noted.

Table 1: Recyclable Materials Categories

Material Category	Material Types in Category
High-grade Paper	office paper scrap, deinked waste paper, and paperboard
OCC and Kraft Paper	cardboard (OCC), brown paperboard, kraft paper
Unsorted Mixed Paper	unsorted mixed paper
Other Miscellaneous Mixed Paper	mechanical pulp, newsprint
Plastics 1-2	resin types: polyethylene (PET), PET scrap
Mixed Plastics 3-7	resin types: polymers of vinyl (PV), polystyrene (PS), other plastic not PET
Glass	cullet and other waste scrap glass
Tire and Rubber Scrap	waste parings and scraps of rubber, and retreads of tires
Used Oil and Grease	waste oils made of polychlorinated biphenyls (PCBs), and other grease and light oils
Batteries	waste and scrap of batteries and electric storage batteries.
Worn Clothing	worn clothing and other worn items, and rags
Copper Wire	copper wire waste and scrap
Ferrous Metal	ferrous metal waste and scrap
Nonferrous Metal	aluminum cans, brass, copper, zinc, tin, tungsten, and other metals, waste, and scrap

Aluminum cans weight and vessel value information are provided separately. Their information is also included in the data for nonferrous metals.

Weight and vessel value information were aggregated from WISERTrade for the material categories identified above. The data was compiled to provide yearly export information to compare with previous years. Additionally, CalRecycle staff evaluated data on key material types on a monthly interval to examine the impacts of international recycling import policies affecting California's export markets.

Changes in export values or weights in a material category may be caused by changes in one or more of the components to the category. Changes for a material category do not necessarily mean that every material component within that category is impacted the same.

Data Limitations

Some materials may be generated in California and exported internationally via ports in other states. Materials generated out of state could also be exported via California ports. Materials may be transported out of the state by truck and rail. The data presented in this report does not account for any of these factors.

CalRecycle does not currently collect data on the flow of recyclable materials within the state of California. In 2015, Governor Edmond G. Brown Jr. signed AB 901 (Gordon, Chapter 746) which changes how recyclable material, organics, and solid waste is reported to CalRecycle. The Office of Administrative Law approved the Recycling and Disposal Reporting System (RDRS) regulations to implement AB 901 on March 5, 2019. Reporting under RDRS begins in the third quarter of 2019, and the 2019 data will be available in early-2020. CalRecycle will use this data to better understand the flow of recyclable and compostable materials as they are processed and move on to end uses. This reporting will provide better data on where exported materials originate, both by geography (e.g. locations within California or from other states) and by processing route (e.g. from solid waste facilities, secondary processing facilities, or recyclers). However, a Sacramento Superior Court judge issued a temporary injunction on July 9, 2019, blocking CalRecycle from obtaining this recycling information from members of the Institute of Scrap Recycling Industries. As a result, an important part of the waste management picture will remain incomplete and there will be a large gap in information about California's recycling infrastructure, at least temporarily.

Results - 2018 Recyclable Materials Exports

Based on the 2018 WISERTrade data, 15.4 million tons of recyclable materials were exported from California ports to international markets. Compared to 2017, approximately 882,000 more tons of recyclable materials were exported from California ports in 2018, an increase of approximately 6 percent. The first year-over-year increase in exported recyclable materials since 2011 occurred in 2018 (see Figure 1). Recyclable materials had a vessel value of \$5.6 billion USD (see Figure 2). The total vessel value increased by approximately \$484 million USD. Ferrous metals and OCC exports were largely the reason for the increase in total vessel value. Recyclable materials accounted for 22 percent of the 53.6 million tons of all material exported from California.

Appendix 1 provides detailed graphics representing the total exports from California ports. Appendix 2 provides detailed graphics representing the exports of specific material categories. Appendix 3 provides detailed graphics representing the exports from the United States. Appendix 4 provides the country codes for each importing country. Appendix 5 provides an ADA accessible version of the figures in the report, including source data for charts and graphs.

Figure 1: Recyclable Material Exported from California Ports by Weight

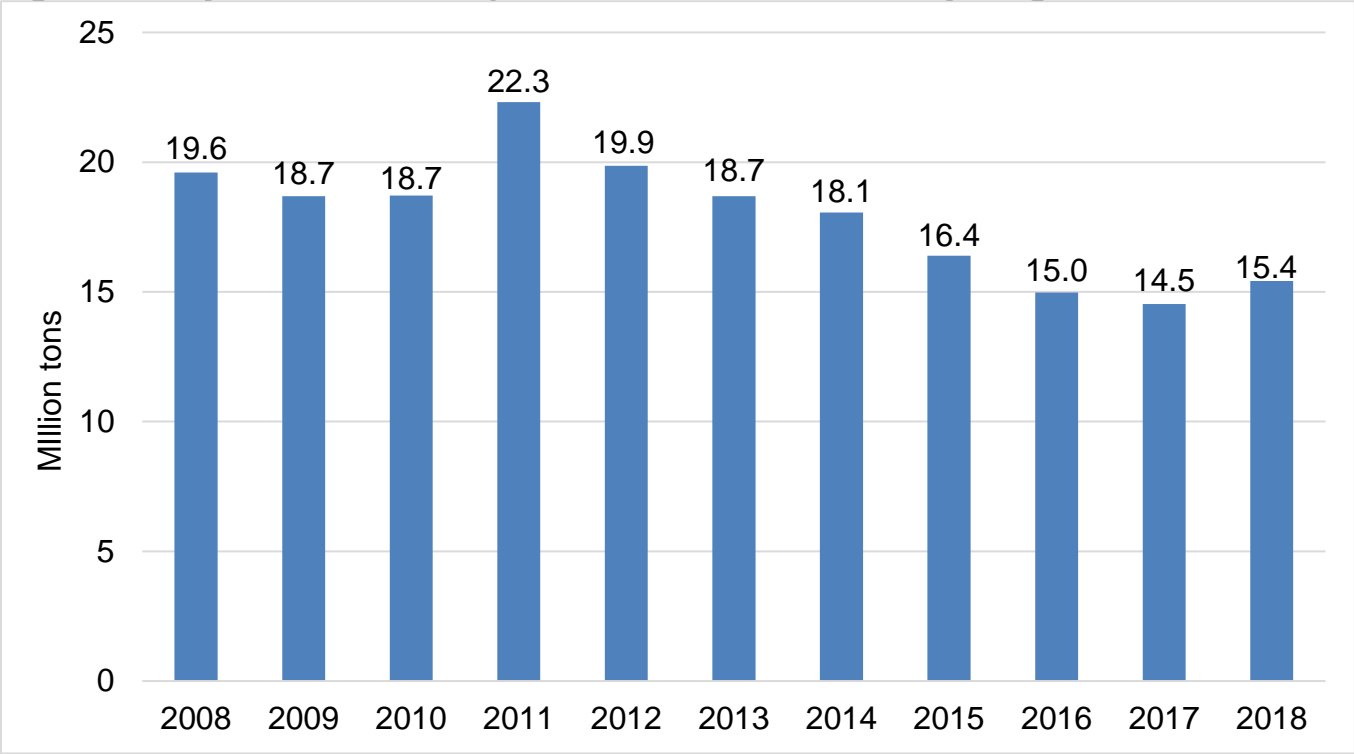
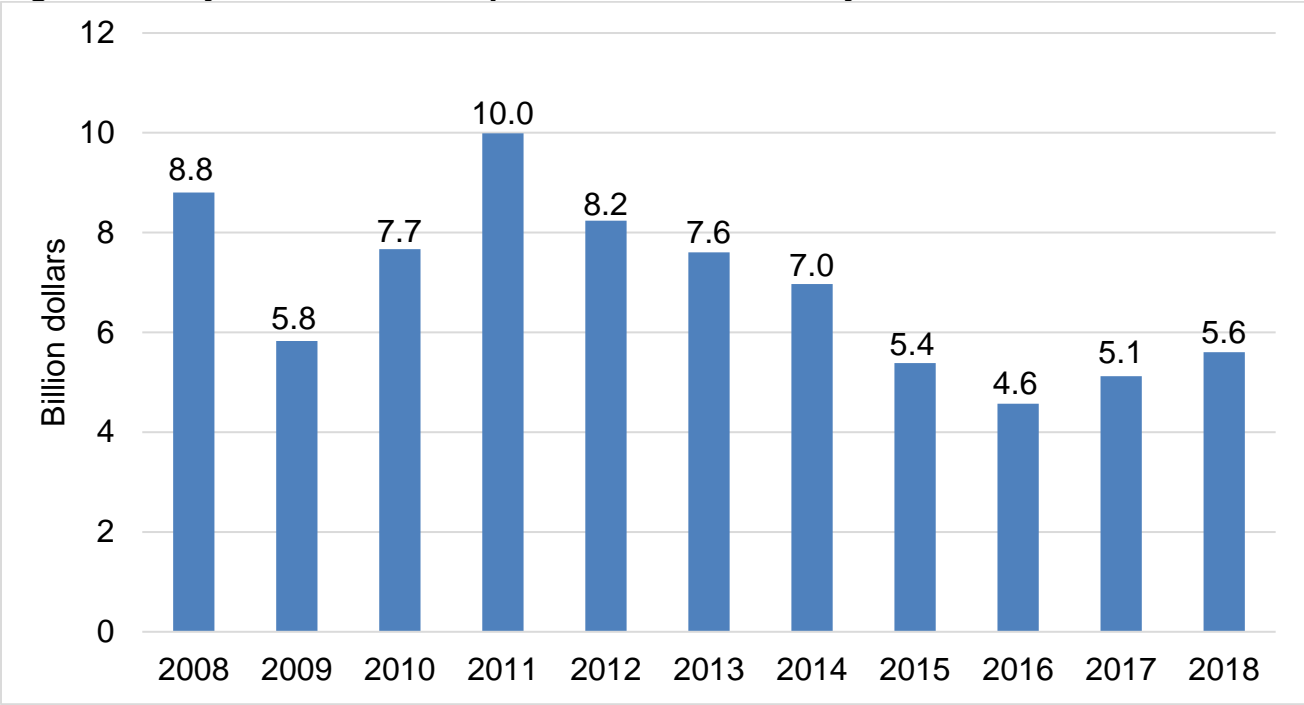


Figure 2: Recyclable Material Exported from CA Ports by Vessel Value



Tables 2 and 3 (below) provide a summary of the recyclable materials categories exported from California ports in 2018. Table 2 provides the difference in the weight of specific recyclable materials exported in 2017 and 2018. Table 3 provides the difference in vessel value of specific recyclable materials exported in 2017 and 2018.

Table 2: 2018 Recyclable Materials Exports from California Ports by Weight*

Material Category	2018 Tons	2017 Tons	Change 2017 to 2018 (tons)	Percent Change (%)
OCC and Kraft paper	5,672,642	4,343,279	1,329,363	31%
Ferrous Metal	5,235,379	4,620,382	614,997	13%
Other Misc. Mixed Paper	2,099,737	1,906,164	193,573	10%
Nonferrous Metal	1,010,558	1,056,894	-46,336	-4%
Unsorted Mixed Paper	675,365	1,530,199	-854,833	-56%
Plastics 1-2	198,000	390,309	-192,310	-49%
Mixed Plastics 3-7	197,298	400,654	-203,355	-51%
Worn Clothing	132,035	137,182	-5,147	-4%
High-grade Paper	108,013	95,803	12,210	13%
Tires/rubber	54,041	33,945	20,096	59%
Used Oil and Grease	25,703	31,248	-5,545	-18%

Material Category	2018 Tons	2017 Tons	Change 2017 to 2018 (tons)	Percent Change (%)
Batteries	25,265	29,776	-4,511	-15%
Copper Wire	22,398	11,406	10,992	96%
Aluminum Cans**	2,338	1,149	1,189	103%
Glass	1,568	2,362	-794	-34%
Total All Recyclable Materials	15,417,931	14,536,153	881,778	6%

*Note: The total of all recyclable materials includes material types not included in the selected material categories listed in the table.

** Note: Aluminum cans are also included in the weight and value of nonferrous metals.

Table 3: 2018 Recyclable Materials Exports from California Ports by Vessel Value*

Material Category	Vessel Value 2018 (USD)	Vessel Value 2017 (USD)	Vessel Value Change (USD)	Percent Change (%)
Nonferrous metal	2,039,644,438	2,010,162,292	29,482,146	1%
Ferrous metal	1,801,904,231	1,498,613,413	303,290,818	20%
OCC and Kraft paper	860,863,543	644,878,861	215,984,682	33%
Other misc. mixed Paper	374,780,427	321,288,791	53,491,636	17%
Copper Wire	122,666,788	57,531,975	65,134,813	113%
Worn Clothing	107,214,643	99,498,911	7,715,732	8%
Unsorted Mixed Paper	83,560,950	180,791,187	-97,230,237	-54%
Plastics 1-2	72,056,873	120,618,767	-48,561,894	-40%
Mixed Plastics 3-7	54,831,351	110,124,740	-55,293,389	-50%
Batteries	34,677,685	34,124,865	552,820	2%
High-grade paper	27,897,150	22,404,346	5,492,804	25%
Tires/rubber	12,044,587	10,477,470	1,567,117	15%
Used Oil and Grease	5,982,532	6,608,760	-626,228	-9%
Glass	5,734,788	2,243,968	3,490,820	156%
Aluminum Cans**	3,388,070	1,643,690	1,744,380	106%
Total All Recyclable Materials	\$5,604,764,227	\$5,120,386,120	\$484,378,107	9%

*Note: The total of all recyclable materials includes material types not included in the selected material categories listed in the table.

** Note: Aluminum cans are also included in the weight and value of nonferrous metals.

International Policies & Exports

Top Recyclable Scrap Importers

China has been the largest importer of California recyclable material since 2000 (see Figure 3). In 2018, China imported 42 percent of all recyclable materials and 34 percent of the total recyclable vessel value.

The ten countries importing the most recyclable material from California are, in order of greatest tonnage: China, Taiwan, South Korea, Vietnam, Malaysia, Indonesia, India, Thailand, Bangladesh, and Japan (see Figure 4). Out of the top five countries, only China’s total recyclable imports declined in 2018: China (-18.9 percent), Taiwan (+42.1 percent), South Korea (+39.6 percent), Vietnam (+60.3 percent), and Malaysia (+144.4 percent). South Korea is the only country out of the top five not to declare policy changes that limited their import of scrap material in 2018. In addition, Malaysia is the only other top-five country that did not declare policies affecting fiber scrap (Table 4).

Figure 3: California Recyclable Exports by Country (Top Five) from 2008 – 2018 by Weight

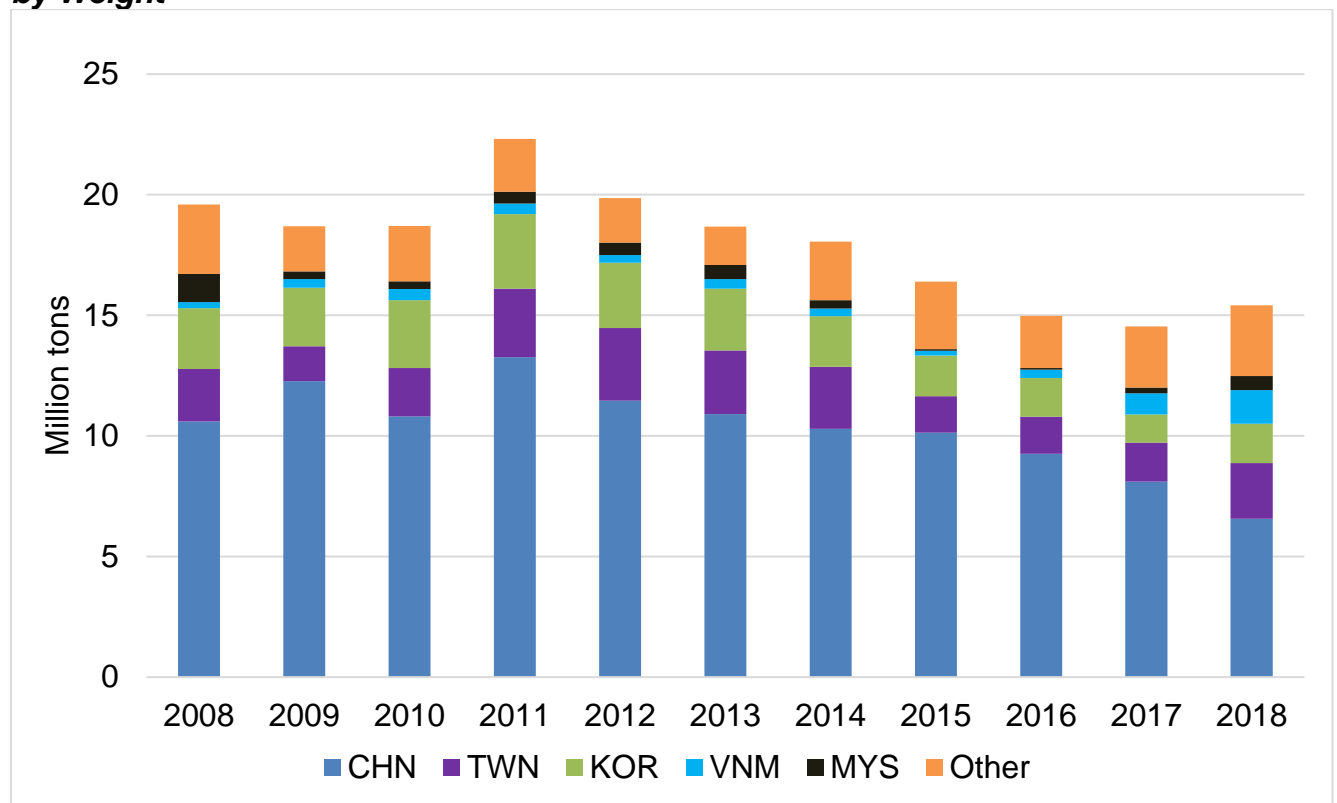


Figure 4: Top Ten Countries Receiving California Recyclable Exports by Weight

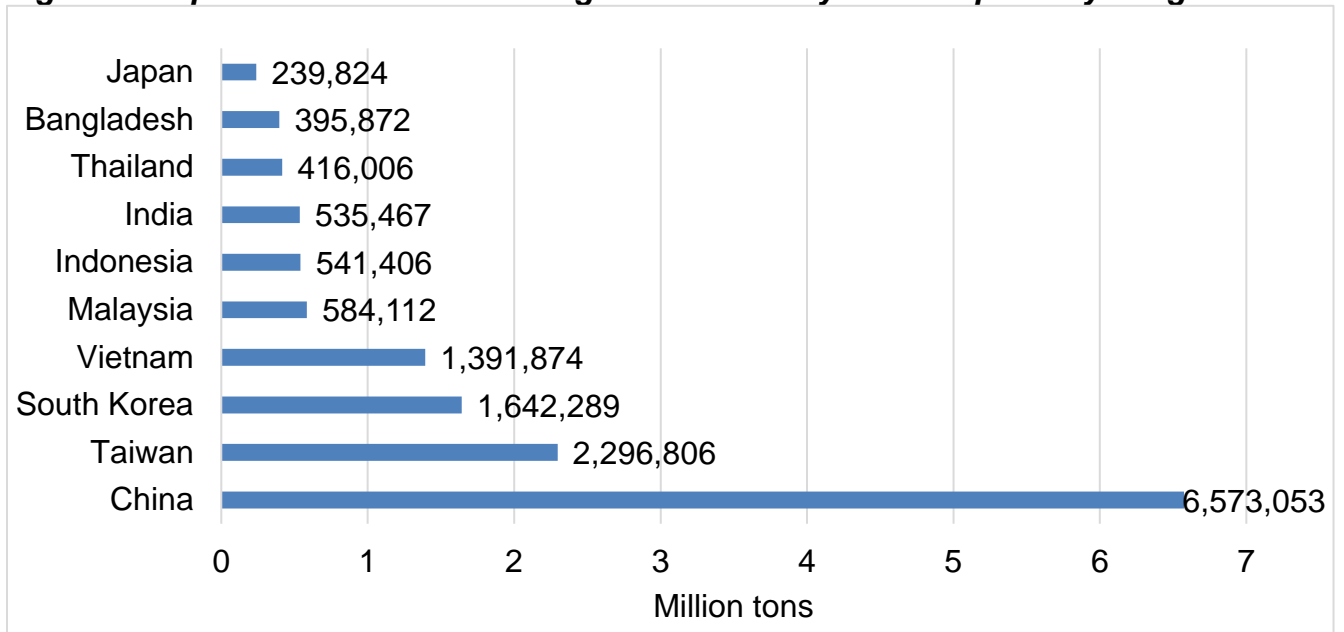


Table 4: Recyclable Scrap Import Policies Through 2018

Country	Year	Policy
China	2013	Green Fence policy - import restrictions and increased requirements for recyclable scrap inspections
China	2017	National Sword policy - campaign to stop the smuggling of illegal scrap imports
China	2017	Twenty four materials banned beginning Dec 31, 2017
China	March 2018	Blue Sky policy- tougher import contamination standards as well as stringent inspection standards and enforcement measures.
China	April 2018	Additional material bans were announced and went into effect at the end of 2018 and the beginning of 2019
China	May 2018	Customs enact 100 percent inspection of recyclable scrap material at the ports and shut down U.S. pre-shipment approvals for one month
China	July 2018	Declares intent to ban all recyclable material imports by 2020
China	December 2018	Restriction on scrap steel and aluminum starting July 1, 2019, announced
Vietnam	May 2018	Several ports impose temporary bans on scrap plastic, new requirements for recovered fiber imports
Vietnam	August 2018	Stops issuing new scrap plastic import licenses
Vietnam	October 2018	Ban on plastic scrap extended until further notice and the country releases new inspection guidelines
Indonesia	May 2018	Requires 100 percent inspection of scrap paper and plastic imports
Thailand	June 2018	The indefinite ban on scrap plastic and electronic imports
Thailand	August 2018	Passes a resolution that will ban scrap plastic imports within two years
Malaysia	July 2018	Stops issuing scrap plastic import permits for three months
Malaysia	October 2018	Imposes import tax on scrap plastics and tightens permit requirements
Taiwan	October 2018	Limits fiber and plastic scrap imports

Recyclable Exports – Material Types of Interest

The five recyclable materials with the most weight exported in 2018 were OCC and kraft paper, ferrous metal, other mixed miscellaneous paper, nonferrous metal and unsorted mixed paper (see Figure 5). The five greatest vessel value material types in 2018 were: nonferrous metal, ferrous metal, OCC and kraft paper, other mixed miscellaneous paper, and copper wire (see Figure 6).

Figure 5: Top Exported Recyclable Materials by Weight and Percent (15.4 Million Tons)

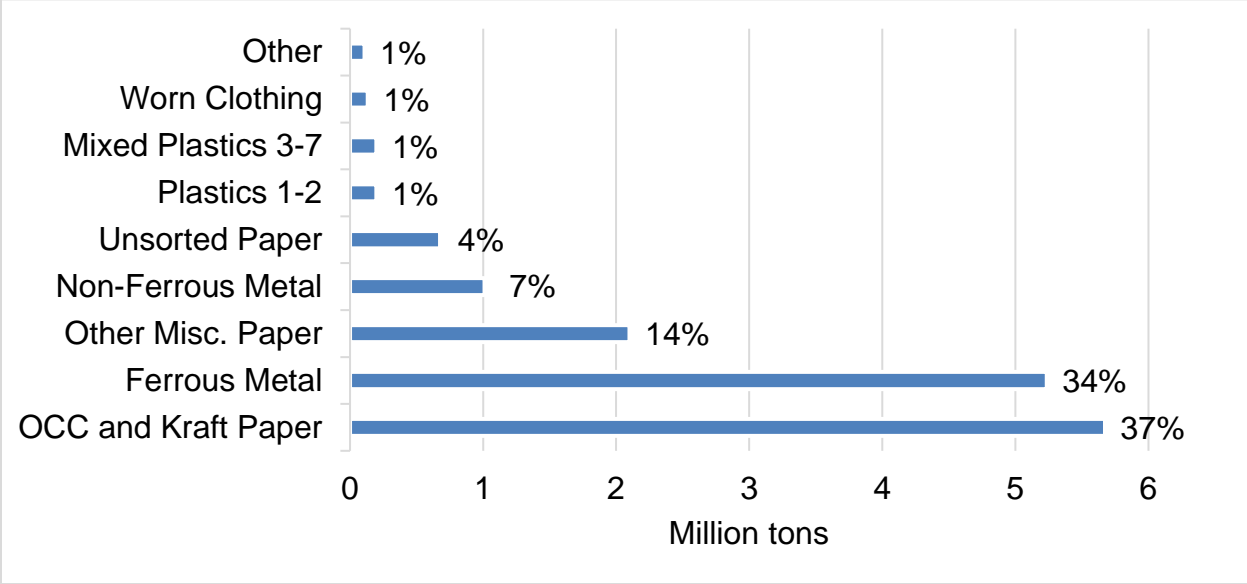
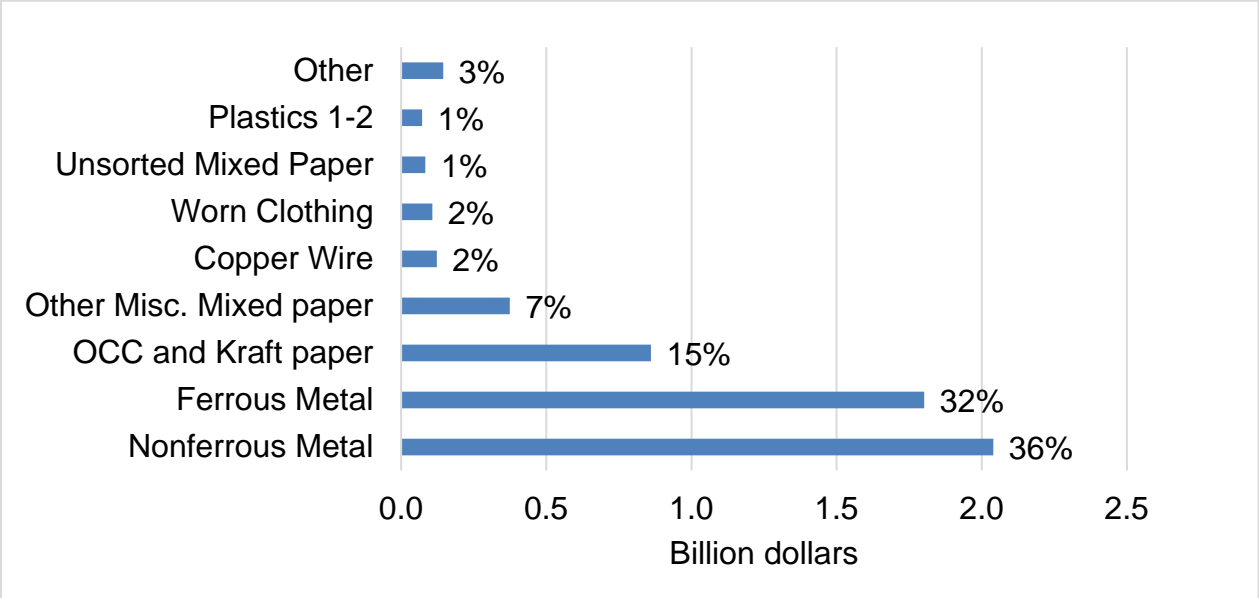


Figure 6: Top Exported Recyclable Materials by Vessel Value by Percent of \$5.6 Billion USD



Nonferrous Metal

Nonferrous metal exports decreased by 4.4 percent in 2018. China imported 50 percent less nonferrous metal than in 2017, but remained the largest importer of the material, purchasing 35 percent of all exports. South Korea increased imports by 40 percent, Malaysia increased 550 percent, Taiwan increased 247 percent, and India increased 171 percent (see Appendix 2). Nonferrous metal vessel value was \$2.04 billion dollars, an increase of 1.5 percent from 2017.

Ferrous Metal

Ferrous metal exports increased by 13.3 percent in 2018. Taiwan has been the largest importer of the material since 2010 and imported 34 percent of all ferrous metal exports from California ports in 2018. The total vessel value of all exported ferrous metal was 1.8 billion dollars, an increase of 20 percent from 2017 (see Appendix 2)

Fiber

There are four categories of fiber tracked by WISERTrade: High-grade paper, unsorted mixed paper, other mixed miscellaneous paper, OCC, and kraft paper. The specific paper types in each category are described in the Methods section.

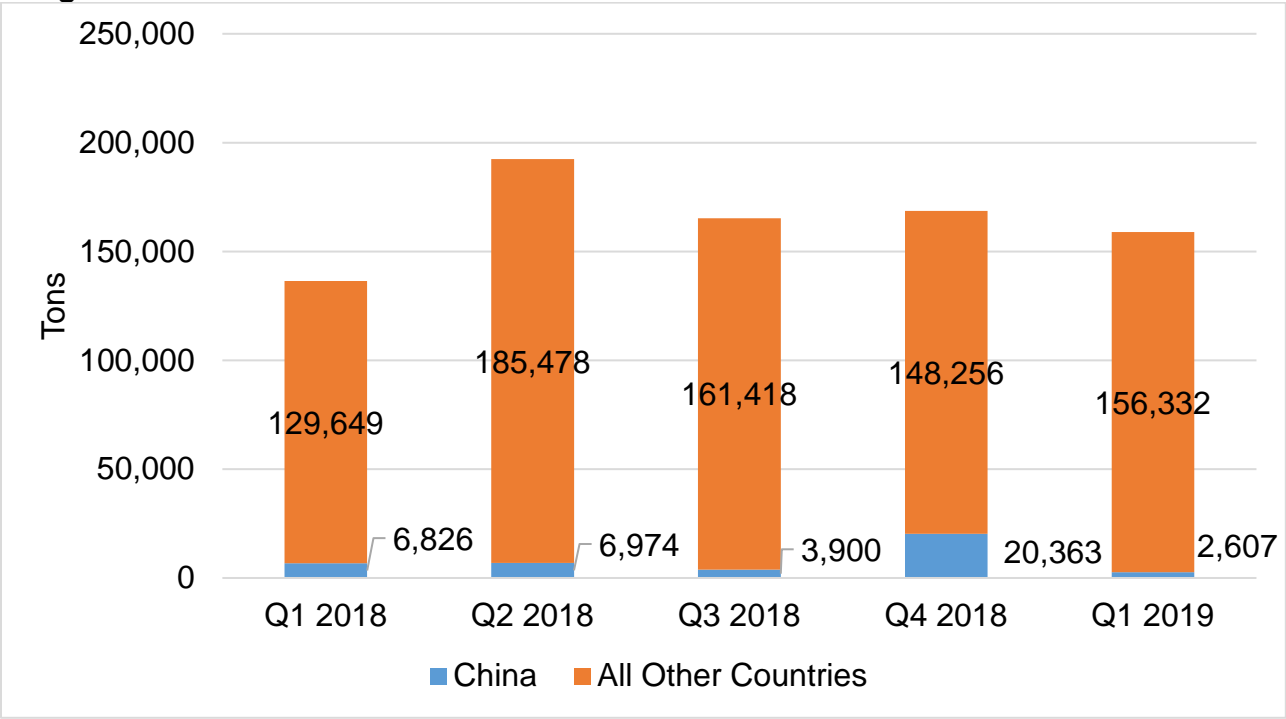
High-grade Paper

High-grade paper exports grew by about 13 percent in 2018, though the total weight exported is relatively insignificant compared to the other paper grades. Only 108,013 tons of material was exported in 2018 (see Appendix 2). Exports to India rose by over 189 percent, while exports to China fell by 73 percent. Mexico, Colombia, and El Salvador imported 31 percent of all high-grade paper from California ports, roughly equivalent to their imports in 2017.

Unsorted Mixed Paper

Unsorted mixed paper exports decreased by 56 percent in 2018. In 2017, China bought 72 percent of California's unsorted mixed paper exports (1.1 million tons). China purchased only 5 percent (39,000 tons) of the total 2018 unsorted mixed paper exports. This 96.5 percent decrease was due to China's ban on mixed paper (see Appendix 2). Exports to Indonesia, Taiwan, and India each increased by over 100 percent in 2018, but the increase was not enough to replace China's lost tonnage share of unsorted mixed paper. Overall, the unsorted mixed paper vessel value declined by more than \$100 million dollars in 2018.

Figure 7: Unsorted Mixed Paper – Quarterly Tons Exported from CA Ports by Weight

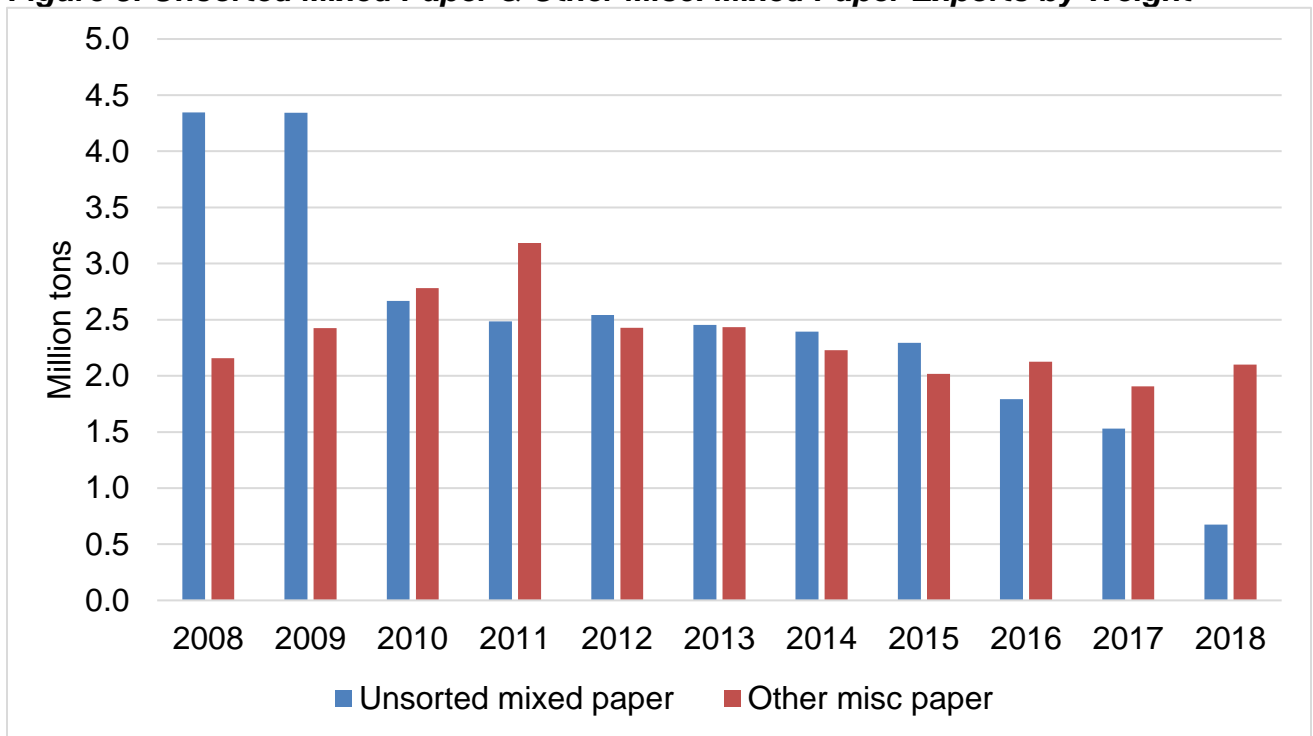


Other Miscellaneous Mixed Paper

Other miscellaneous mixed paper exports increased by 10 percent in 2018. Seventy-seven percent of the material was exported to China. Exports to Korea, Indonesia, Vietnam, and Thailand increased significantly in 2018. Total exports to those countries were only 332,841 tons of material compared to China’s 1.6 million tons (see Appendix 2).

Mixed miscellaneous paper exports have been greater than unsorted mixed paper since 2016 (see Figure 8). Other mixed miscellaneous paper is generally pre-consumer fiber that is cleaner than unsorted mixed paper. These types of material bales are not produced from curbside collection bins. As a result, this material category is less contaminated and has not been significantly impacted by the more stringent import quality standards.

Figure 8: Unsorted Mixed Paper & Other Misc. Mixed Paper Exports by Weight



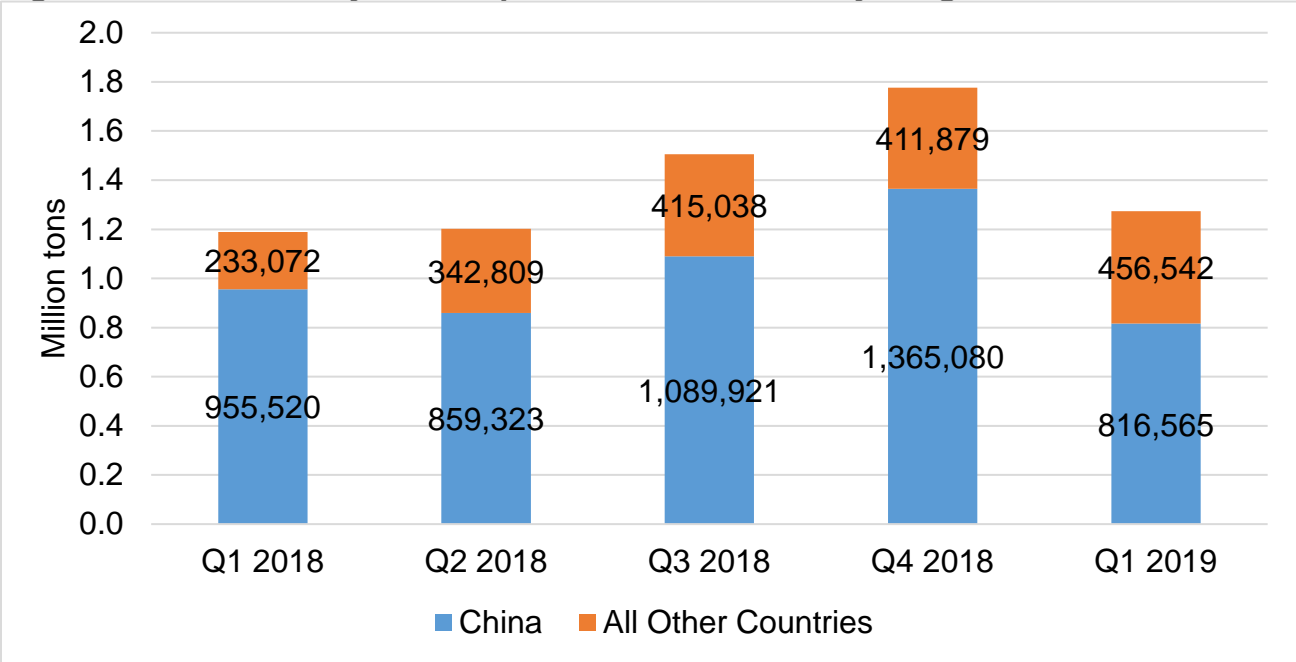
Old Corrugated Cardboard (OCC)

OCC exports increased by 30 percent in 2018 (see Appendix 2). China, the largest OCC consumer, imported 14 percent more OCC in 2018 than 2017. Vietnam, Taiwan, Korea, and Thailand all imported over 100 percent more OCC in 2018 than they did in 2017. China imported 75 percent of all California OCC exports in 2018. In prior years, China imported 88 percent in 2016 and 87 percent in 2017.

There was a 25 percent increase in OCC imports to China in quarter four of 2018 due to increased purchasing in October (see Figure 9). This was likely due to traders purchasing the last volumes available under their Chinese import permits.³ Imports declined in November and December as China authorized very little tonnage for imports.

Export data from quarter one of 2019 shows that OCC exports to other countries, primarily in Southeast Asia, continued their general increase while exports to China declined significantly. China imported 40 percent less material in quarter one of 2019 than quarter four of 2018 (see Figure 9). A significant reduction in authorized import permits, tariffs, and a general slowdown of the Chinese economy partially caused this decline.⁴

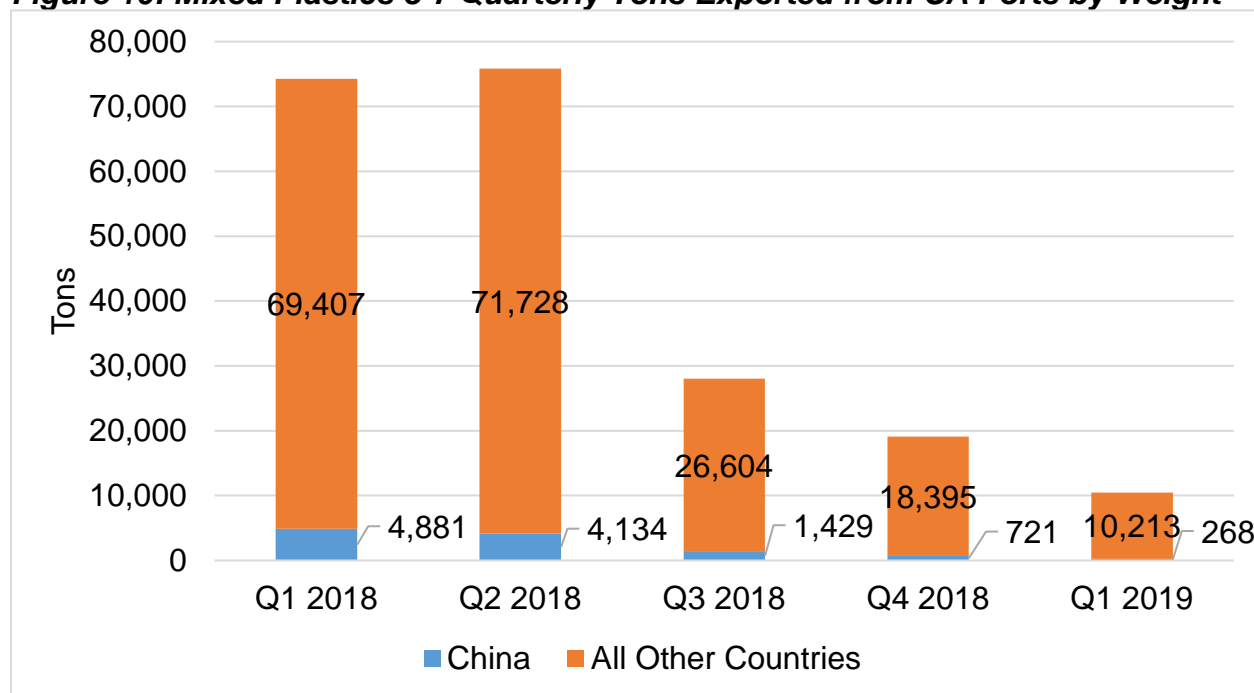
Figure 9: OCC Quarterly Tons Exported from CA Ports by Weight



Plastic – Mixed Plastics 3-7

Mixed plastics 3-7 exports declined by 50 percent in 2018 due to import restrictions taking effect in multiple countries (see Appendix 2). Exports to China, Hong Kong, and Vietnam declined by 93 percent, 77 percent, and 39 percent respectively. Imports to Malaysia and Thailand increased by 100 percent and 191 percent for the year, with Malaysia importing 40 percent of all mixed plastics. In June 2018, Thailand began an indefinite ban on scrap plastics and in July 2018, Malaysia stopped scrap plastic import permits for three months. Exports to both countries dropped significantly in quarters three and four as those restrictions took effect (see Figure 10). By the first quarter of 2019, total mixed plastics 3-7 exports had declined to negligible tonnages. There was an 86 percent decline in the comparison between the first quarter of 2018 and 2019.

Figure 10: Mixed Plastics 3-7 Quarterly Tons Exported from CA Ports by Weight



Plastics 1-2

California ports exported 198,000 tons of plastics 1-2 in 2018, a 50 percent decrease from 2017 (see Appendix 2). Plastics 1-2 include large bottles and rigid containers such as water bottles, drink bottles, milk jugs, and detergent bottles.

California has a robust infrastructure for processing and remanufacturing these plastics as many of them participate in the California Beverage Container Recycling Act. The high-quality raw material is also exported because it is used for remanufacturing by other countries. The significant decline in exports of plastics 1-2 was due to the decrease in shipments to China (-90 percent) and Hong Kong (-68 percent).

Impact on California Recycling Industry

Uncertainty about shifting export markets and declining scrap prices had a significant impact on California's recycling industry in 2018. Historically, California's model of collecting, sorting, and exporting meant one-half to two-thirds of Californians' curbside recycling material was exported abroad. Though total recyclable exports and vessel value increased in 2018, multiple international import restrictions on fiber and plastic scrap led to falling revenue and difficulty in selling material. This is especially applicable to material types that originate from curbside collection.

Material recovery facilities (MRFs) that sort and bale curbside collection material are responding to the fiber and plastic slowdown in different ways. Some MRFs have chosen to stockpile materials until scrap prices improve, markets reopen, or alternative markets become available. Others are disposing of bales that are no longer safe to stockpile, are of degraded quality, or will not be marketable due to contamination or other factors.

MRFs continue to struggle with increased processing costs. More labor is needed to remove contaminants during processing in order to produce cleaner bales. In response, the industry is investing in new technologies, like advanced screens and optical sorters, as well as creating secondary processing operations to further reduce contamination. These operations sort aggregated mixed material bales into individual commodity bales of higher value as a way to reduce further contamination.

Mixed plastics 3-7 remain difficult for MRFs to sell as demand and scrap values continue to decline. The mixed plastics 3-7 scrap value remains negative in Q1 2019 (see Figure 11). Unsorted mixed paper is similarly hard to sell, even with an increase in exports to Southeast Asia. Unsorted mixed paper has negligible to negative value when factoring in collection and processing costs (see Figure 12).

The declining price of OCC is also concerning for MRFs. OCC enjoyed growing demand through 2018 and was a relatively consistent source of revenue while unsorted mixed paper's value declined (see Figure 13). The significant drop of OCC exports to China in quarter one of 2019, coupled with a continued decline in scrap value due to domestic oversupply, will likely have a significant impact on the California recycling industry in 2019.

Figure 11: Mixed Plastics 3-7 Scrap Value (RIS²)

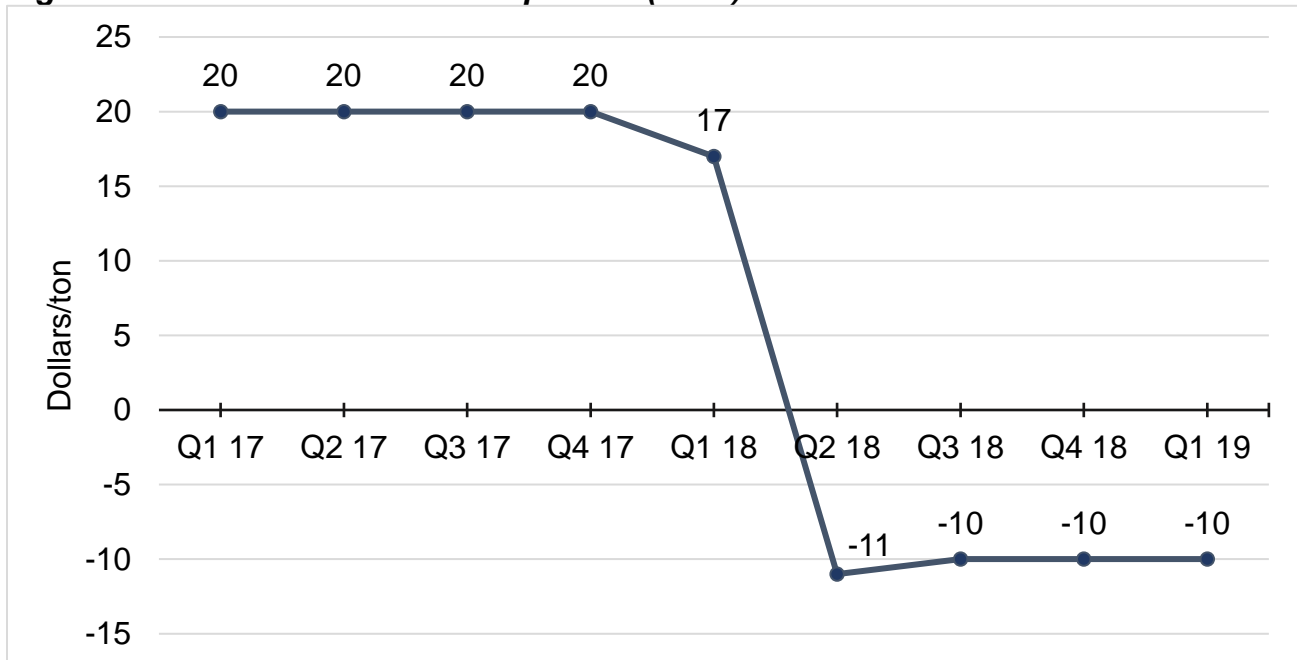


Figure 12: Unsorted Mixed Paper Scrap Value (RIS²)

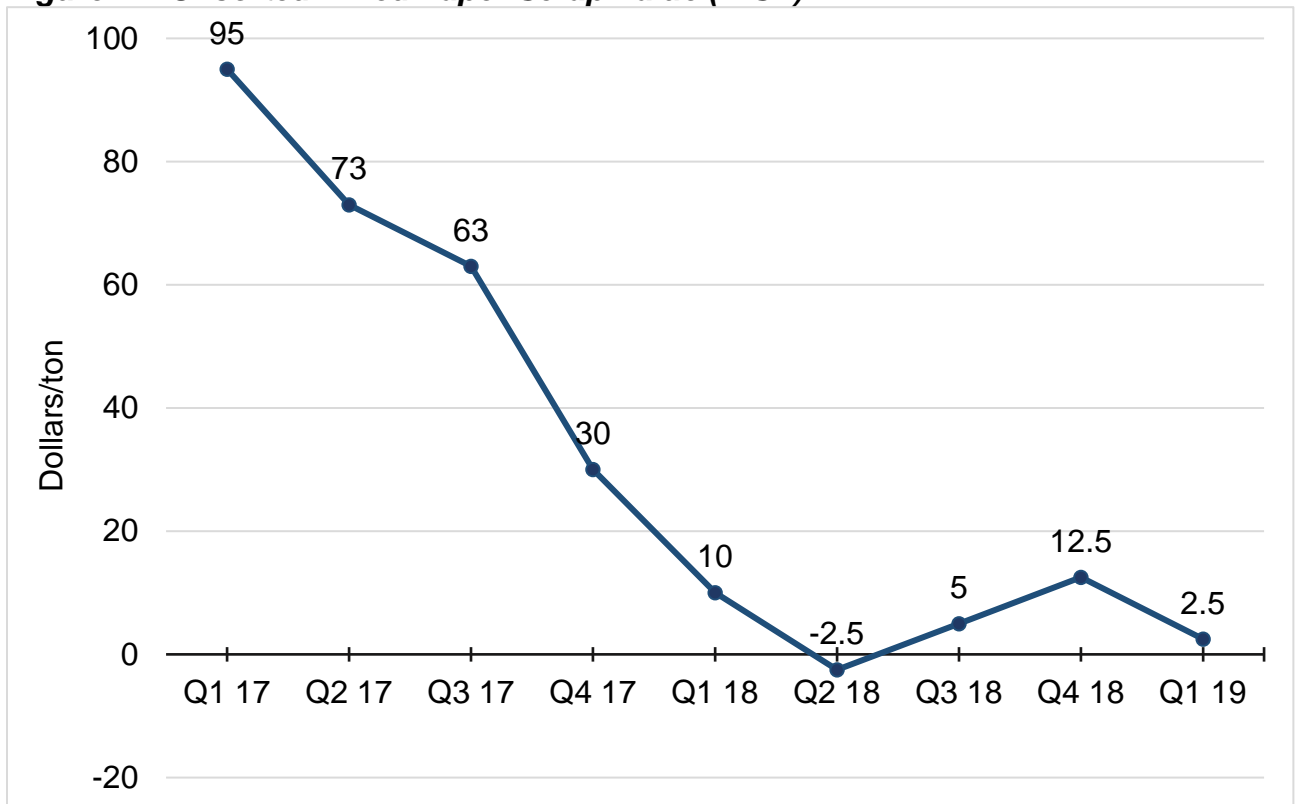
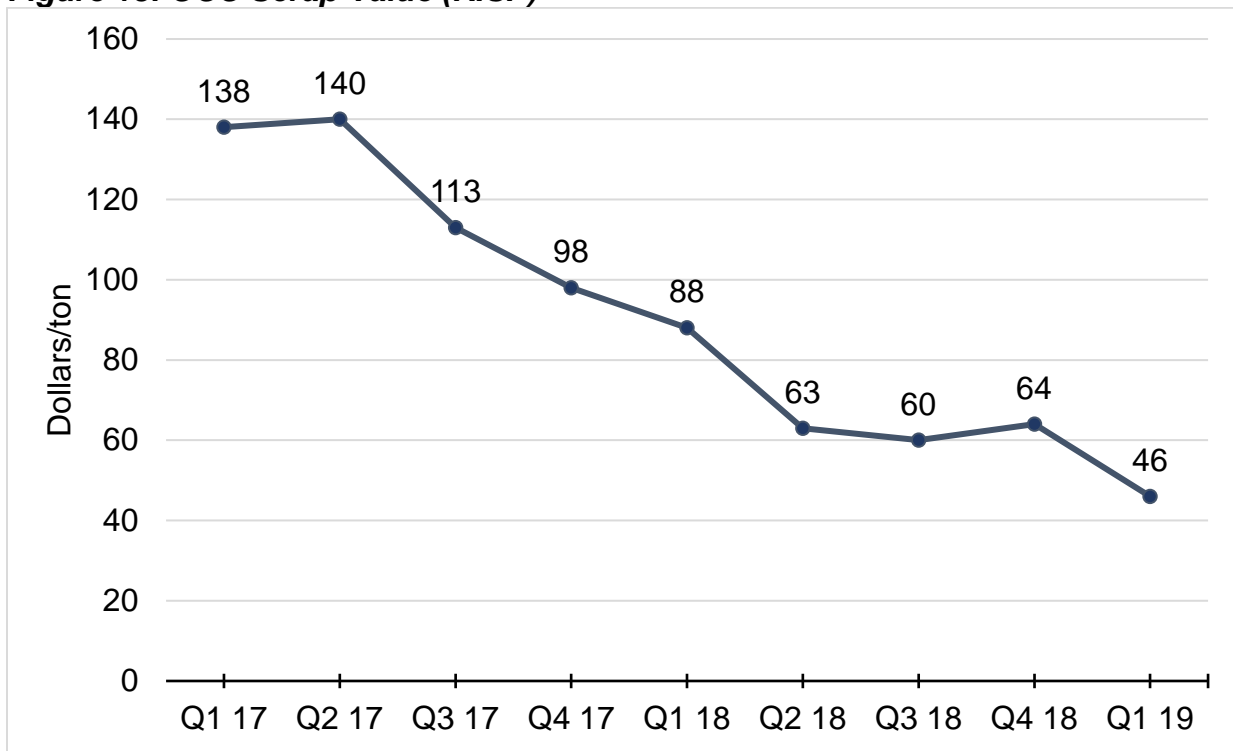


Figure 13: OCC Scrap Value (RIS²)



Impact on California Jurisdictions

Curbside recycling is not as profitable as it was in past years. In some cases, it is becoming a cost to jurisdictions. For example, San Diego generated 4 million dollars in revenue from recycling in the fiscal year 2017. The revenue dropped to 3 million dollars in 2018 due to the city reimbursing haulers and processors one million dollars for recycling processing. In 2019, no revenue is expected from recycling in San Diego.⁵ Many jurisdictions have raised their curbside collection rates to help offset rising processing costs. Others have new cost-sharing agreements with local haulers or have allowed haulers to charge customer contamination fees.

While the scale of financial impacts varies from jurisdiction to jurisdiction, there has been a significant amount of contamination-specific education and outreach across California targeting local problem materials. A few jurisdictions have asked residents to stop putting specific materials in recycling bins; most commonly plastics like film, bags, and mixed plastics 3-7. Regional taskforces, like StopWaste in Alameda County, bring together neighboring jurisdictions to share best practices and methods as well as facilitate consistent messaging for local residents and businesses.⁶

Jurisdictions are also turning to local policy to ban specific material types they find problematic in their recycling stream. For example, Grover Beach and Milpitas have ordinances that took full or partial effect in 2018 to reduce the sale or distribution of expanded polystyrene.⁷⁻⁸ Concord and Santa Barbara adopted polystyrene-focused ordinances in 2018 that will be in effect in 2019.⁹⁻¹⁰ Moreover, in early 2019, Imperial Beach, Berkeley, and Palo Alto passed ordinances aimed at reducing single-use food ware and other single-use plastics.¹¹⁻¹³ These materials would likely have ended up in mixed plastics 3-7 streams.

In a more direct response to export markets changes, the city of Palo Alto requested that their hauler provide any available non-proprietary information about the final destination of exported recyclables.¹⁴ This request also includes additional information about potential environmental or human rights violations at the final material destination. At the time of publication, CalRecycle is not aware of any other jurisdictions that have made similar requests of their haulers.

Impact on International Trading Partners

The shifts in international export markets have caused significant global impacts across the world. Major changes have occurred in the countries importing California's recyclable material in 2018.

China's import policies are helping the country meet its environmental goal of only allowing the import of clean, uncontaminated raw materials. Based on discussions with California recyclers, material currently sent to China is less contaminated than material

sent in prior years. The almost complete cessation of mixed plastic scrap and unsorted mixed paper imports have caused the price of feedstock to significantly increase in China. Chinese manufacturers have to acquire more expensive virgin feedstock or access a dwindling supply of imported recyclable material. Some manufacturers are purchasing processing facilities in the United States (as well as in other countries) to ensure they will have a consistent supply of fiber and plastic scrap in the form of paper pulp and plastic pellet/flake.¹⁵

Some Chinese recyclers have moved their operations from China to Southeast Asia. There they have access to recyclable material and can then export the processed scrap into China.¹⁵ It is unknown what quantity of material was purchased by the Southeast Asian industry, versus the quantity of material purchased by Chinese businesses operating in Southeast Asia.

Vietnam, Malaysia, Taiwan, Indonesia, and Thailand enacted policies in 2018 to deal with the significant increase in imported fiber and plastic scrap. These policies are similar to China's policies, which aim to reduce the importation of difficult-to-recycle scrap materials. Thailand, Vietnam, and Malaysia announced temporary bans on plastic scrap imports for varying periods during the year. The bans attempted to control the significant tonnages overwhelming their existing infrastructure.

The media coverage of recycling and plastic scrap practices in China increased in 2017. The National Sword policy was put in place to halt the environmental damages caused by the importation of scrap plastics. Images and stories of the environmental harm and human health impacts from mishandled or contaminated plastic residue in Southeast Asia captured the attention and concern of the global community. Recycling and plastic scrap exporting continued to receive immense media coverage throughout 2018. The coverage highlighted the practice of developed countries shipping hard-to-recycle plastics causing environmental damages to developing countries.

In response, many countries agreed to add hard-to-recycle and mixed plastic waste to the Basel Convention. Under this convention, countries exporting plastic wastes must notify the importing country, thus lending more transparency to the global trade in plastic waste in 2020.

Many reported environmental and health issues stem from illegal and legal processing facilities operating unsafely. The practice of burning plastic scrap for fuel and illegal paper and mixed plastic processing operations caused environmental and health issues in China and other Asian countries. Foreign countries, state governments, and local-level governments are all working to regulate and reduce negative impacts in the recyclable process.

The global trade of recyclable scrap remains important and beneficial to California's recycling system. California must take responsibility for cleaning up its recycling stream and reducing the export of materials that will never be recycled.

Conclusions

Recyclable materials exported from California ports increased by nearly 882,000 tons (6 percent) in 2018 compared to 2017. It was the first year-over-year increase in recyclable exports since 2011. The increased total recyclable tonnage was primarily due to increased imports by Taiwan, Malaysia, Vietnam, and Indonesia in 2018. While some material exports decreased due to Nation Sword and other import restrictions, other material exports increased in tonnage. OCC paper, other miscellaneous paper, and ferrous metals export increases were primarily responsible for the increase of total recyclable tonnage for 2018.

Despite strict import restrictions, China continues to be the largest importer of California seaborne recyclable materials, purchasing 42 percent of recyclable exports in 2018. Recyclable materials exported to China declined by approximately 1.5 million tons from 2017, and exports of fiber and plastic scrap to China will continue to decrease if the country continues toward its goal of banning recyclable scrap imports by 2020.

The surplus of recyclable material previously destined for China prompted many Southeast Asian nations to enact import restrictions in 2018. Temporary bans increased inspections, and limited import licenses helped these countries reduce the import of highly contaminated fiber and plastic scrap.

Images and stories of the environmental harm and human health impacts from mishandled or contaminated plastic residue in Southeast Asia captured the attention and concern of the global community. In response, many countries agreed to add hard-to-recycle and mixed plastic waste to the Basel Convention. Under this convention, and beginning in January 2021, countries exporting plastic wastes must notify the importing country, lending transparency to the global trade in plastic waste.

Global trade in recyclable scrap material has been and will continue to be an important piece of California's recycling infrastructure. However, the export of contaminated scrap material to other countries, as well as under-regulated processing operations that negatively affect human health and the environment, will be increasingly scrutinized by the international community.

Less contaminated recyclable material is both more marketable to domestic recyclers as well as more readily able to be exported to countries pursuing more stringent import standards. California must increase its efforts to produce cleaner bales of scrap material in order to meet the changing policies of the overseas markets and facilitate more in-state demand. Recycling this material locally will reduce the environmental impact of transporting this material, as well as minimizing market impacts due to international policy changes. In-state recycling also assures that the processing operations meet a consistent environmental standard.

CalRecycle will continue to monitor recyclable material exports, and if you have data or insights on these issues, please contact CalRecycle's Knowledge Integration Section at exports@calrecycle.ca.gov.

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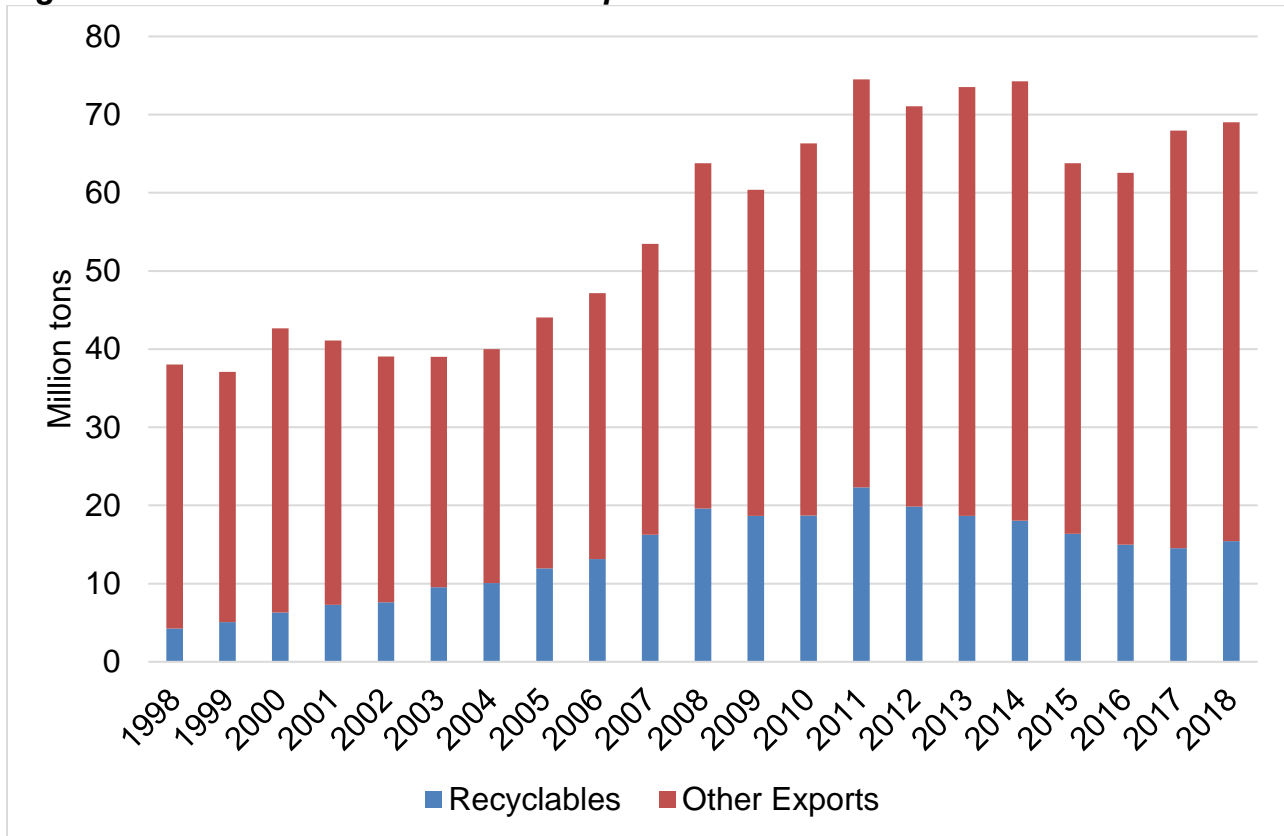
Appendix 1: 2018 California Seaborne Exports*

California Seaborne Exports by Weight

Table 5: Total Seaborne Exports by Weight

Recyclables	Other Commodities	Total All Commodities
15.4 million	53.6 million	69 million

Figure 14. Total California Seaborne Exports from 1998 – 2018

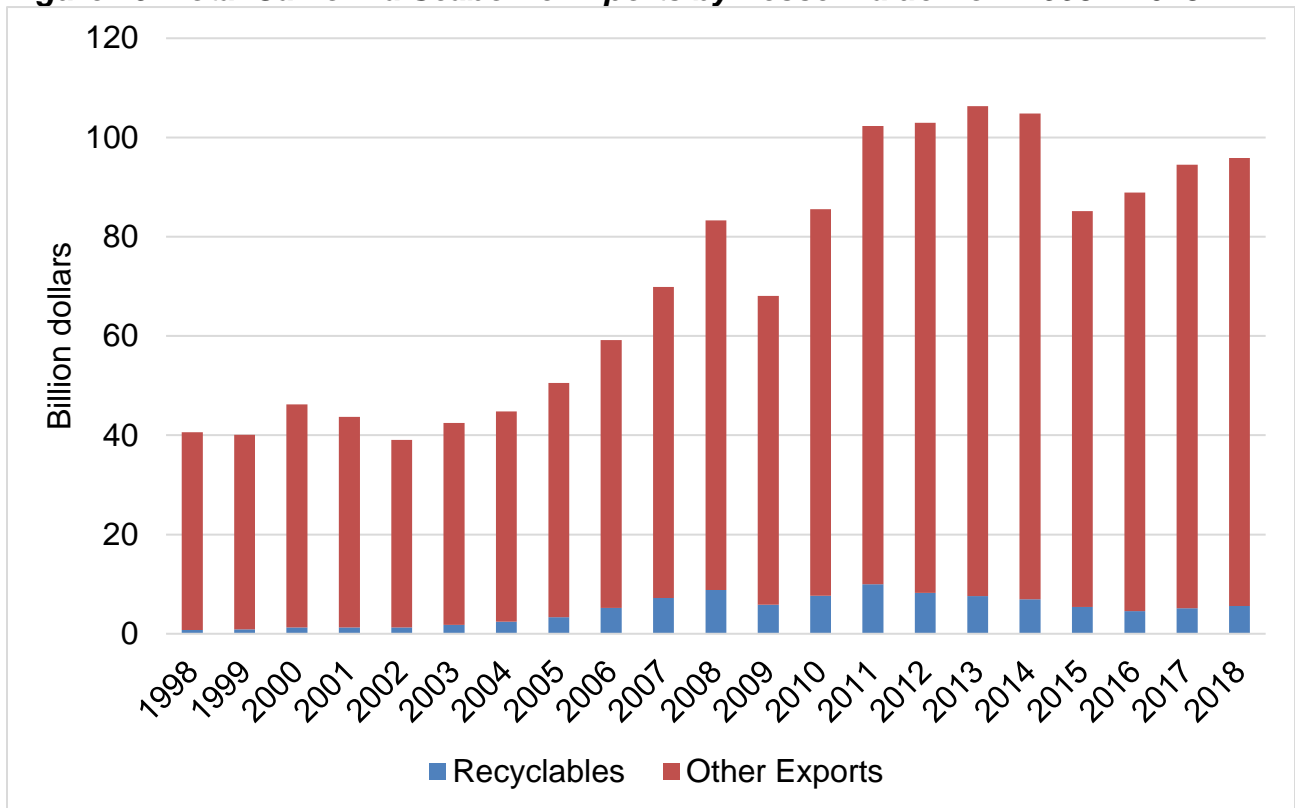


California Seaborne Exports - Commodities by Vessel Value

Table 6: Total Seaborne Exports by Vessel Value

Recyclables	Other Commodities	Total All Commodities
\$5.6 billion	\$90.3 billion	\$95.9 billion

Figure 15. Total California Seaborne Exports by Vessel Value from 1998 – 2018



California Seaborne Exports - Recyclables by Destination Country by Weight (Total: 15.4 Million Tons)

Table 7: Top Ten Destination Countries by Weight

Top 10 Countries	Total Tons	Weight Change 2017 to 2018	Percent of Recyclables	Percent Change from 2017
China (CHN)	6,573,053	-1,532,349	42%	-19%
Taiwan (TWN)	2,296,806	680,482	15%	42%
Korea (KOR)	1,642,289	466,789	11%	40%
Vietnam (VNM)	1,391,874	523,608	9%	60%
Malaysia (MYS)	584,112	345,109	4%	144%
Indonesia (IDN)	541,406	337,021	4%	165%
India (IND)	535,467	284,829	3%	114%
Thailand (THA)	416,006	-101,625	3%	-20%
Bangladesh (BGD)	395,872	119,982	3%	43%
Japan (JPN)	239,824	127,783	2%	114%

Figure 16. 2018 Recyclable Exports by Destination Country by Weight (15.4 Million Tons)

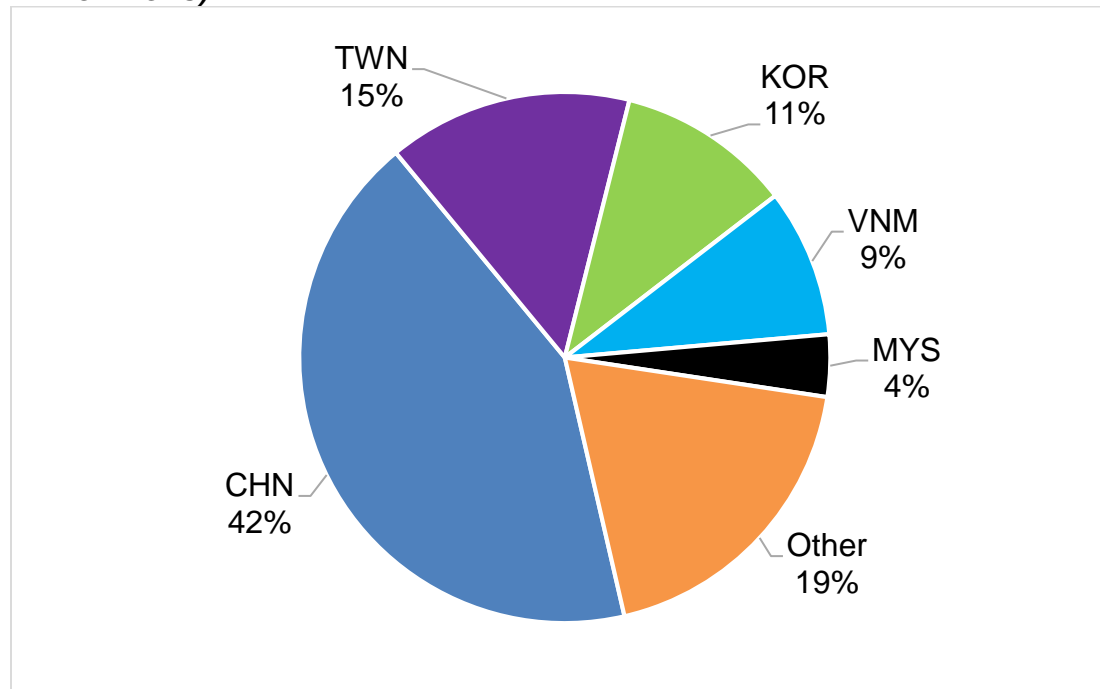


Figure 17. Recyclable Exports by Destination Country from 2008-2018

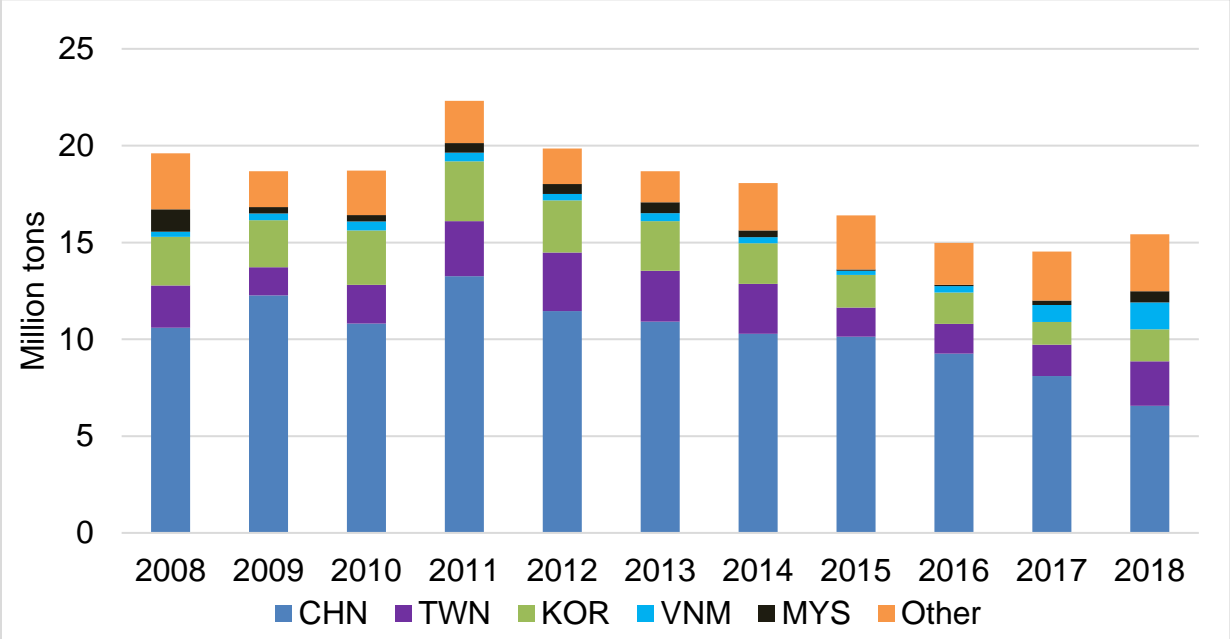
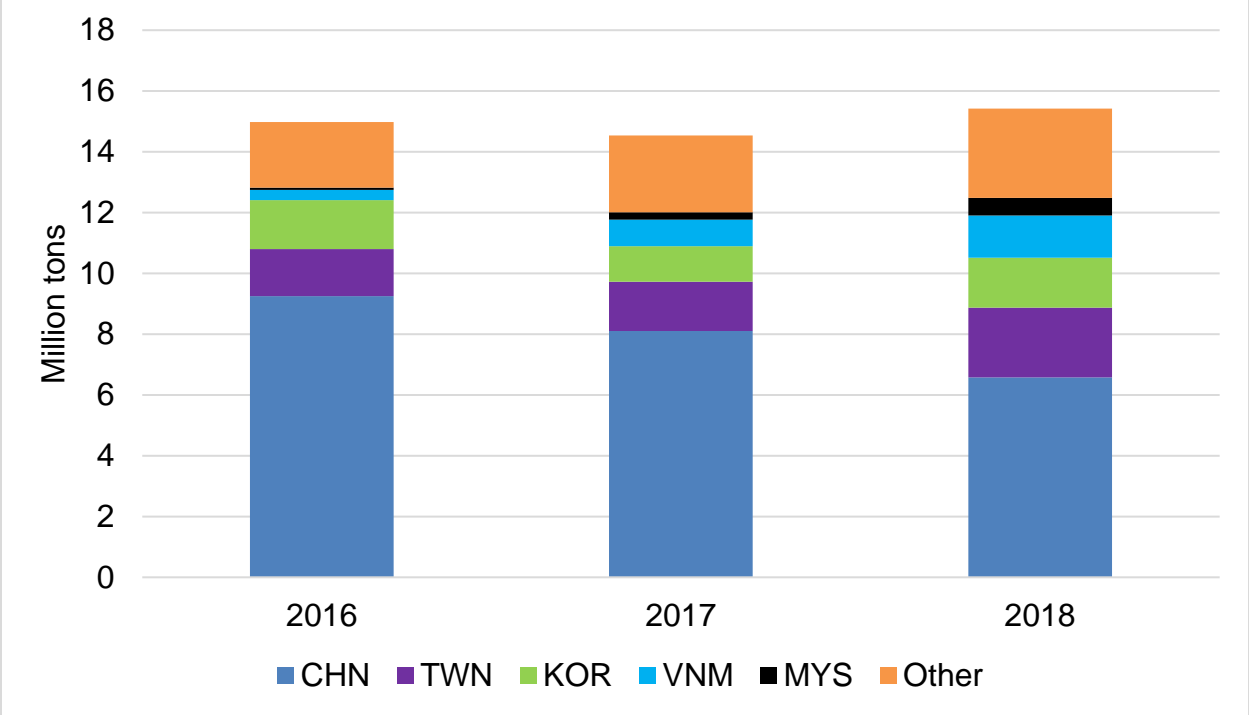


Figure 18. Recyclable Exports - Top Six Countries from 2016 – 2018



California Seaborne Exports - Recyclables by Destination Country (USD) (Total: \$5.6 Billion)

Table 8: Top Ten Destination Countries by Vessel Value

Top 10 Countries	Total Vessel Value (USD)	Vessel Value Change 2017 to 2018	Percent of Recyclables (%)	Percent Change 2017 to 2018(%)
China (CHN)	\$1,928,927,494	-\$729,164,901	34%	-27%
Korea (KOR)	\$805,015,495	\$281,977,179	14%	54%
Taiwan (TWN)	\$790,310,645	\$305,376,671	14%	63%
Vietnam (VNM)	\$342,102,706	\$140,382,886	6%	70%
Japan (JPN)	\$325,432,988	\$71,810,235	6%	28%
Malaysia	\$299,088,602	\$221,292,894	5%	284%
India (IND)	\$237,277,067	\$135,275,117	4%	133%
Hong Kong (HKG)	\$162,495,467	\$11,499,074	3%	8%
Bangladesh	\$125,353,930	\$56,730,010	2%	83%
Thailand (THA)	\$111,127,268	-\$13,303,038	2%	-11%

Figure 19. 2018 Recyclable Exports by Destination Country by Vessel Value

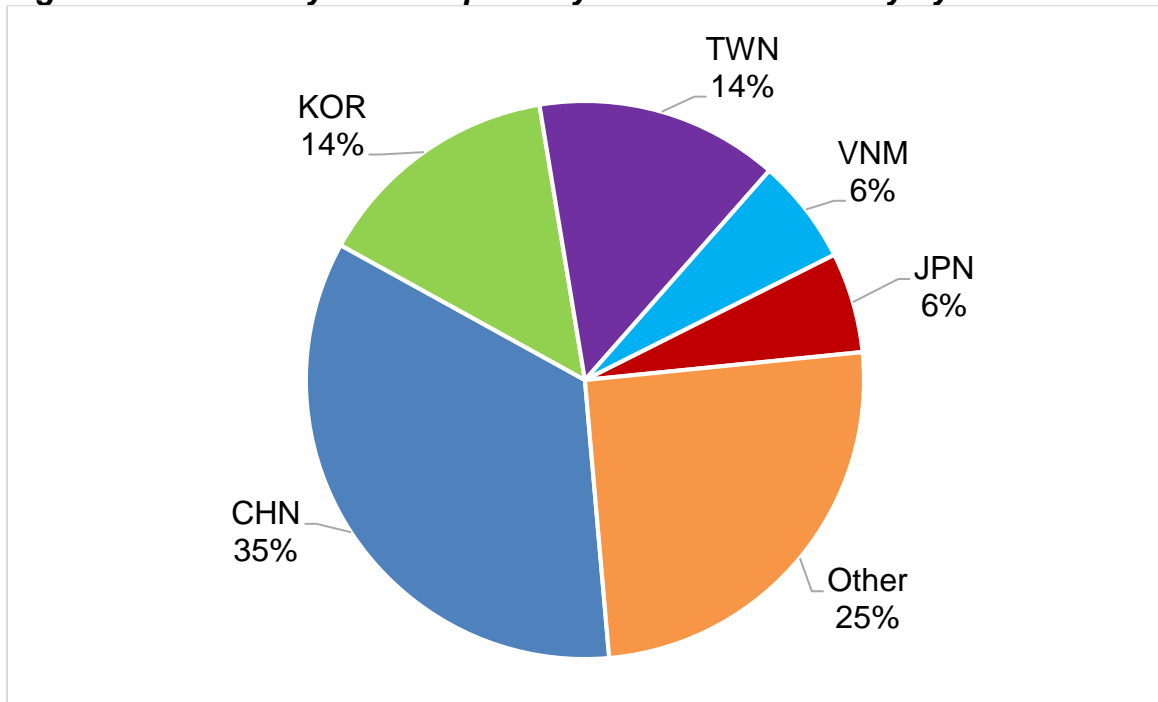
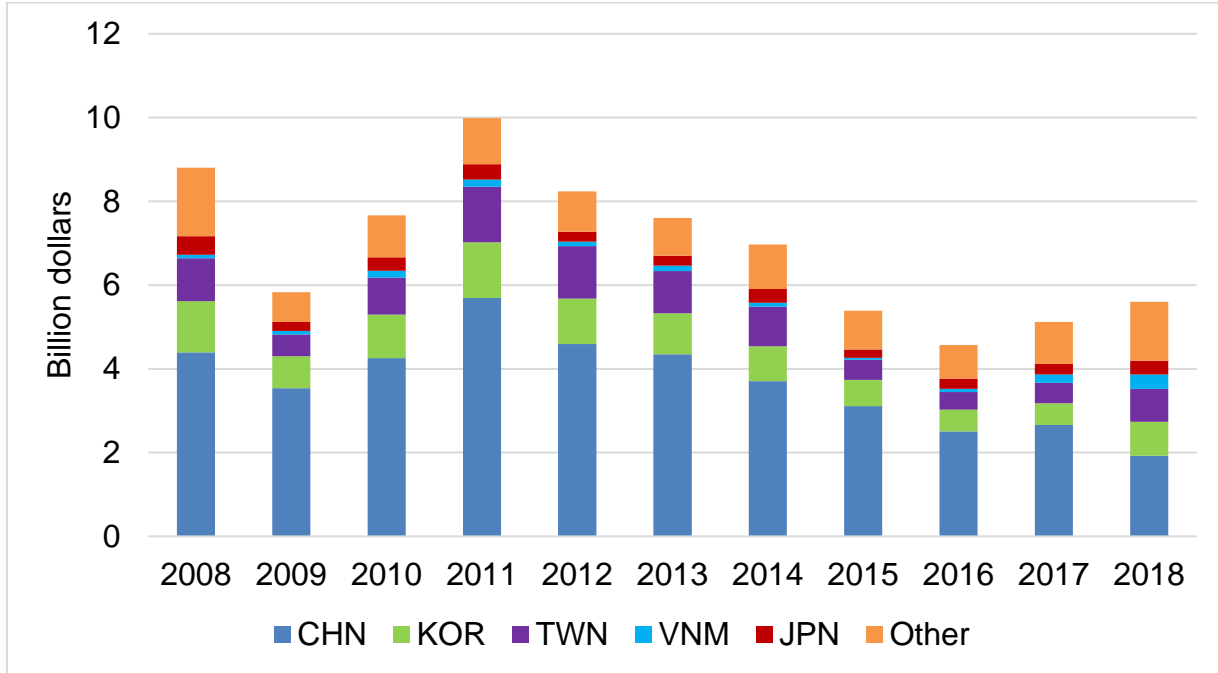


Figure 20. Recyclable Exports by Destination Country by Vessel Value from 2008 – 2018



CA Seaborne Exports - Recyclables by Material Category

Table 9. Recyclable Materials by Percent of Total Weight (Total: 15.4 Million Tons)

Material	Percent of Total Weight (%)
OCC and Kraft paper	37%
Ferrous Metal	34%
Other Misc. Paper	14%
Nonferrous Metal	7%
Unsorted Paper	4%
Plastics 1-2	1%
Mixed Plastics 3-7	1%
Worn Clothing	>1%
High-Grade Paper	>1%
Tires/Rubber	>1%

*Chart of California recyclables by material category (Weight) on pg. 14

CA Seaborne Exports - Recyclables by Material Category (Vessel Value) (Total: \$5.6 Billion USD)

Table 10. Recyclable Materials by Percent of Total Vessel Value (Total: \$5.6 Billion USD)

Material	Percent of Total Vessel Value*
Nonferrous Metal	36%
Ferrous Metal	32%
OCC and Kraft paper	15%
Other Misc. Paper	7%
Copper Wire	2%
Worn Clothing	2%
Unsorted Mixed Paper	1%
Plastics 1-2	1%
Mixed Plastics 3 - 7	>1%

Material	Percent of Total Vessel Value*
Batteries	>1%

*Chart of California recyclables by material category (vessel value) on pg. 15

Appendix 2: 2018 Seaborne Exports of Individual Recyclable Material Categories

Nonferrous Metals

Table 11: Nonferrous Metals Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
1,010,558	-4%	\$2,039,644,438	1%

Figure 21. Nonferrous Metals (Excluding Copper Wire) Exports from California by Weight (15.4 Million Tons)

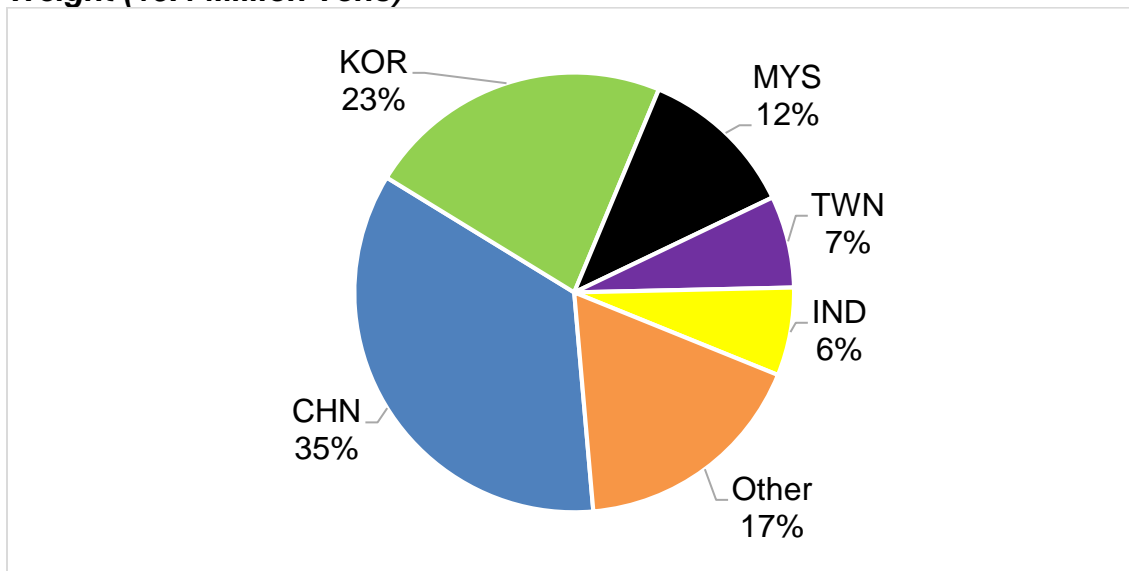
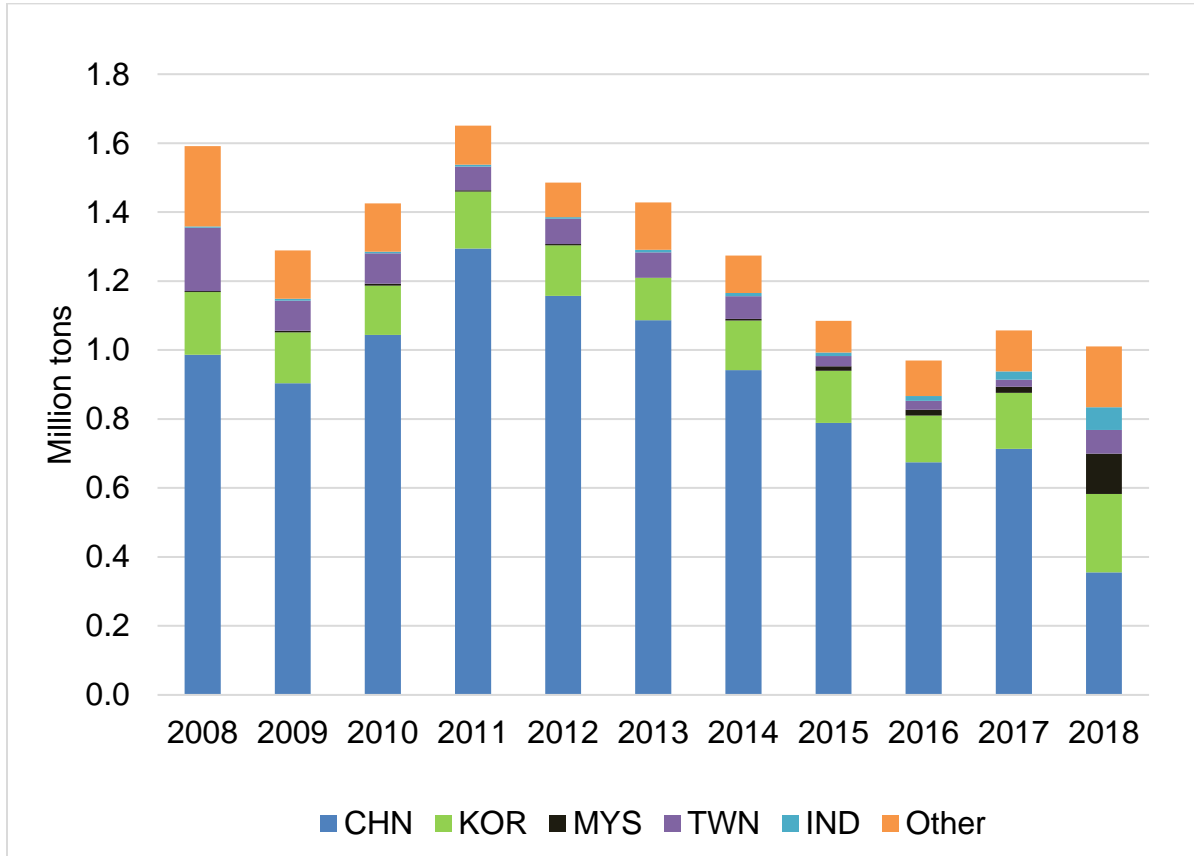


Figure 22. Nonferrous Metals (Excluding Copper Wire) Exports by Country from 2008 - 2018



Ferrous Metals

Table 12: Ferrous Metals Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
5,235,379	13%	\$1,801,904,231	20%

Figure 23. 2018 Ferrous Metal Exports from California by Country (by Weight 15.4 Million Tons)

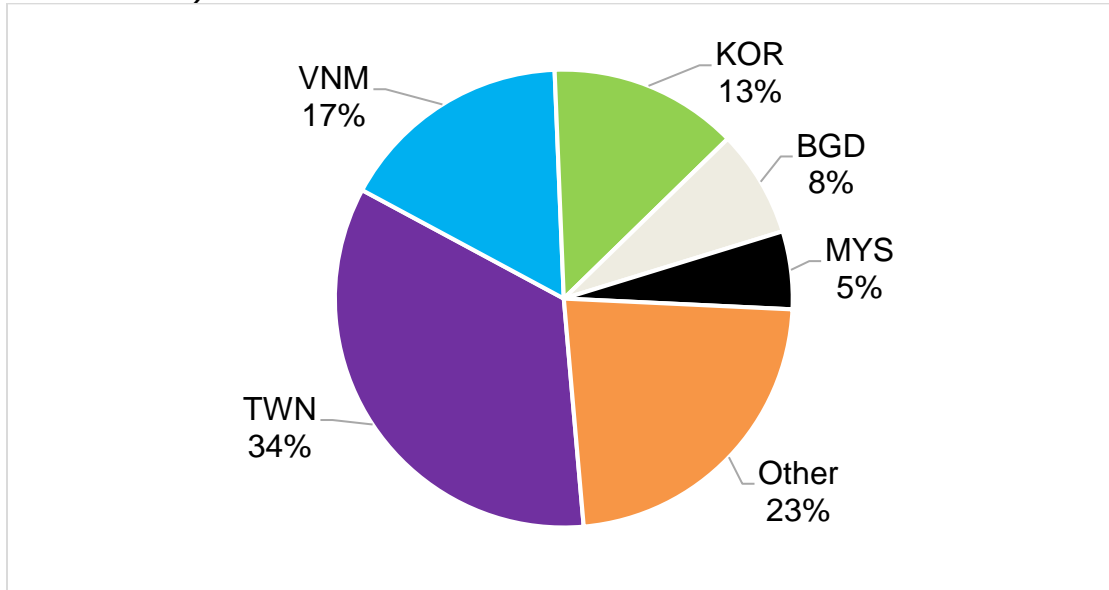
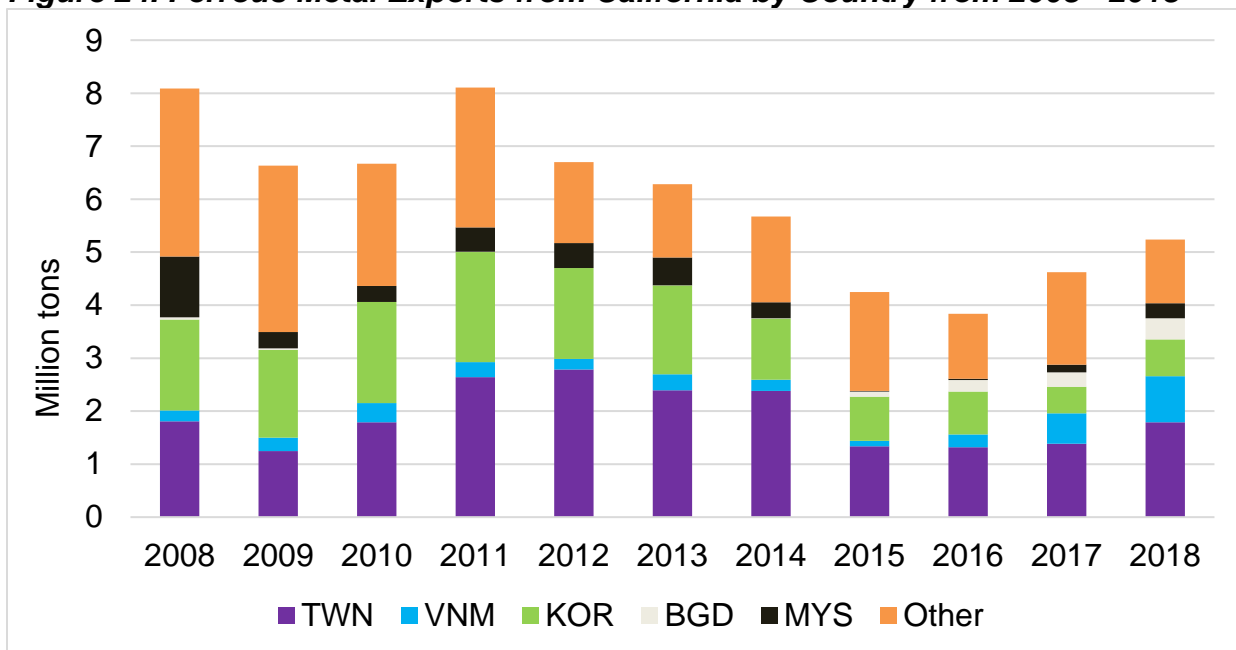


Figure 24. Ferrous Metal Exports from California by Country from 2008 - 2018



High-Grade Paper

Table 13: High-Grade Paper Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
108,013	13%	\$7,897,150	25%

Figure 25. High-Grade Paper Exports from California by Country (by Weight 15.4 Million Tons)

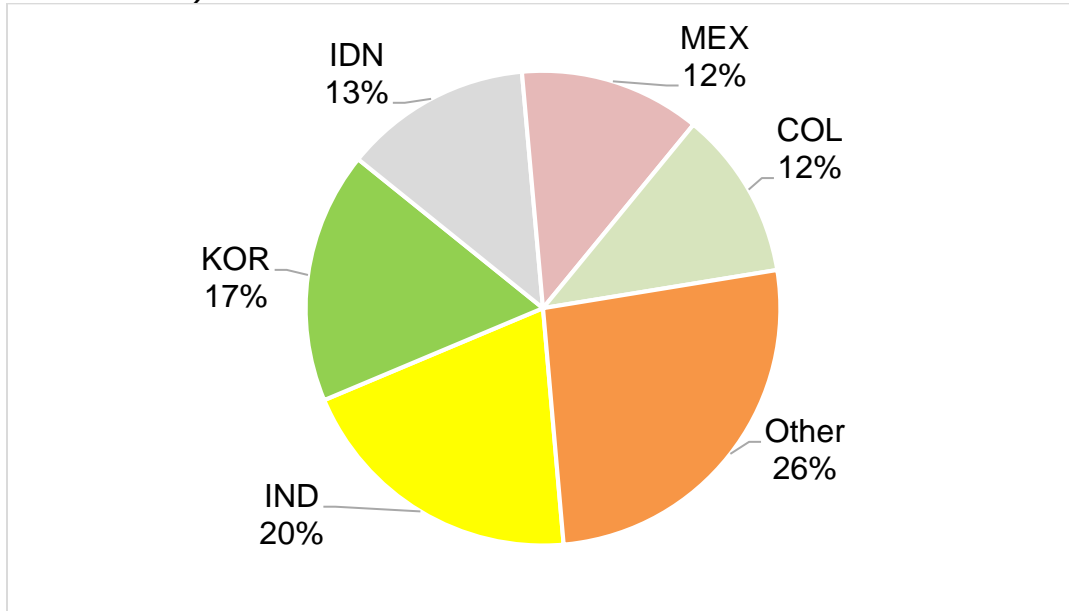
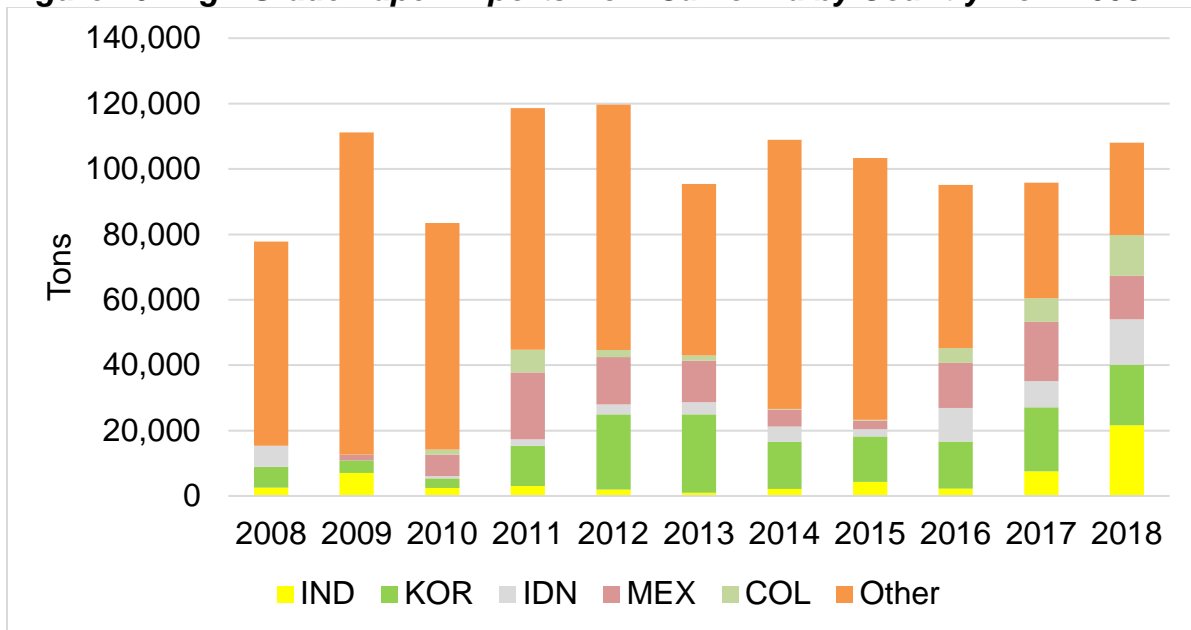


Figure 26. High-Grade Paper Exports from California by Country from 2008 - 2018



Unsorted Mixed Paper

Table 14: Nonferrous Metals Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
675,365	-56%	\$83,560,950	-54%

Figure 27. Unsorted Mixed Paper Exports from California by Country (by Weight 15.4 Million Tons)

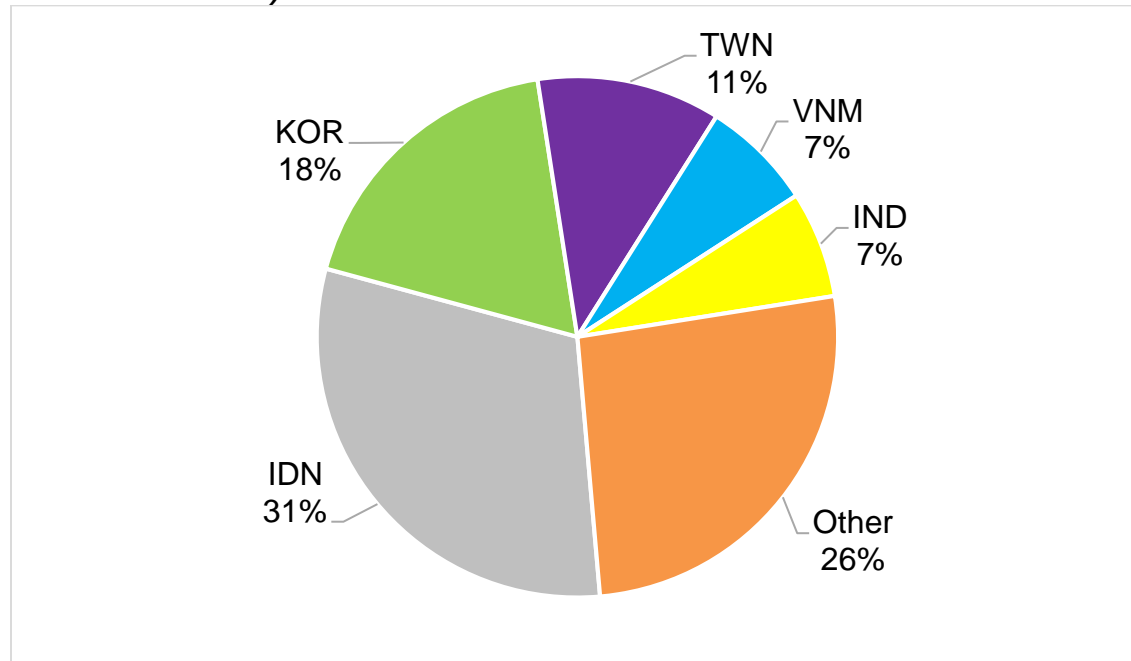
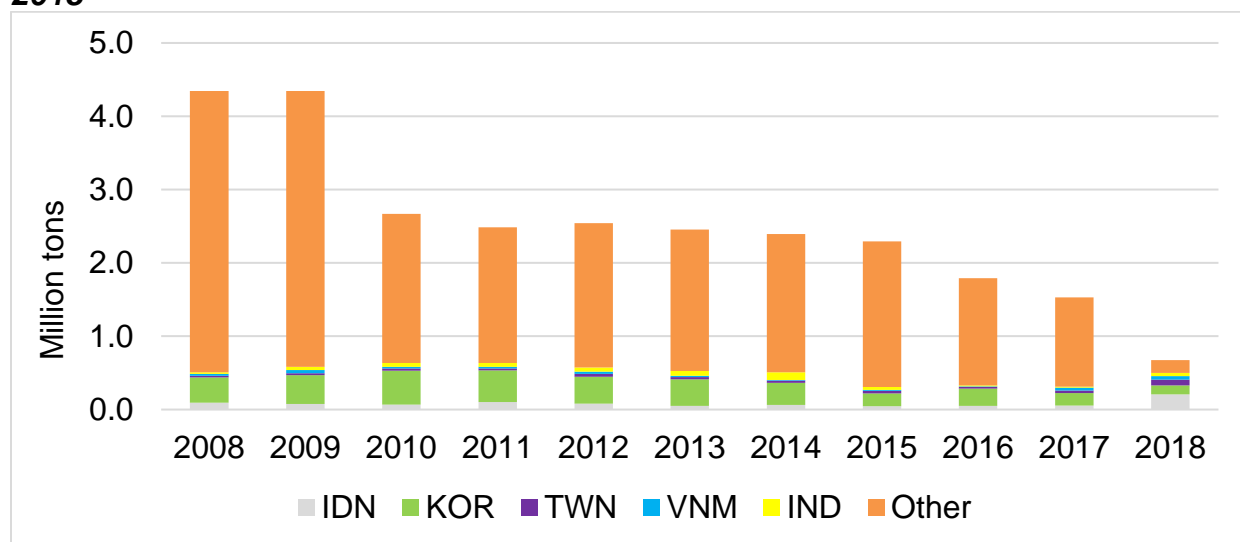


Figure 28. Unsorted Mixed Paper Exports from California by Country from 2008 - 2018



Other Miscellaneous (Misc.) Mixed Paper

Table 15: Other Misc. Mixed Paper Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
2,099,737	10%	\$374,780,427	17%

Figure 29. Other Misc. Mixed Paper Exports from California by Country (by Weight 15.4 Million Tons)

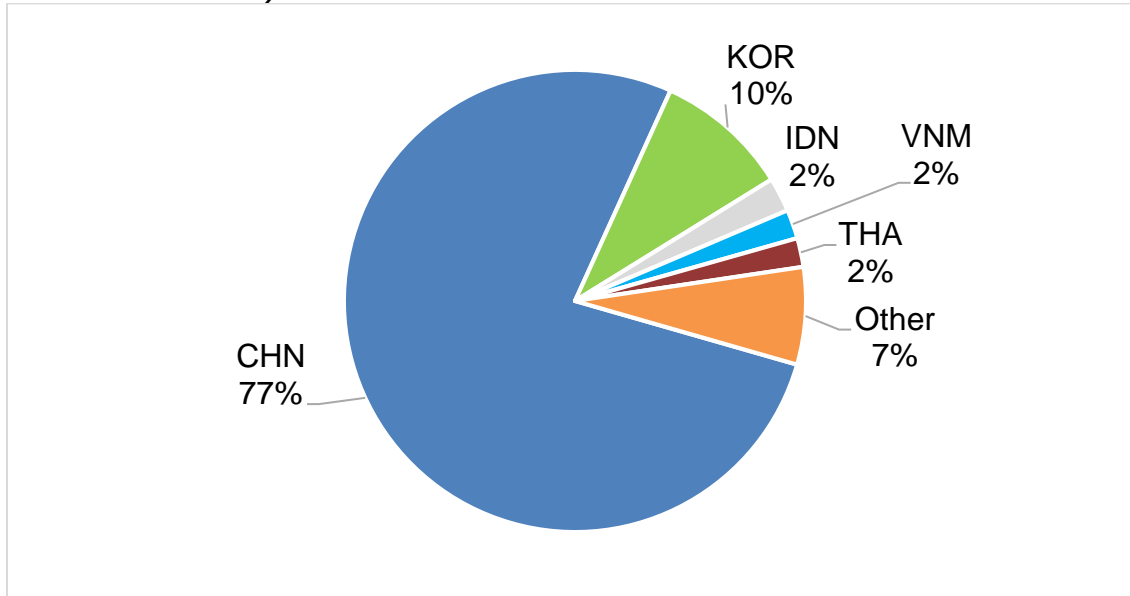
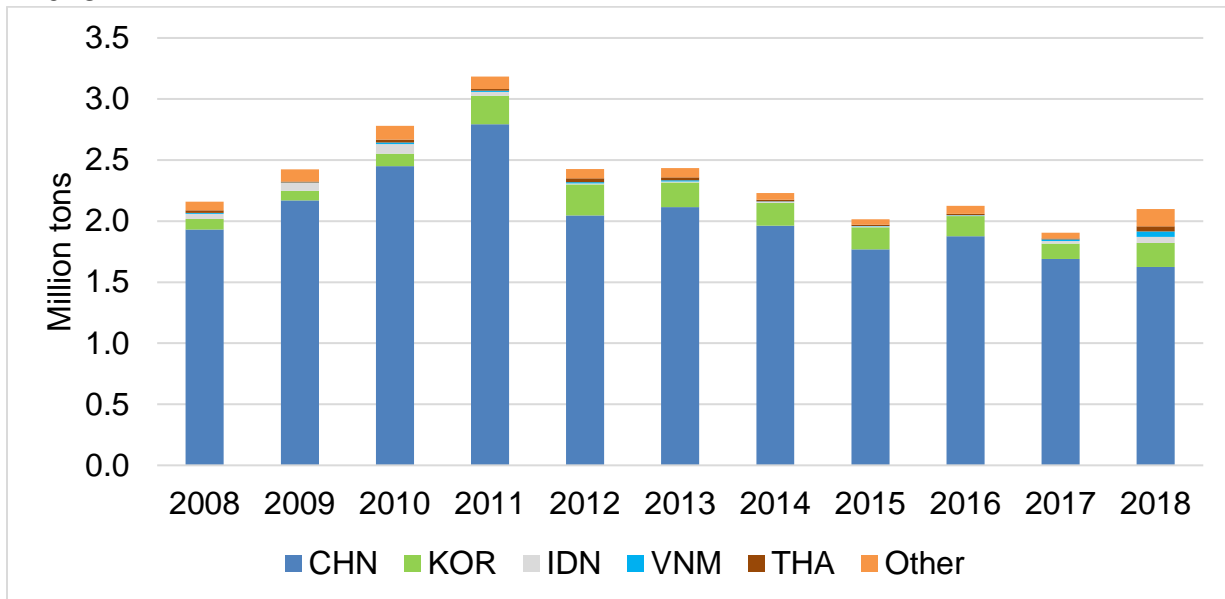


Figure 30. Other Misc. Mixed Paper Exports from California by Country from 2008 - 2018



OCC and Kraft Paper

Table 16: Nonferrous Metals Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
5,672,642	31%	\$860,863,543	33%

Figure 31. OCC and Kraft Paper Exports from California by Country (by Weight 15.4 Million Tons)

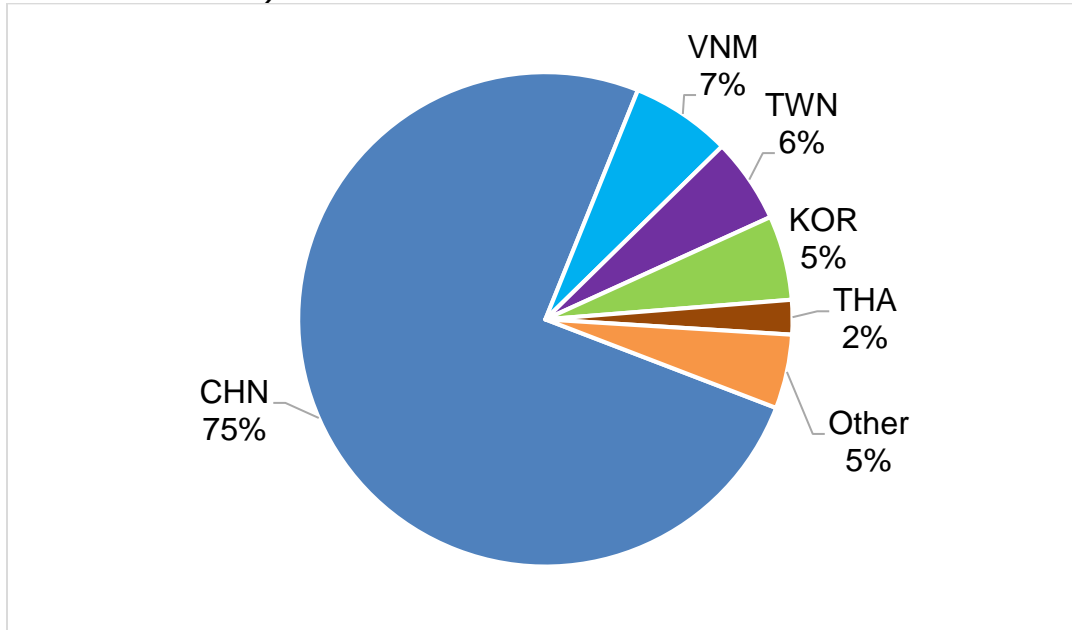
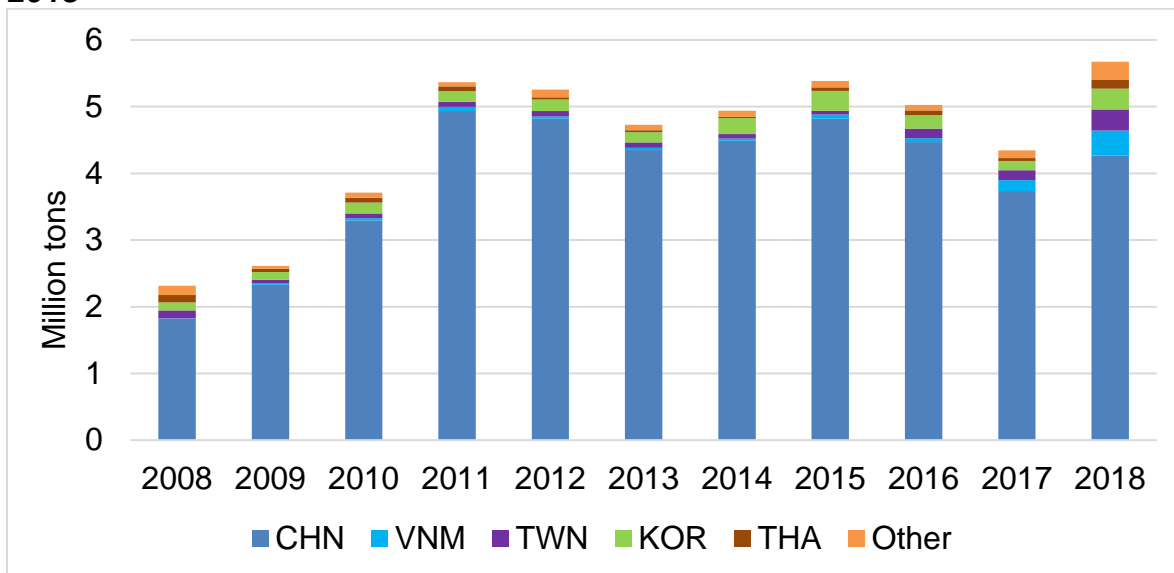


Figure 32. OCC and Kraft Paper Exports from California by Country from 2008 – 2018



Mixed Plastics 3-7

Table 17: Mixed Plastics 3-7 Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
197,298	-50%	\$54,831,351	-50%

Figure 33. Mixed Plastics 3-7 Exports from California by Country (by Weight 15.4 Million Tons)

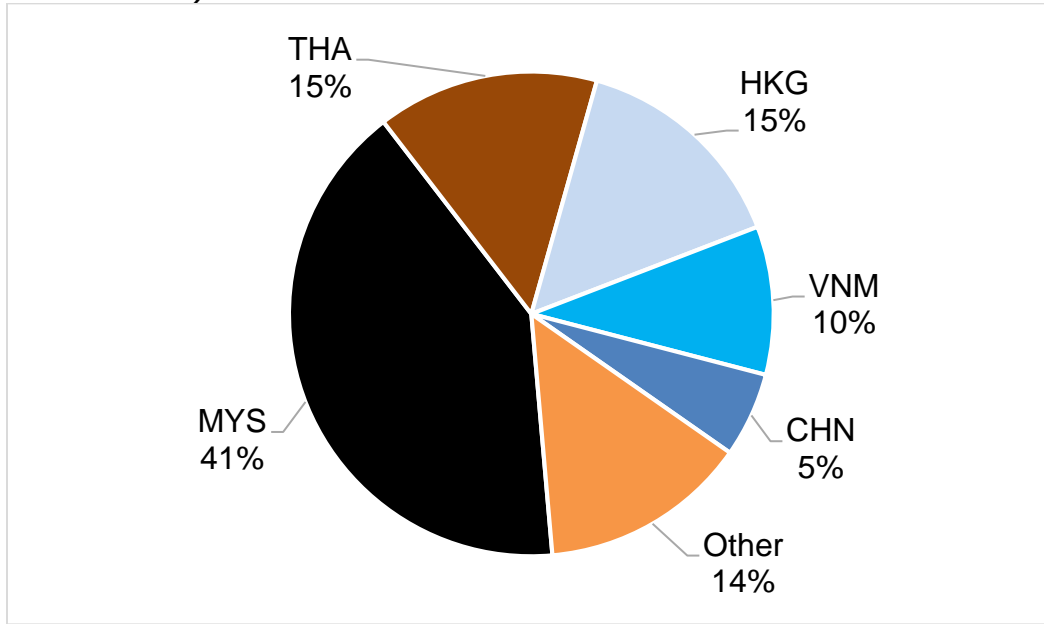
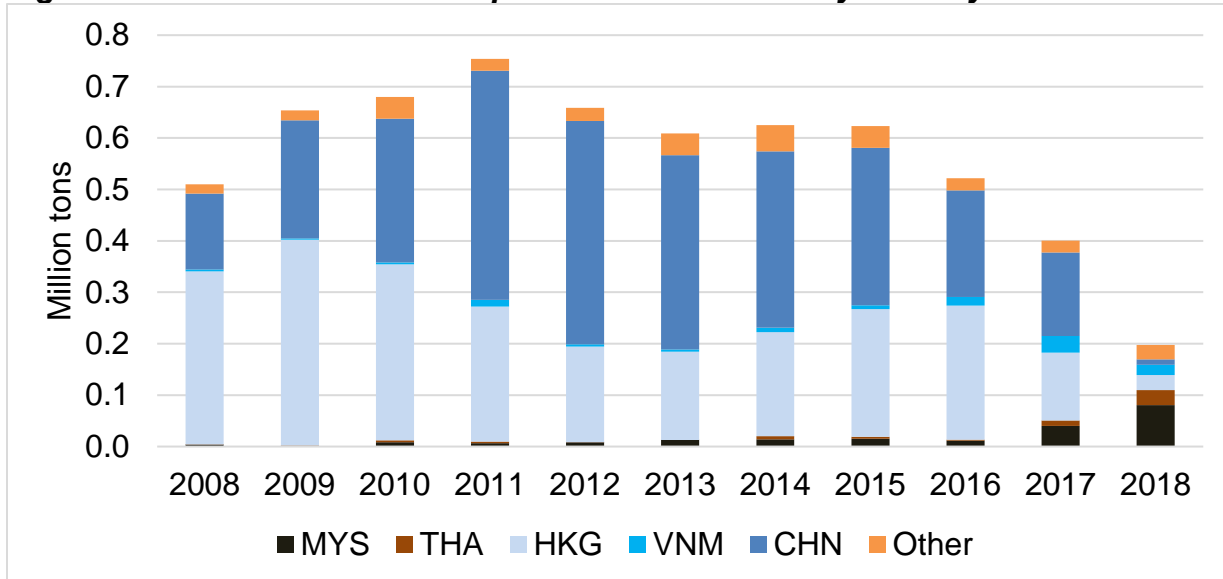


Figure 34. Mixed Plastics 3-7 Exports from California by Country from 2008 - 2018



Plastics 1-2

Table 18: Plastics 1-2

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
198,000	-49%	\$72,056,873	-40%

Figure 35. Plastics 1-2 Exports from California by Country (by Weight 15.4 Million Tons)

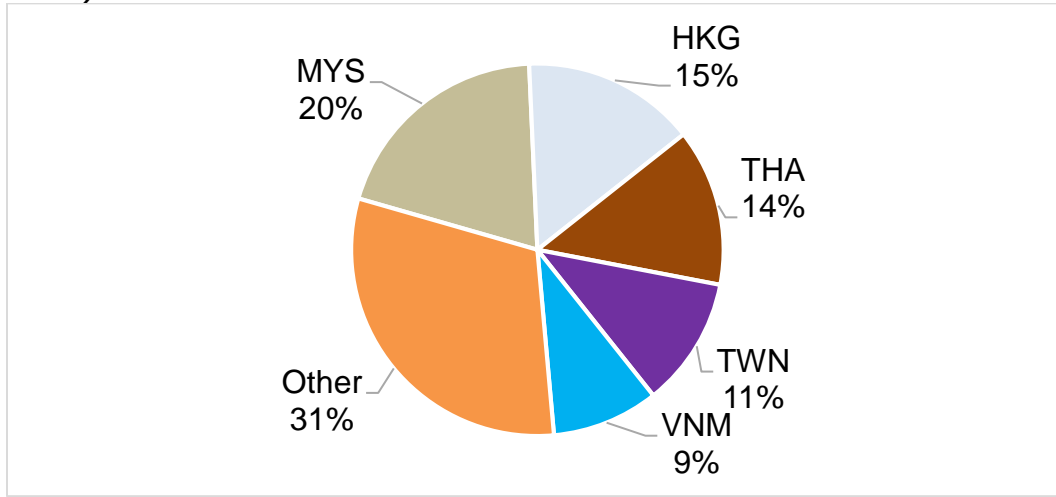
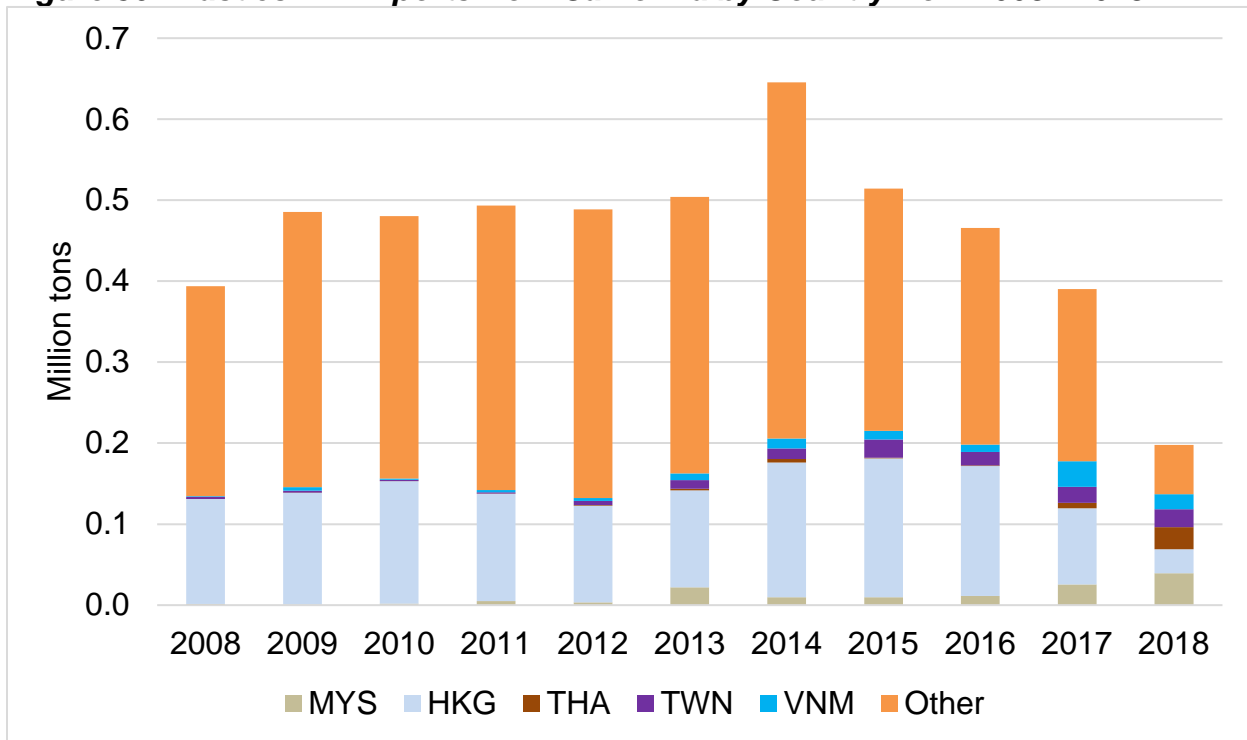


Figure 36. Plastics 1-2 Exports from California by Country from 2008 - 2018



Copper Wire

Table 19 Copper Wire Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
22,398	96%	\$122,666,788	113%

Figure 37. Copper Wire Exports from California by Country (by Weight 15.4 Million Tons)

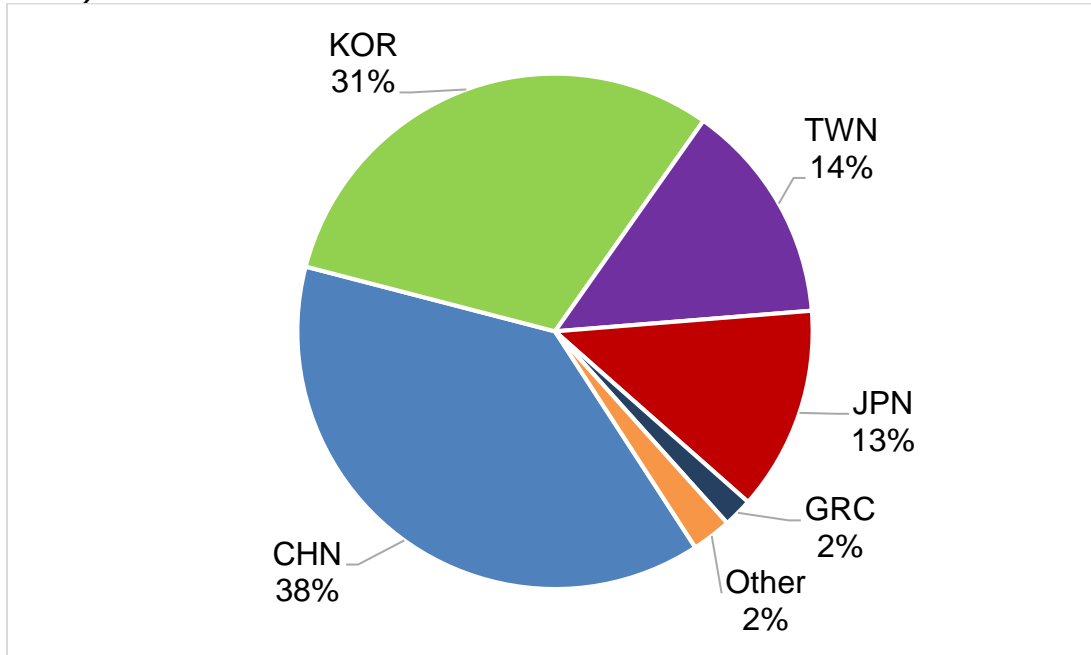
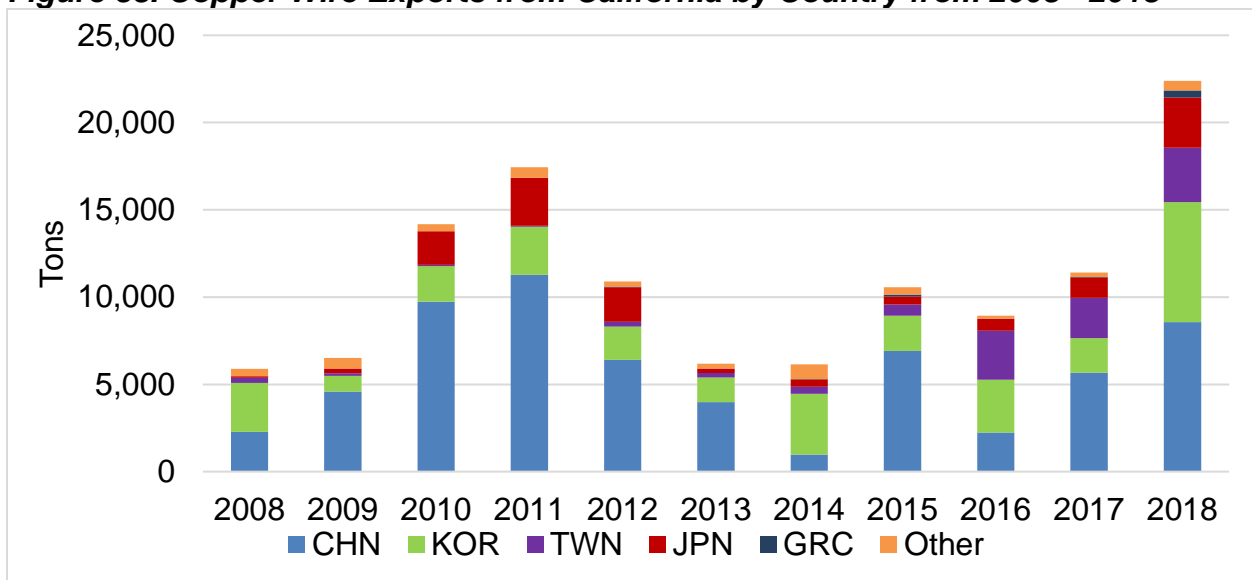


Figure 38. Copper Wire Exports from California by Country from 2008 - 2018



Worn Clothing

Table 20: Worn Clothing Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
132,035	-4%	\$107,214,643	8%

Figure 39. Worn Clothing Exports from California by Country (by Weight 15.4 Million Tons)

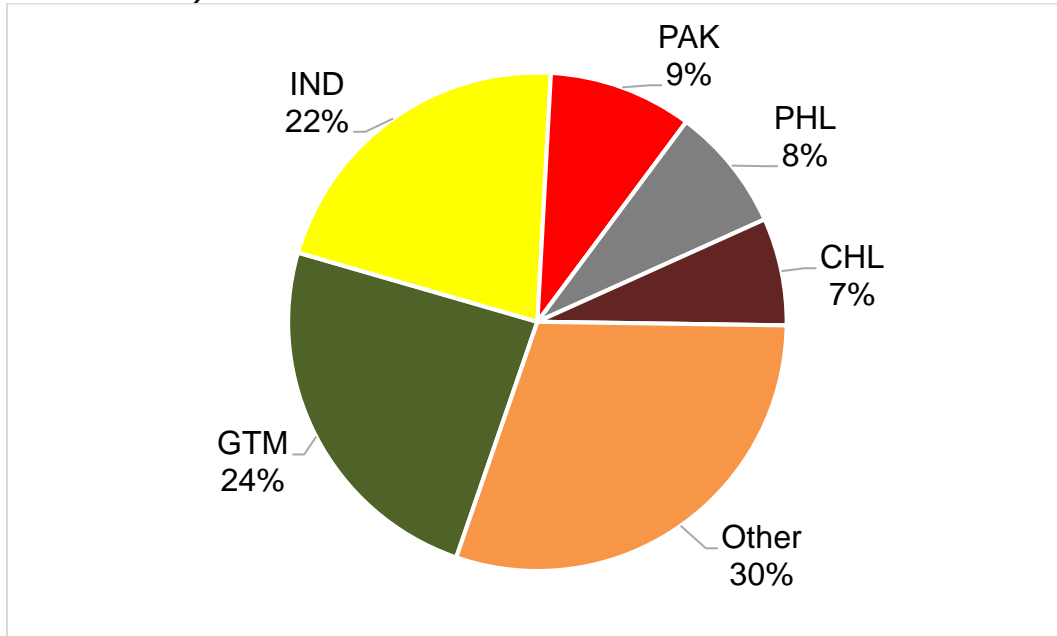
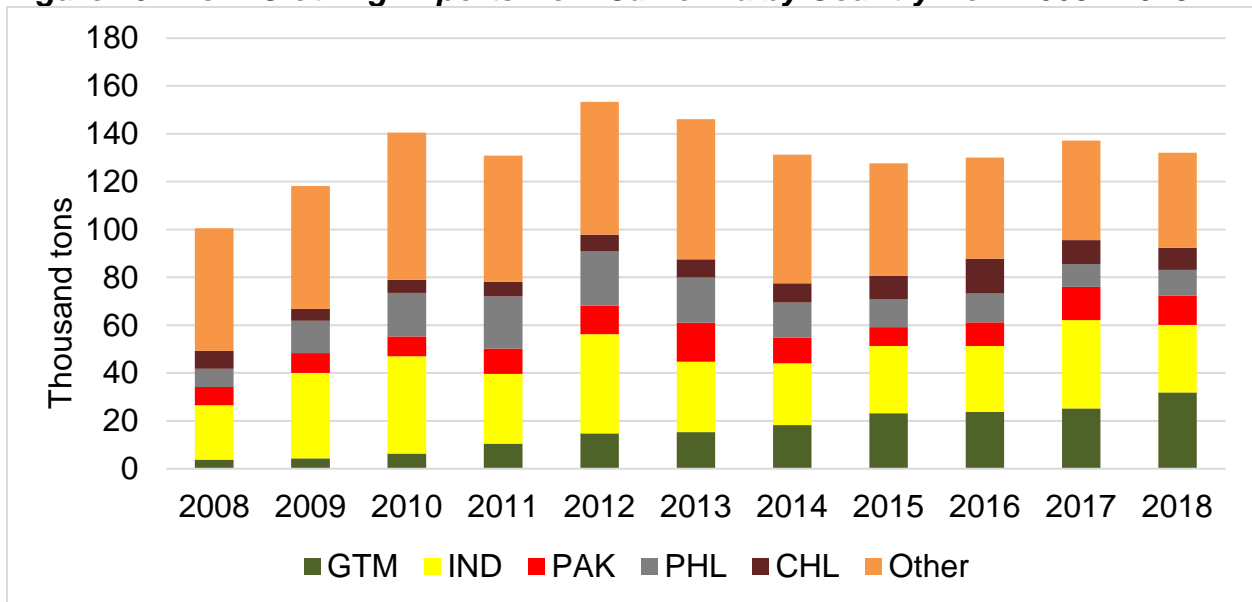


Figure 40. Worn Clothing Exports from California by Country from 2008 - 2018



Batteries

Table 21: Batteries Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
25,265	-15%	\$34,677,685	2%

Figure 41. Batteries Exports from California by Country (by Weight 15.4 Million Tons)

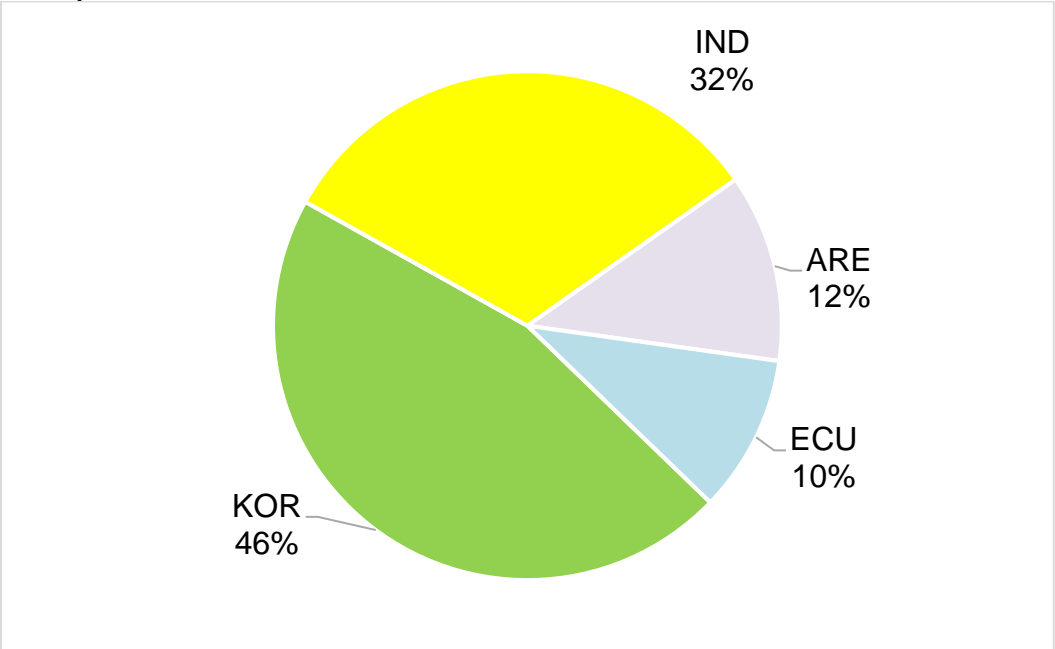
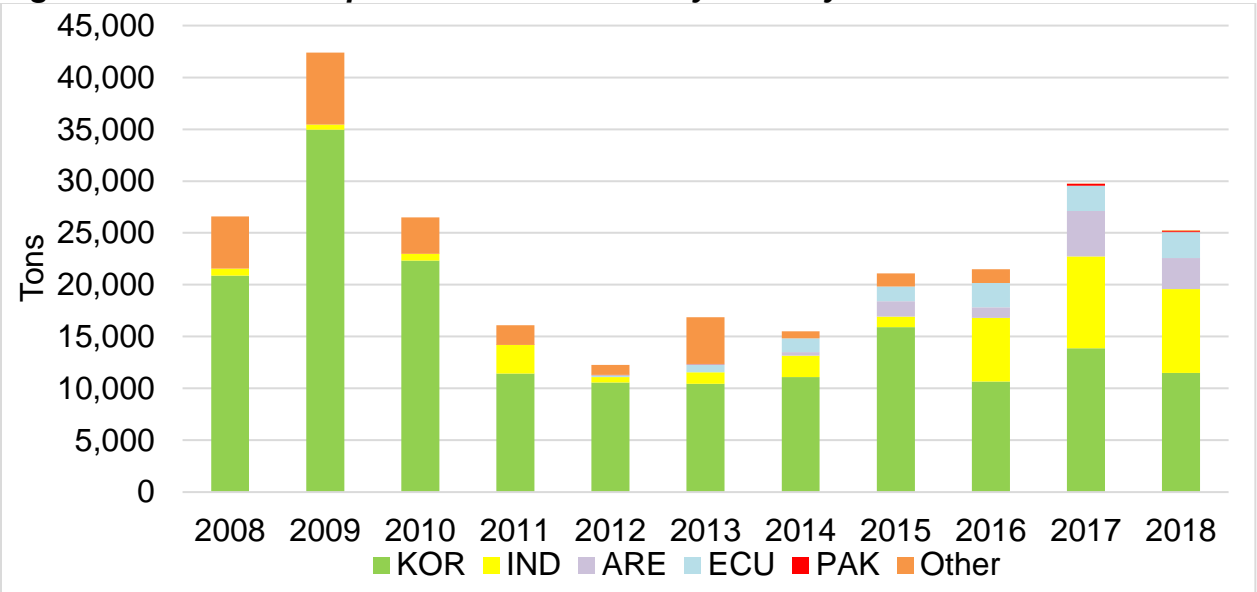


Figure 42. Batteries Exports from California by Country from 2008 - 2018



Tires and Rubber Scrap

Table 22: Tires and Rubber Scrap Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
54.041	59%	\$12,044,587	15%

Figure 43. Tires/Rubber Scrap Exports from California by Country (by Weight 15.4 Million Tons)

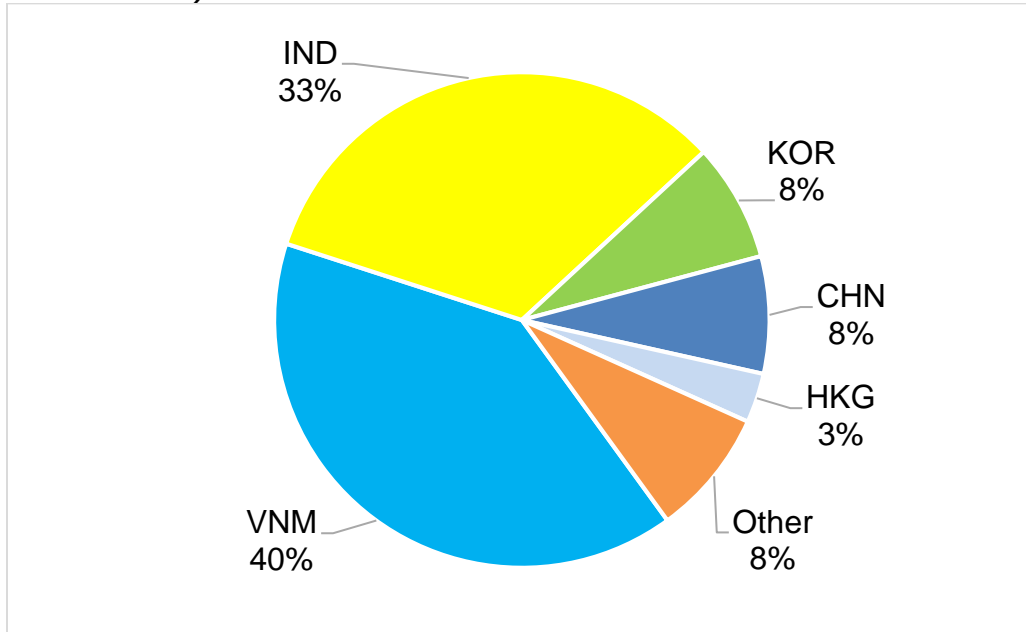
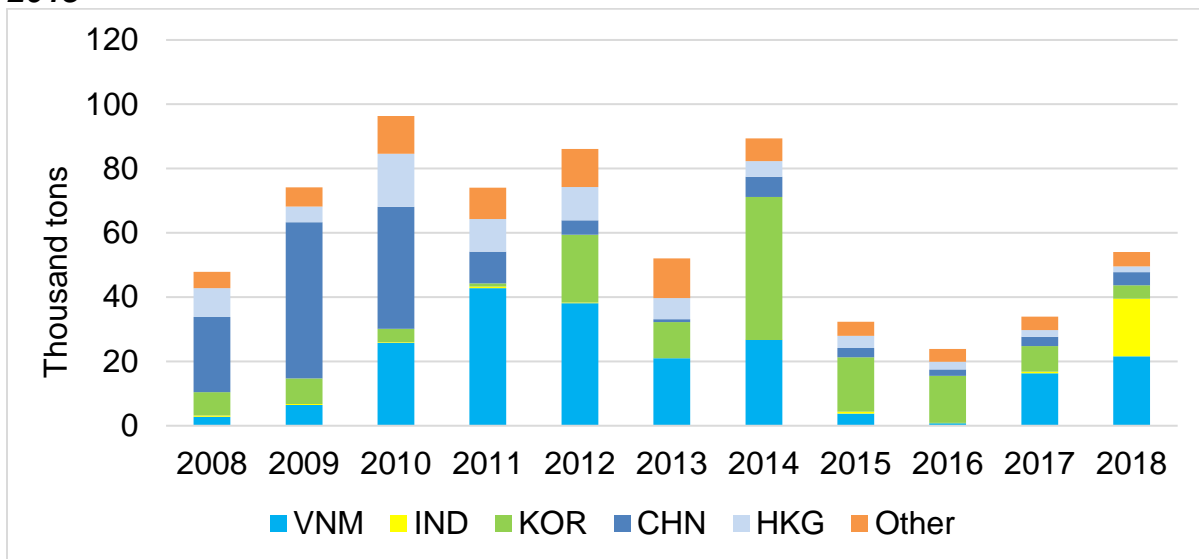


Figure 44. Tires/Rubber Scrap Exports from California by Country from 2008 – 2018



Used Oil and Grease

Table 23: Used Oil and Grease Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
25,703	-18%	\$5,982,532	-9%

Figure 45. Used Oil/Grease Exports from California by Country (by Weight 15.4 Million Tons)

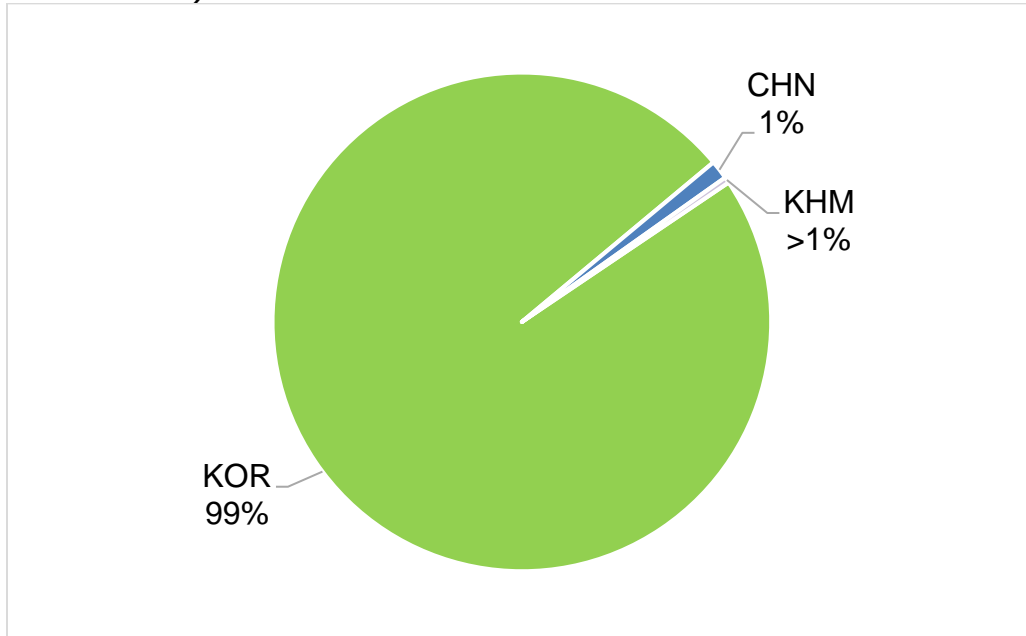
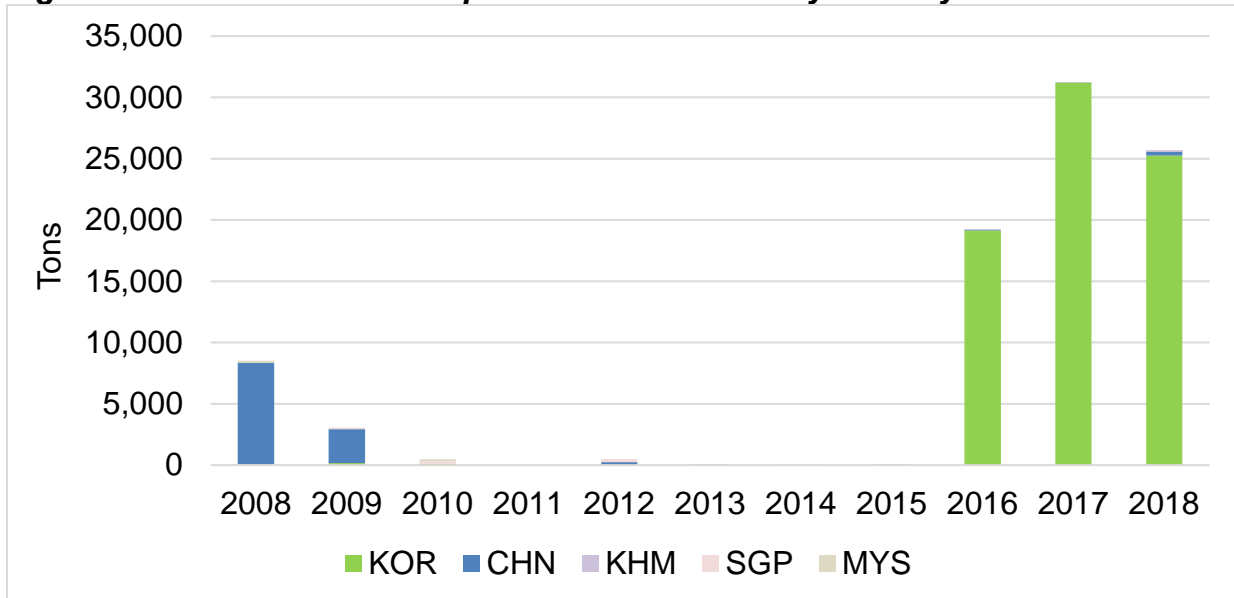


Figure 46. Used Oil/Grease Exports from California by Country from 2008 - 2018



Glass

Table 24: Glass Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
1,568	-34%	\$5,734,788	156%

Figure 47. Glass Exports from California by Country (by Weight 15.4 Million Tons)

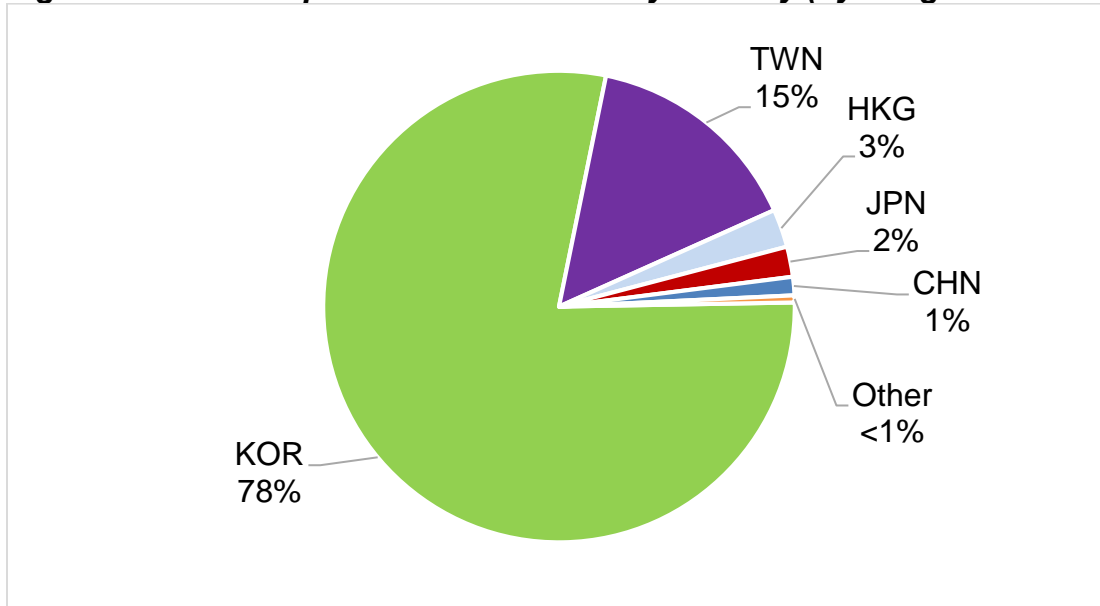
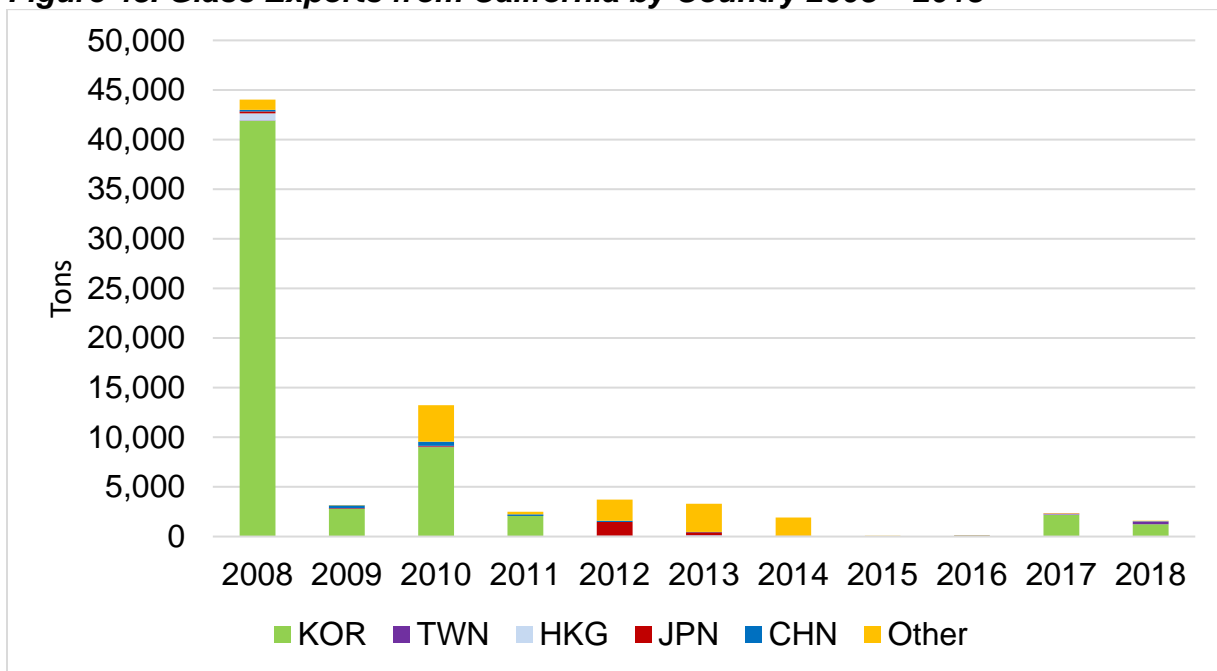


Figure 48. Glass Exports from California by Country 2008 – 2018



Aluminum Cans

Table 25: Aluminum Cans Weight and Vessel Value

Tons Exported	Percent Change from 2017	Vessel Value	Percent Change from 2017
2,338	103%	\$3,388,070	106%

Figure 49. Aluminum Cans Exports from California by Country (by Weight 15.4 Million Tons)

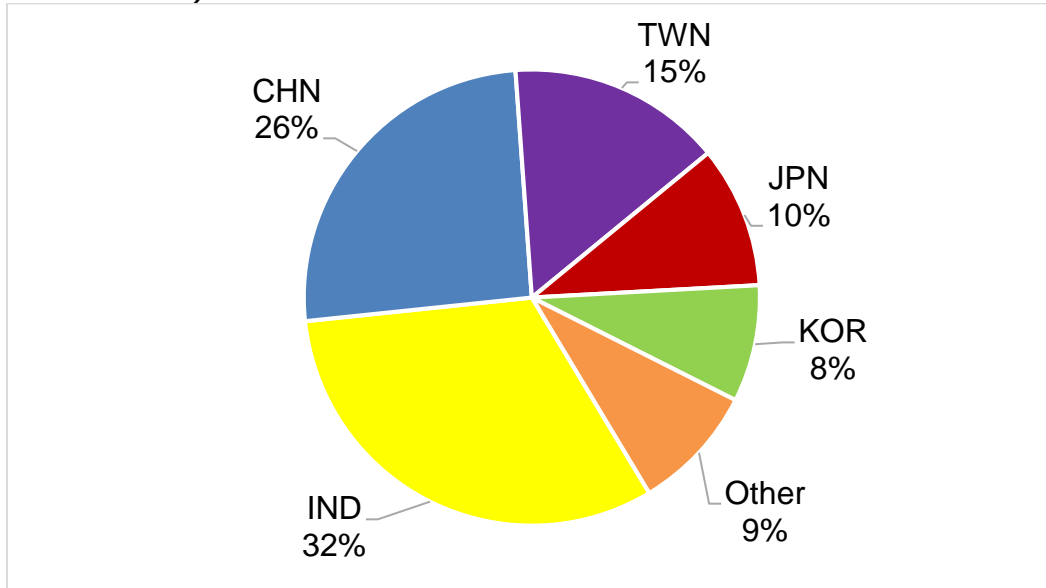
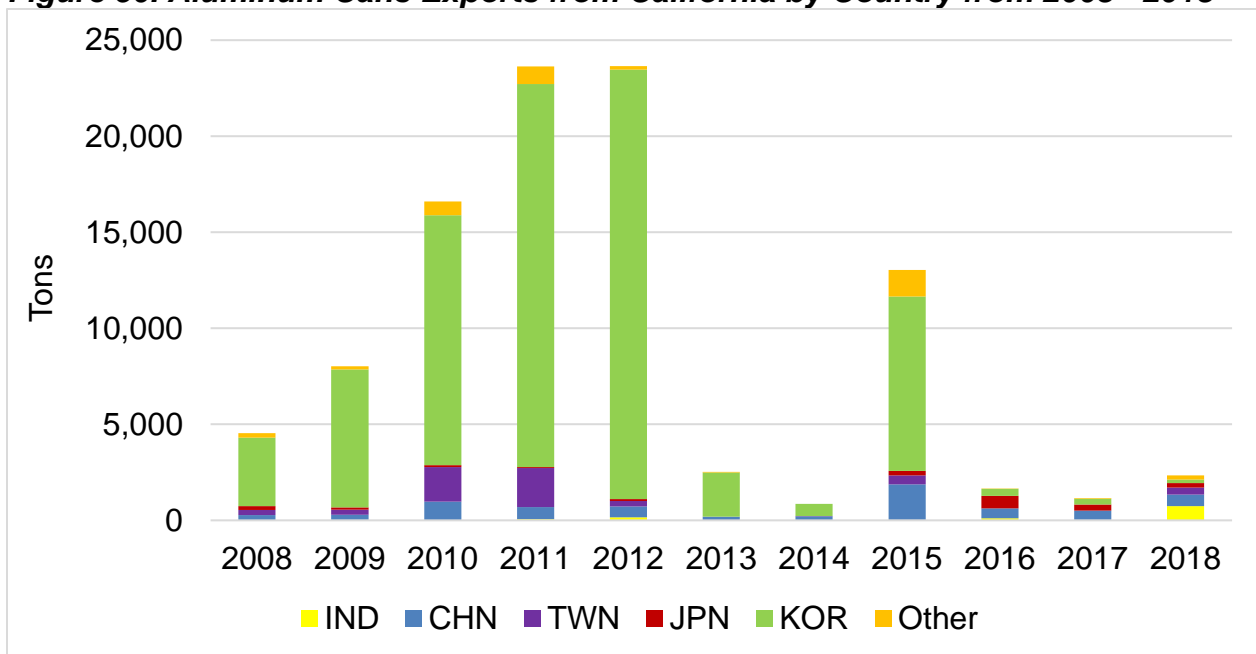


Figure 50. Aluminum Cans Exports from California by Country from 2008 - 2018



Appendix 3: 2018 U.S. Seaborne Exports of Recyclable Materials

Figure 51. U.S. Seaborne Recyclable Materials Exports by Country (by weight (15.4 Million Tons))

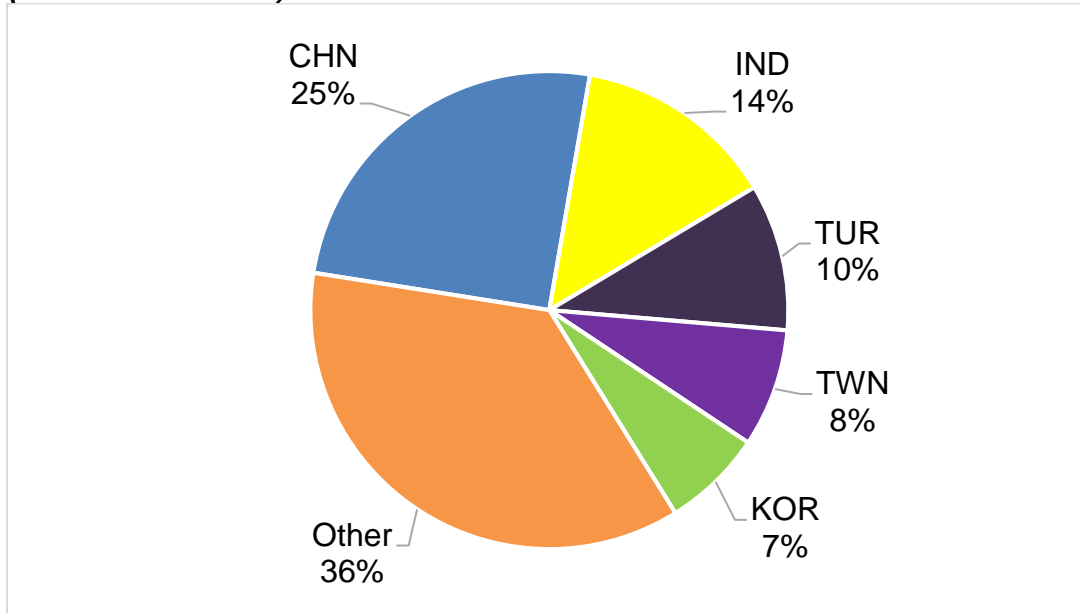


Figure 52. Tons of U.S. Seaborne Recyclable Materials Exports by Country from 2008 - 2018

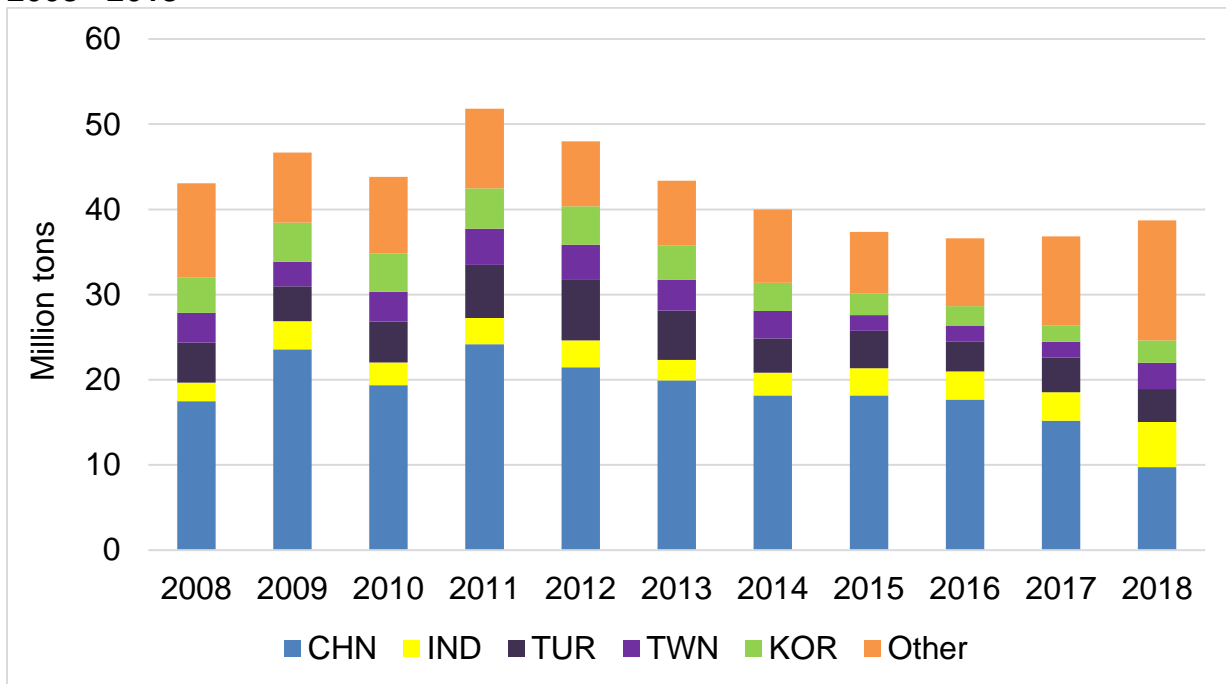


Figure 53. 2018 U.S. Seaborne Recyclable Materials Exports by Country (by Vessel Value)

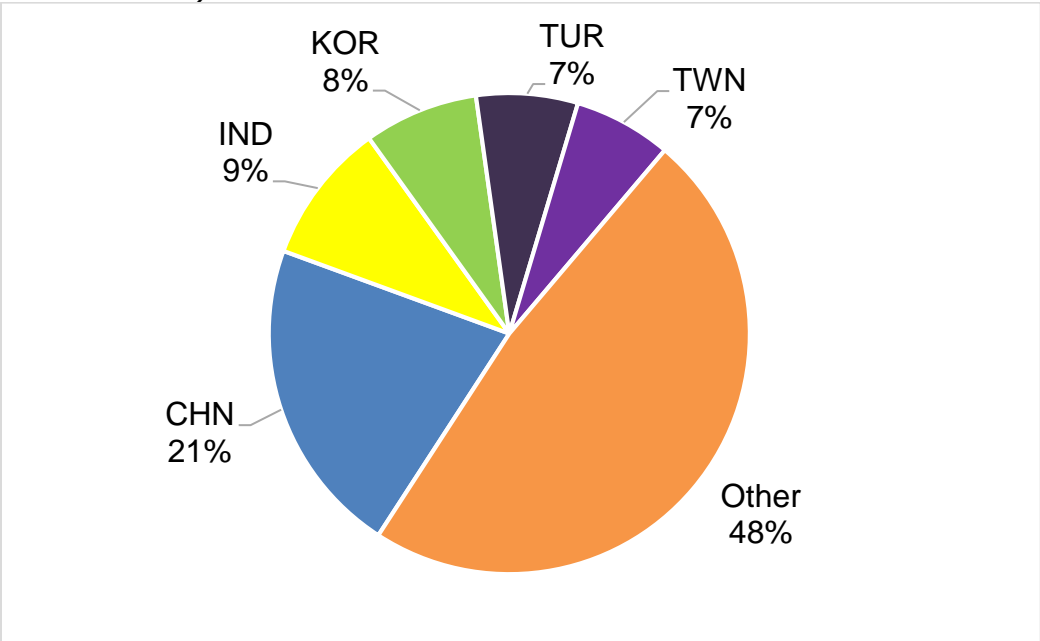
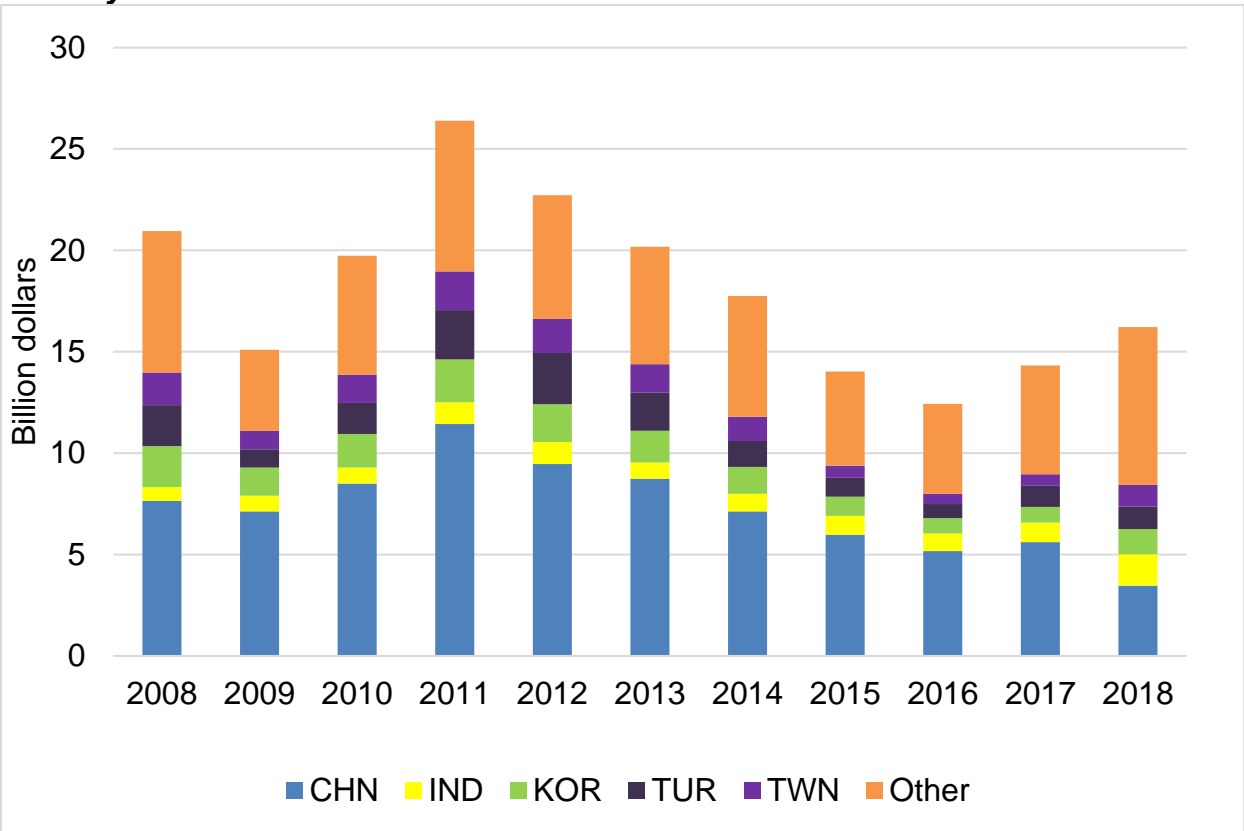


Figure 54. Vessel Value of U.S. Seaborne Recyclable Materials Exports by Country from 2008 - 2018



Appendix 4: Applicable Country Code Abbreviations

ARE	United Arab Emirates
BGD	Bangladesh
CHL	Chile
CHN	China
COL	Colombia
ECU	Ecuador
GRC	Greece
GTM	Guatemala
HKG	Hong Kong
IDN	Indonesia
IND	India
JPN	Japan
KOR	Korea, Republic Of
MEX	Mexico
MYS	Malaysia
PAK	Pakistan
PHL	Philippines
SGP	Singapore
SLV	El Salvador
THA	Thailand
TUR	Turkey
TWN	Taiwan
VNM	Vietnam

Appendix 5: Accessible Version of Tables and Figures

Figure 1: Recyclable Material Exported from CA Ports by Weight Trend

This figure displays the amount of recyclable materials and other materials shipped from California ports by sea from 2008-2018.

Year	Recyclables
2008	19,598,613
2009	18,687,562
2010	18,706,811
2011	22,317,156
2012	19,860,525
2013	18,685,245
2014	18,059,733
2015	16,394,429
2016	14,976,317
2017	14,536,153
2018	15,417,931

Figure 2: Recyclable Material Exported from CA Ports – Vessel Value Trend

This figure shows the vessel value of recyclable materials sent from California ports from 2008-2018.

Year	Recyclables
2008	8,806,032,285
2009	5,830,066,873
2010	7,667,521,082
2011	9,987,621,858
2012	8,237,767,017
2013	7,605,086,054

Year	Recyclables
2014	6,970,882,999
2015	5,386,926,247
2016	4,571,370,106
2017	5,120,386,120
2018	5,604,764,227

Figure 3: CA Recyclable Exports by Country from 2008 – 2018 by Weight Trend

This figure shows the top five countries and all other aggregated countries importing the most recyclable material from California ports from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	10,604,998	12,265,427	10,809,293	13,266,039	11,460,691	10,909,878	10,289,933	10,139,327	9,255,129	8,105,402	6,573,053
Taiwan	2,166,473	1,456,021	2,004,167	2,839,654	3,015,167	2,634,337	2,577,955	1,503,113	1,548,271	1,616,323	2,296,806
South Korea, Republic Of	2,520,033	2,428,803	2,809,569	3,085,906	2,704,087	2,561,187	2,100,608	1,684,799	1,604,269	1,176,500	1,642,289
Vietnam	263,522	352,484	466,332	444,623	323,256	403,767	310,711	209,707	339,881	868,266	1,391,874
Malaysia	1,165,404	322,685	327,794	492,240	509,422	574,088	346,095	61,243	67,798	239,003	584,112
Other	2,878,184	1,862,142	2,289,656	2,188,695	1,847,902	1,601,987	2,434,431	2,796,241	2,160,969	2,530,660	2,929,797

Figure 4: Top Ten Countries Receiving CA Recyclable Exports by Tons

This figure shows the top ten countries receiving California recyclable exports by tons in 2018.

Country	Weight
China	6,573,053
Taiwan	2,296,806
South Korea	1,642,289
Vietnam	1,391,874
Malaysia	584,112
Indonesia	2,929,797
India	541,406
Thailand	535,467
Bangladesh	416,006
Japan	395,872

Figure 5: Top Exported Recyclable Materials by Percent of 15.4 Million Tons

This figure shows the top eight categories of recyclable materials exported from California by the percentage of weight in 2018.

Material	% All Recycle Exports*
OCC and Kraft Paper	37%
Ferrous Metal	34%
Other Misc. Paper	14%
Nonferrous Metal	7%
Unsorted Paper	4%
Plastics 1-2	1%
Mixed Plastics 3-7	1%
Worn Clothing	1%
Other	2%

Figure 6: Top Exported Recyclable Materials by Vessel Value by Percent of \$5.6 Billion

This figure shows the top eight categories of recyclable materials exported from California by percentage vessel value in 2018.

Material	% All Recycle Exports*
Nonferrous Metal	36%
Ferrous Metal	32%
OCC and Kraft Paper	15%
Other Misc. Paper	7%
Worn Clothing	2%
Unsorted Paper	1%
Plastics 1-2	1%
Mixed Plastics 3-7	1%
High-Grade Paper	<1%
Other	3%

Figure 7: Unsorted Mixed Paper – Quarterly Tons Exported from CA Ports

This figure shows the tonnage of Unsorted Mixed Paper exported to China and all other countries combined.

Unsorted Mixed Paper	China	All Other Countries
Q1 2018	6,826	129,649
Q2 2018	6,974	185,478
Q3 2018	3,900	161,418
Q4 2018	20,363	148,256
Q1 2019	2607	156,332

Figure 8: Unsorted Mixed Paper & Other Misc. Mixed Paper Exports Trend

This figure shows the comparison between Unsorted Mixed paper and Other Misc. Mixed paper. 2018 saw a large decrease in Unsorted Mixed Paper.

Type of Paper	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Unsorted Mixed Paper	4,346,591	4,344,465	2,667,255	2,485,319	2,540,586	2,454,825	2,394,680	2,294,438	1,790,847	1,530,199	675,365
Other Misc. Mixed Paper	2,158,185	2,424,763	2,780,582	3,182,789	2,426,624	2,433,694	2,228,858	2,016,420	2,126,125	1,906,164	2,099,737

Figure 9: OCC Quarterly Tons Exported from CA Ports

This figure shows the amount of OCC exported to other countries combined. China receives the largest amounts of OCC in 2018.

Quarter	China	All Other Countries
Q1 2018	955,520	233,072
Q2 2018	859,323	342,809
Q3 2018	1,089,921	415,038
Q4 2018	1,365,080	411,879
Q1 2019	816,565	456,542

Figure 10: Mixed Plastics 3-7 Quarterly Tons Exported from CA Ports

This figure shows the tonnage of OCC exported to China and all other countries combined. Q4 2018 saw the beginning of a decrease to China.

Quarter	China	All Other Countries
Q1 2018	4,881	69,407
Q2 2018	4,134	71,728
Q3 2018	1,429	26,604
Q4 2018	721	18,395
Q1 2019	268	10,213

Figure 11: Mixed Plastic 3-7 Scrap Value (RIS²)

This figure shows the scrap value of Mixed Plastics 3-7 from Q1 2017 to Q1 2019.

Quarter	2017	2018	2019
Q1	20	16.92	-10
Q2	20	-10.80	
Q3	20	-10	
Q4	20	-10	

Figure 12: Unsorted Mixed Paper Scrap Value (RISI)

This figure shows the Unsorted Mixed Paper Scrap Value dollars/ton by quarter for years 2017, 2018, and Q1 2019.

Quarter	2017	2018	2019
Q1	95	10	2.5
Q2	73	-2.5	
Q3	63	5	
Q4	30	12.5	

Figure 13: OCC Scrap Value (RISI)

This figure shows the OCC values dollars/tons by quarters for years 2017, 2018, and Q1 2019.

Quarter	2017	2018	2019
Q1	138	88	46
Q2	140	63	
Q3	113	60	
Q4	98	64	

Figure 14: Total California Seaborne Exports from 1998 – 2018 Trend

This figure displays the tonnage of recyclable exports and all other exports from California ports from 1998 to 2018.

Year	Recyclables	Other Exports
1998	4,272,994	33,768,319
1999	5,083,108	31,990,105
2000	6,320,731	36,334,182
2001	7,271,304	33,849,579
2002	7,630,840	31,418,696
2003	9,549,578	29,444,715
2004	10,087,098	29,903,413
2005	11,938,685	32,122,268
2006	13,153,708	34,025,983
2007	16,243,610	37,222,781
2008	19,598,613	44,169,846
2009	18,687,562	41,681,500
2010	18,706,811	47,602,869
2011	22,317,156	52,179,936
2012	19,860,525	51,199,520
2013	18,685,245	54,827,233

Year	Recyclables	Other Exports
2014	18,059,733	56,182,580
2015	16,394,429	47,383,526
2016	14,976,317	47,582,800
2017	14,536,153	53,407,337
2018	15,417,931	53,588,841

Figure 15: Total California Seaborne Exports by Vessel Value from 1998 – 2018 Trend

This figure shows the trend of California exports by vessel value from 1998-2018.

Year	Recyclables	Total Exports
1998	775,658,290	39,821,934,564
1999	875,236,881	39,216,984,750
2000	1,299,866,371	44,913,919,500
2001	1,288,651,784	42,438,765,714
2002	1,303,679,253	37,769,985,010
2003	1,757,906,800	40,720,710,629
2004	2,407,187,755	42,386,450,467
2005	3,344,559,648	47,200,806,881
2006	5,223,647,937	53,976,563,513
2007	7,235,559,060	62,665,140,333
2008	8,806,032,285	74,519,026,702
2009	5,830,066,873	62,279,753,431
2010	7,667,521,082	77,880,865,343
2011	9,987,621,858	92,307,910,129
2012	8,237,767,017	94,697,754,139
2013	7,605,086,054	98,735,641,688
2014	6,970,882,999	97,856,396,567

Year	Recyclables	Total Exports
2015	5,386,926,247	79,810,156,226
2016	4,571,370,106	84,352,909,652
2017	5,120,386,120	89,408,666,253
2018	5,604,764,227	90,284,617,614

Figure 16: 2018 Recyclable Exports by Destination Country – Weight

This figure shows the top 5 California exports and combined Other countries by weight and percentage of 15.4 million tons. China is the largest at 42 percent.

Country	Total Tons	Percent of Total Weight
China	6,573,053	42 %
Taiwan	2,296,806	15%
Korea, Republic Of	1,642,289	11%
Vietnam	1,391,874	9%
Malaysia	584,112	4%
Other	2,929,797	19%

Figure 17: Recyclable Exports by Destination Country from 2008-2018 Trend

This figure shows the trend of the top 5 California exports and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	10,604,998	12,265,427	10,809,293	13,266,039	11,460,691	10,909,878	10,289,933	10,139,327	9,255,129	8,105,402	6,573,053
Taiwan	2,166,473	1,456,021	2,004,167	2,839,654	3,015,167	2,634,337	2,577,955	1,503,113	1,548,271	1,616,323	2,296,806
Korea, Republic Of	2,520,033	2,428,803	2,809,569	3,085,906	2,704,087	2,561,187	2,100,608	1,684,799	1,604,269	1,176,500	1,642,289
Vietnam	263,522	352,484	466,332	444,623	323,256	403,767	310,711	209,707	339,881	868,266	1,391,874

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Malaysia	1,165,404	322,685	327,794	492,240	509,422	574,088	346,095	61,243	67,798	239,003	584,112
Other	2,878,184	1,862,142	2,289,656	2,188,695	1,847,902	1,601,987	2,434,431	2,796,241	2,160,969	2,530,660	2,929,797

Figure 18: Recyclable Exports - Top Five Countries from 2016 - 2018

This figure shows the top 5 export countries and combined Other countries by weight comparing 2016-2018.

Country	2016	2017	2018
China	9,255,129	8,105,402	6,573,053
Taiwan	1,548,271	1,616,323	2,296,806
Korea, Republic Of	1,604,269	1,176,500	1,642,289
Vietnam	339,881	868,266	1,391,874
Malaysia	67,798	239,003	584,112
Other	2,160,969	2,530,660	2,929,797

Figure 19: 2018 Recyclable Exports by Destination Country - Vessel Value

This figure shows the top 5 California exports and combined Other countries by vessel value and percentage of \$5.6 Billion USD. China is the largest at 32 percent.

Country	Dollars
China	1,928,927,494
Korea, Republic Of	805,015,495
Taiwan	790,310,645
Vietnam	342,102,706
Japan	325,432,988
Other	1,412,974,899

Figure 20: Recyclable Exports by Destination Country by Vessel Value from 2008 – 2018

This figure shows the trend of the top 5 California exports and combined Other countries by vessel value from 2008-2018.

Country	2008	2009	2010	2011	2012	2013
China	4,396,198,965	3,538,508,404	4,257,232,934	5,691,540,105	4,594,985,500	4,347,730,436
Korea, Republic Of	1,219,184,236	767,047,966	1,034,890,356	1,328,398,981	1,084,261,827	975,437,267
Taiwan	1,023,599,740	513,602,062	892,105,936	1,334,103,681	1,252,329,238	1,009,625,862
Vietnam	85,449,157	88,245,325	159,541,657	162,865,934	102,323,625	129,523,103
Japan	446,239,792	214,470,121	321,076,672	367,483,460	242,992,859	238,066,088
Other	1,635,360,395	708,192,995	1,002,673,527	1,103,229,697	960,873,968	904,703,298

Figure 20: Continued

Country	2014	2015	2016	2017	2018
China	3,707,647,215	3,112,412,503	2,510,105,479	2,658,092,404	1,928,927,494
Korea, Republic Of	834,624,761	627,294,614	517,204,652	523,038,316	805,015,495
Taiwan	947,128,980	475,959,284	420,911,201	484,933,974	790,310,645
Vietnam	89,834,753	46,294,748	73,559,347	201,719,820	342,102,706
Japan	324,339,086	203,034,961	248,123,260	253,622,753	325,432,988
Other	1,067,308,204	921,930,137	801,466,167	998,978,853	1,412,974,899

Figure 21: Non-Ferrous Metals (Excluding Copper Wire) Exports from California by (by Weight)

This figure shows the percentage of nonferrous metals exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
China	355,079
Korea, Republic Of	227,790

Country	2018 Tons
Malaysia	117,258
Taiwan	68,238
India	65,531
Other	176,661

Figure 22: Nonferrous Metals (Excluding Copper Wire) Exports by Country from 2008 - 2018

This figure shows the trend of Nonferrous metals exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	986,350	904,209	1,043,753	1,294,101	1,157,292	1,086,726	941,941	788,358	674,937	713,487	355,079
Korea, Republic Off	181,789	146,742	143,524	165,381	146,404	121,970	144,138	151,472	135,315	162,514	227,790
Malaysia	3,070	5,024	5,537	4,195	3,931	1,287	3,854	13,357	16,178	18,038	117,258
Taiwan	183,568	87,090	88,189	68,793	73,072	73,379	66,577	29,937	26,491	19,647	68,238
India	4,162	5,998	4,017	5,585	4,997	7,347	8,949	9,317	13,403	24,121	65,531
Other	232,595	140,207	140,533	112,632	100,397	137,865	108,640	92,194	103,196	119,087	176,661

Figure 23: 2018 Ferrous Metal Exports from California by Country (by Weight)

This figure shows the percentage of Ferrous metals exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Taiwan	1,792,694
Vietnam	864,129
Korea, Republic Of	698,766
Bangladesh	395,066

Country	2018 Tons
Malaysia	287,948
Other	1,196,775

Figure 24: Ferrous Metal Exports from California by Country from 2008 - 2018

This figure shows the trend of Ferrous metals exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Taiwan	1,807,561	1,243,781	1,792,073	2,638,934	2,788,377	2,396,742	2,382,819	1,337,092	1,321,948	1,385,514	1,792,694
Vietnam	203,102	254,889	357,469	284,986	196,536	296,435	209,004	102,555	239,595	574,183	864,129
Korea, Republic Of	1,716,688	1,656,111	1,908,224	2,077,995	1,712,661	1,679,458	1,157,059	833,733	808,583	499,394	698,766
Bangladesh	42,774	32,090	3,832	3,553	1,054	441	3,372	95,697	219,174	275,978	395,066
Malaysia	1,148,627	306,724	301,038	461,217	473,701	527,373	300,729	11,108	19,673	141,446	287,948
Other	3,166,071	3,139,305	2,306,822	2,640,951	1,525,682	1,382,012	1,619,140	1,866,565	1,225,713	1,743,867	1,196,775

Figure 25: High-Grade Paper Exports from California by Country (by Weight)

This figure shows the percentage of High-Grade paper exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
India	21,664
Korea, Republic Of	18,500
Indonesia	13,810
Mexico	13,338
Colombia	12,417
Other	28,284

Figure 26: High-Grade Paper Exports from California by Country from 2008 - 2018

This figure shows the trend of High-Grade paper exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
India	2,558	7,007	2,488	3,073	1,995	935	2,149	4,336	2,289	7,486	21,664
Korea, Republic Of	6,298	3,821	2,859	12,277	22,961	23,996	14,362	13,842	14,391	19,657	18,500
Indonesia	6,488	0	670	1,981	3,079	3,782	4,705	2,274	10,220	7,959	13,810
Mexico	0	1,699	6,561	20,461	14,423	12,725	5,158	2,534	13,789	18,104	13,338
Colombia	0	112	1,642	6,959	2,199	1,483	224	258	4,475	7,270	12,417
Other	62,467	98,502	69,256	73,881	75,075	52,511	82,311	80,084	49,941	35,327	28,284

Figure 27: Unsorted Mixed Paper Exports from California by Country (by Weight)

This figure shows the percentage of Unsorted Mixed paper exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Indonesia	206,686
Korea, Republic Of	123,839
Taiwan	77,058
Vietnam	46,716
India	44,650
Other	176,416

Figure 28: Unsorted Mixed Paper Exports from California by Country from 2008 - 2018

This figure shows the trend of Unsorted Mixed paper exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Indonesia	93,904	77,888	69,188	100,676	78,707	51,292	63,879	46,022	51,189	55,942	206,686
Korea, Republic Of	343,577	389,635	460,766	432,874	369,309	360,584	301,764	175,952	236,726	169,249	123,839
Taiwan	21,118	29,647	30,108	28,178	39,704	31,256	28,334	35,346	18,199	32,587	77,058
Vietnam	27,795	41,820	22,671	20,469	28,147	17,412	8,049	12,939	10,131	40,635	46,716
India	21,822	41,418	52,087	54,060	56,021	66,757	105,166	38,396	10,973	15,439	44,650
Other	3,838,374	3,764,058	2,032,435	1,849,062	1,968,697	1,927,524	1,887,488	1,985,782	1,463,630	1,216,346	176,416

Figure 29: Other Misc. Mixed Paper Exports from California by Country (by Weight)

This figure shows the percentage of Other Miscellaneous (Misc.) Mixed paper exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
China	1,623,956
Korea, Republic Of	197,382
Indonesia	50,337
Vietnam	42,679
Thailand	42,444
Other	142,940

Figure 30: Other Misc. Mixed Paper Exports from California by Country from 2008 - 2018

This figure shows the trend of Other Misc. paper exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	1,932,254	2,170,678	2,449,802	2,792,466	2,046,565	2,113,777	1,963,061	1,768,422	1,877,119	1,689,909	1,623,956
Korea, Republic Of	86,672	77,754	101,432	233,966	254,113	202,649	187,070	179,961	165,530	127,039	197,382
Indonesia	41,285	65,362	80,933	32,907	8,267	8,967	8,588	9,877	5,022	21,065	50,337
Vietnam	6,111	2,779	11,374	9,664	10,035	8,313	2,829	1,723	1,799	11,013	42,679
Thailand	22,436	8,324	23,823	13,515	31,679	24,574	14,743	10,245	11,414	9,262	42,444
Other	69,427	99,867	113,218	100,270	75,965	75,414	52,567	46,192	65,241	47,877	142,940

Figure 31: OCC and Kraft Paper Exports from California by Country (by Weight)

This figure shows the percentage of OCC and Kraft paper exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
China	4,269,844
Vietnam	372,240
Taiwan	314,268
Korea, Republic Of	313,507
Thailand	127,964
Other	274,818

Figure 32: OCC and Craft Paper Exports from California by Country from 2008 – 2018

This figure shows the trend of OCC and Craft paper exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	1,820,219	2,330,604	3,294,118	4,935,812	4,819,120	4,350,704	4,486,504	4,818,615	4,469,987	3,736,237	4,269,844
Vietnam	6,448	19,847	33,703	60,906	35,398	33,692	36,308	62,619	54,969	163,661	372,240
Taiwan	120,286	53,493	71,480	79,111	80,724	79,210	66,248	59,658	147,649	145,323	314,268
Korea, Republic Of	120,349	116,253	164,059	155,811	173,226	154,556	238,465	296,634	201,361	142,172	313,507
Thailand	107,668	47,447	71,365	70,286	33,602	28,664	19,423	51,397	68,175	43,006	127,964
Other	140,721	43,064	75,371	65,472	114,790	82,666	92,993	95,227	83,462	112,881	274,818

Figure 33: Mixed Plastics 3-7 Exports from California by Country (by Weight)

This figure shows the percentage of Mixed Plastics exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Malaysia	80,785
Thailand	29,216
Hong Kong	29,170
Vietnam	19,532
China	11,165
Other	27,429

Figure 34: Mixed Plastics 3-7 Exports from California by Country from 2008 - 2018

This figure shows the trend of Mixed Plastics 3-7 exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Malaysia	3,763	1,630	8,290	6,785	8,446	12,516	13,773	15,181	11,283	40,384	80,785
Thailand	364	333	3,935	2,755	65	278	6,518	3,823	2,354	10,035	29,216
Hong Kong	336,599	400,260	342,446	262,435	186,083	171,641	202,324	248,251	260,319	132,456	29,170
Vietnam	3,680	2,653	3,144	13,555	4,308	4,182	8,656	7,456	16,830	31,973	19,532
China	147,325	229,407	279,639	445,365	434,473	378,014	342,508	305,975	207,531	162,304	11,165
Other	18,368	19,546	42,284	22,993	25,424	42,148	51,472	42,553	23,294	23,502	27,429

Figure 35: Plastics 1-2 Exports from California by Country (by Weight)

This figure shows the percentage of Plastics 1-2 exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Malaysia	39,297
Hong Kong	29,839
Thailand	27,044
Taiwan	22,339
Vietnam	18,362
Other	61,119

Figure 36: Plastics 1-2 Exports from California by Country from 2008 - 2018

This figure shows the trend of Plastics 1-2 exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Malaysia	1,446	863	1,687	4,879	3,591	22,154	9,943	9,839	11,252	25,766	39,297
Thailand	129,445	138,215	151,434	132,561	119,151	119,477	166,185	171,451	160,515	94,013	29,839
Hong Kong	44	21	22	162	739	2,116	4,177	581	718	6,704	27,044

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vietnam	2,981	2,152	1,429	1,772	5,244	10,636	13,213	22,496	16,526	19,634	22,339
China	654	4,433	1,899	2,887	3,326	8,161	12,212	10,902	9,022	31,732	18,362
Other	259,287	339,661	323,727	351,016	356,704	341,403	439,574	298,927	267,529	212,461	61,119

Figure 37: Copper Wire Exports from California by Country (by Weight)

This figure shows the percentage of Copper Wire exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
China	8,559
Korea, Republic Of	6,882
Taiwan	3,125
Japan	2,866
Greece	411
Other	556

Figure 38: Copper Wire Exports from California by Country from 2008 - 2018

This figure shows the trend of Plastics 1-2 exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	2,285	4,583	9,732	11,278	6,407	3,979	974	6,918	2,246	5,677	8,559
Korea, Republic Of	2,791	904	2,038	2,756	1,904	1,423	3,481	2,006	3,018	1,964	6,882
Taiwan	293	144	84	59	268	243	407	649	2,815	2,325	3,125
Japan	103	271	1,915	2,735	1,979	267	416	463	698	1,144	2,866
Greece	0	0	0	0	46	0	22	106	0	43	411
Other	418	614	403	608	283	266	843	419	155	253	556

Figure 39: Worn Clothing Exports from California by Country (by Weight)

This figure shows the percentage of Worn Clothing exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Guatemala	31,951
India	28,239
Pakistan	12,310
Philippines	10,660
Chile	9,206
Other	39,670

Figure 40: Worn Clothing Exports from California by Country from 2008 - 2018

This figure shows the trend of Worn Clothing exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Guatemala	3,775	4,341	6,309	10,485	14,836	15,277	18,302	23,222	23,776	25,279	31,951
India	22,739	35,662	40,765	29,126	41,465	29,519	25,794	28,134	27,557	36,802	28,239
Pakistan	7,619	8,306	8,185	10,660	11,808	16,326	10,647	7,885	9,889	13,903	12,310
Philippines	7,703	13,552	18,195	21,781	22,868	18,791	14,689	11,739	12,013	9,523	10,660
Chile	7,426	4,978	5,535	6,160	6,926	7,602	8,153	9,715	14,542	10,064	9,206
Other	51,292	51,323	61,600	52,687	55,428	58,608	53,658	46,932	42,304	41,611	39,670

Figure 41: Batteries Exports from California by Country (by Weight)

This figure shows the percentage of Batteries exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Korea, Republic Of	11,510
India	8,067

Country	2018 Tons
United Arab Emirates	3,003
Ecuador	2,509
Pakistan	67
Other	110

Figure 42: Batteries Exports from California by Country from 2008 - 2018

This figure shows the trend of Batteries exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Korea, Republic Of	20,867	34,949	22,343	11,440	10,564	10,439	11,106	15,910	10,648	13,871	11,510
India	684	493	666	2,763	539	1,118	2,050	1,027	6,155	8,874	8,067
United Arab Emirates	0	0	0	0	0	0	350	1,485	1,009	4,369	3,003
Ecuador	0	0	0	0	175	784	1,320	1,415	2,369	2,449	2,509
Pakistan	0	0	23	21	22	21	0	0	0	183	67
Other	5,024	6,955	3,461	1,871	963	4,514	671	1,269	1,327	30	110

Figure 43: Tires/Rubber Scrap Exports from California by Country (by Weight)

This figure shows the percentage of Tires/Rubber scrap exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Vietnam	21,609
India	17,908
Korea, Republic Of	4,171
China	4,135
Hong Kong	1,747

Country	2018 Tons
Other	4,470

Figure 44: Tires/Rubber Scrap Exports from California by Country from 2008 – 2018

This figure shows the trend of Tires/Rubber scrap exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vietnam	2,784	6,461	25,736	42,768	38,162	20,985	26,695	3,806	821	16,299	21,609
India	385	266	242	484	118	0	12	527	65	471	17,908
Korea, Republic Of	7,272	7,953	4,172	991	21,145	11,243	44,496	16,941	14,628	8,010	4,171
China	23,436	48,586	37,981	9,887	4,432	909	6,251	2,866	1,960	2,896	4,135
Hong Kong	8,905	4,947	16,450	10,144	10,367	6,585	4,884	3,798	2,417	2,092	1,747
Other	5,093	5,969	11,752	9,822	11,825	12,345	7,023	4,363	4,039	4,177	4,470

Figure 45: Used Oil/Grease Exports from California by Country (by Weight)

This figure shows the percentage of Used Oil/Grease exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Korea, Republic Of	25,267
China	315
Cambodia	98
Singapore	10
Malaysia	9
Other	5

Figure 46: Used Oil/Grease Exports from California by Country from 2008 - 2018

This figure shows the trend of Used Oil/Grease exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Korea, Republic Of	52	180	120	0	0	5	1	68	19,145	31,205	25,267
China	8,277	2,768	0	0	235	14	0	0	89	4	315
Cambodia	0	0	0	0	0	0	0	0	0	0	98
Singapore	0	107	172	0	283	0	0	8	2	9	10
Malaysia	185	0	187	0	0	0	0	0	0	0	9
Other	2,120	1,372	300	187	539	852	290	17	103	30	5

Figure 47: Glass Exports from California by Country (by Weight)

This figure shows the percentage of Glass exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
Korea, Republic Of	1,231
Taiwan	237
Hong Kong	41
Japan	32
China	20
Other	8

Figure 48: Glass Exports from California by Country from 2008 - 2018

This figure shows the trend of Glass exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Korea, Republic Of	41,900	2,804	8,997	2,065	4	14	13	2	58	2,191	1,231
Taiwan	45	0	65	0	60	104	0	0	0	63	237
Hong Kong	710	0	0	0	0	23	14	8	3	44	41
Japan	199	55	76	9	1,402	282	49	18	29	31	32
China	136	288	422	168	114	36	0	0	5	0	20
Other	1,045	2	3,671	271	2,136	2,836	1,848	46	16	33	8

Figure 49: Aluminum Cans Exports from California by Country (by Weight)

This figure shows the percentage of Aluminum Cans exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
India	747
China	596
Taiwan	356
Japan	235
Korea, Republic Of	194
Other	210

Figure 50: Aluminum Cans Exports from California by Country from 2008 - 2018

This figure shows the trend of Glass exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
India	0	20	0	61	150	0	0	21	102	19	747
China	277	274	977	632	574	193	207	1,849	525	489	596

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Taiwan	267	259	1,804	2,037	288	0	21	477	0	0	356
Japan	204	123	84	42	88	0	0	231	645	318	235
Korea, Republic Of	3,562	7,177	13,015	19,948	22,371	2,292	626	9,071	370	301	194
Other	236	167	726	911	169	44	0	1,385	7	22	210

Figure 51: U.S. Seaborne Recyclable Materials Exports by Country (by weight)

This figure shows the percentage of U.S. Seaborne recyclable materials exported to the top 5 countries and combined Other countries by weight.

Country	2018 Tons
China	9,762,586
India	5,293,997
Turkey	3,849,647
Taiwan	3,096,280
Korea, Republic Of	2,630,352
Other	14,065,545

Figure 52: Tons of U.S. Seaborne Recyclable Materials Exports by Country from 2008 - 2018

This figure shows the trend of U.S. Seaborne materials exported to the top 5 countries and combined Other countries by weight from 2008-2018.

Country	2008	2009	2010	2011	2012	2013
China	17,489,656	23,565,028	19,367,861	24,170,818	21,470,814	19,918,618
India	2,160,479	3,324,421	2,663,126	3,088,778	3,161,656	2,425,935
Turkey	4,703,140	4,073,269	4,812,839	6,214,564	7,073,643	5,757,777
Taiwan	3,512,177	2,893,661	3,489,871	4,255,086	4,162,990	3,628,096
Korea, Republic Of	4,121,678	4,586,535	4,525,819	4,748,119	4,488,355	4,030,661
Other	11,100,417	8,231,628	8,965,118	9,326,548	7,631,376	7,608,888

Figure 52 Continued

Country	2014	2015	2016	2017	2018
China	18,166,131	18,174,019	17,685,337	15,202,854	9,762,586
India	2,666,843	3,197,418	3,285,186	3,319,035	5,293,997
Turkey	4,031,610	4,379,299	3,528,297	4,073,821	3,849,647
Taiwan	3,222,847	1,823,002	1,826,166	1,896,431	3,096,280
Korea, Republic Of	3,285,324	2,571,384	2,302,179	1,848,450	2,630,352
Other	8,620,649	7,213,705	7,963,434	10,480,720	14,065,545

Figure 53: 2018 U.S. Seaborne Recyclable Materials Exports by Country (by Vessel Value)

This figure shows the percentage of U.S. Seaborne recyclable materials exported to the top 5 countries and combined Other countries by vessel value.

Country	2018 Vessel Value USD
China	3,473,072,468
India	1,540,843,191
Korea, Republic Of	1,246,868,253
Turkey	1,108,218,690
Taiwan	1,066,990,183
Other	7,779,024,625

Figure 54: Vessel Value of U.S. Seaborne Recyclable Materials Exports by Country from 2008 - 2018

This figure shows the trend of U.S. Seaborne materials exported to the top 5 countries and combined Other countries by vessel value from 2008-2018.

Country	2008	2009	2010	2011	2012	2013
China	7,649,020,044	7,128,946,809	8,494,910,965	11,440,761,383	9,469,916,040	8,733,942,003
India	676,108,956	772,686,394	792,058,795	1,069,297,069	1,080,962,721	808,757,091
Korea, Republic Of	2,016,817,589	1,385,084,491	1,657,652,149	2,120,112,900	1,867,411,574	1,568,355,681
Turkey	2,017,847,141	901,110,568	1,535,308,459	2,428,232,806	2,515,927,494	1,892,956,445
Taiwan	1,611,613,712	913,893,020	1,385,650,061	1,902,370,632	1,700,798,964	1,390,209,896
Other	6,980,303,374	3,989,402,072	5,873,129,481	7,432,723,427	6,082,663,842	5,778,587,117

Figure 54 Continued

Country	2014	2015	2016	2017	2018
China	7,125,050,258	5,978,159,321	5,166,532,693	5,617,888,797	3,473,072,468
India	876,717,177	925,805,937	873,206,660	951,568,422	1,540,843,191
Korea, Republic Of	1,322,154,760	953,627,299	757,626,713	783,866,543	1,246,868,253
Turkey	1,278,134,755	931,180,271	693,714,983	1,031,143,436	1,108,218,690
Taiwan	1,191,017,406	596,563,996	507,504,452	570,840,519	1,066,990,183
Other	5,949,379,582	4,631,259,106	4,426,976,643	5,362,797,840	7,779,024,625