

Recycled Metals Commodities Markets Updates

**NRC & Pennsylvania RMC Sustainable Materials
Management Webinar Series
August 23, 2016**

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Chief Economist and Director of Commodities
Institute of Scrap Recycling Industries, Inc.**

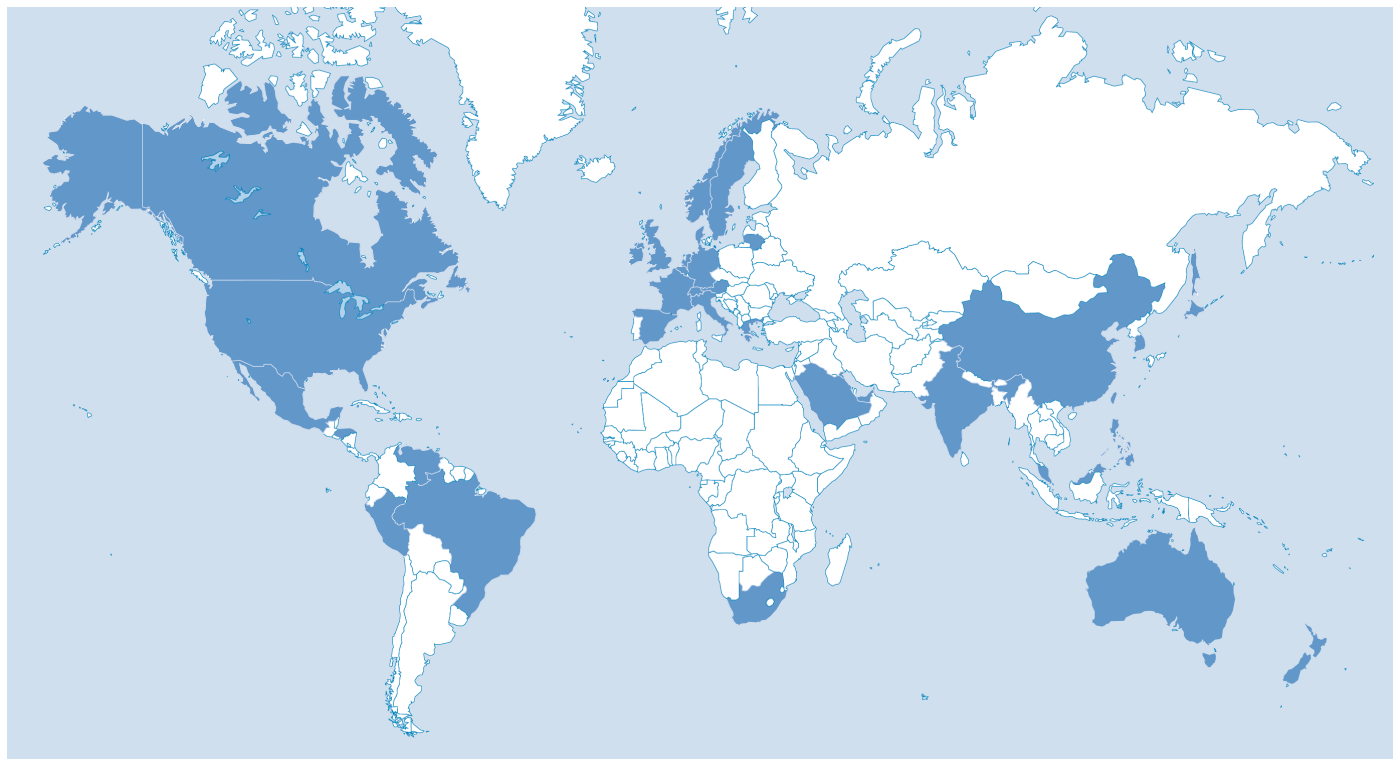
- **About ISRI**
- **Scrap Metal Market Drivers: Commodities, Manufacturing and China**
 - *Brexit and Other Risk Factors*
- **Market Updates**
 - *Ferrous*
 - *Stainless and Nickel*
 - *Nonferrous*
- **Outlook**

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ISRI: Voice of the Recycling Industry



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~1,300

Member
companies

2,750+

Recycling facilities
worldwide

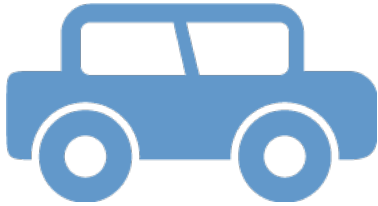
34

Countries

ISRI Members Process and Broker The Full Range of Scrap Commodities



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**Ferrous &
non-ferrous
metals**



Paper

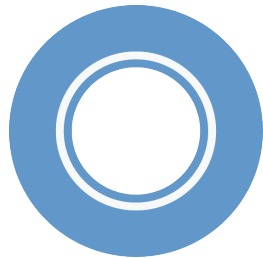


Plastics

Glass



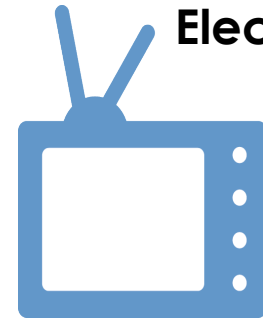
Rubber



Textiles



Electronics



Our Priorities

**Workplace
safety**



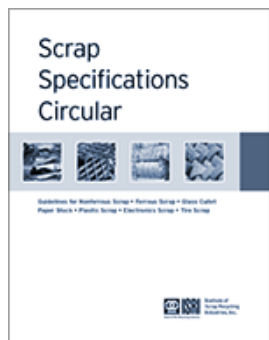
**Responsible
Recycling**



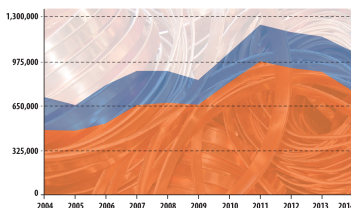
**Free & Fair
Trade**



Scrap ≠ Waste



Market Intelligence



**Education,
Training &
Networking**

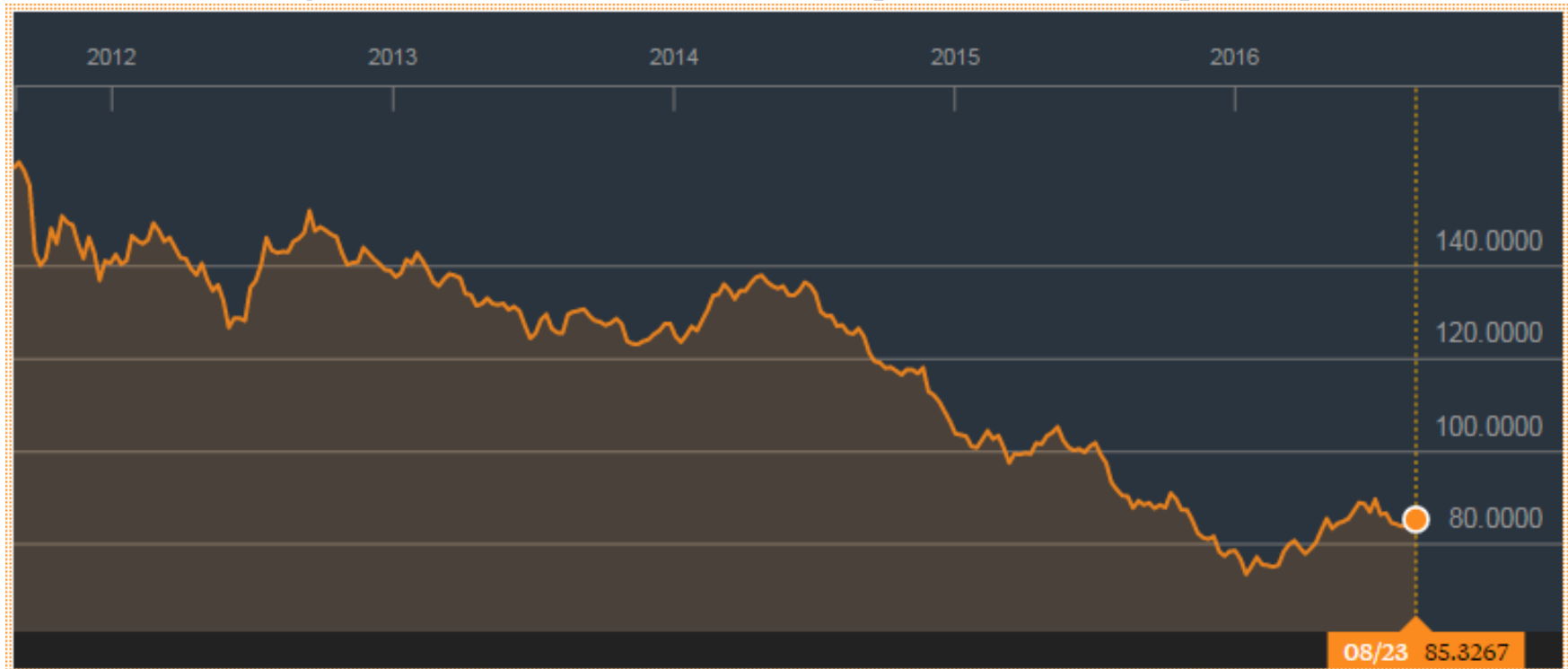


Awareness



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Bloomberg Commodity Index (BCOM:IND)



The Bloomberg Commodity Index is down 47% since August 2011.

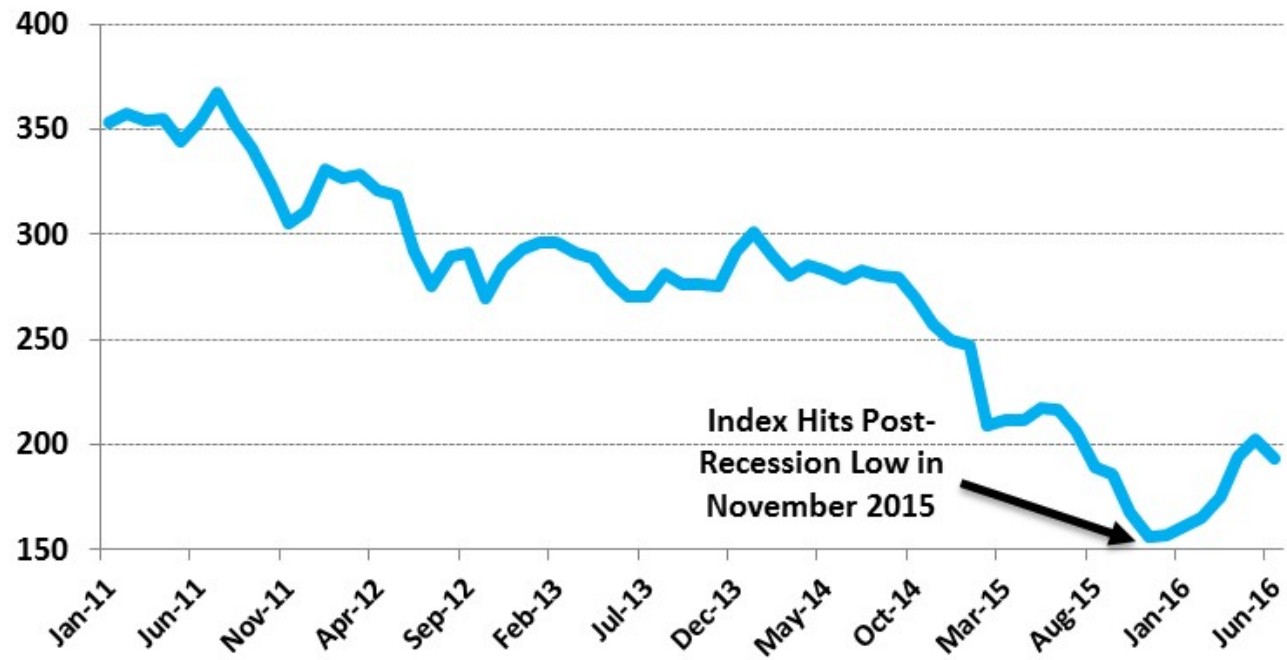
ISRI Index Hits Post-Recession Low in 4Q 2015



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ISRI Index: Jan 2011 - Jun 2016

(Jan 1998 = 100)



Scrap recycling is a commodities-based business. The ISRI Index, a weighted index of ferrous scrap, copper scrap, aluminum scrap, and recovered paper and fiber prices, fell to the lowest level since the Great Recession in November 2015.

Divergent Scrap Commodity Prices

Published Scrap Prices

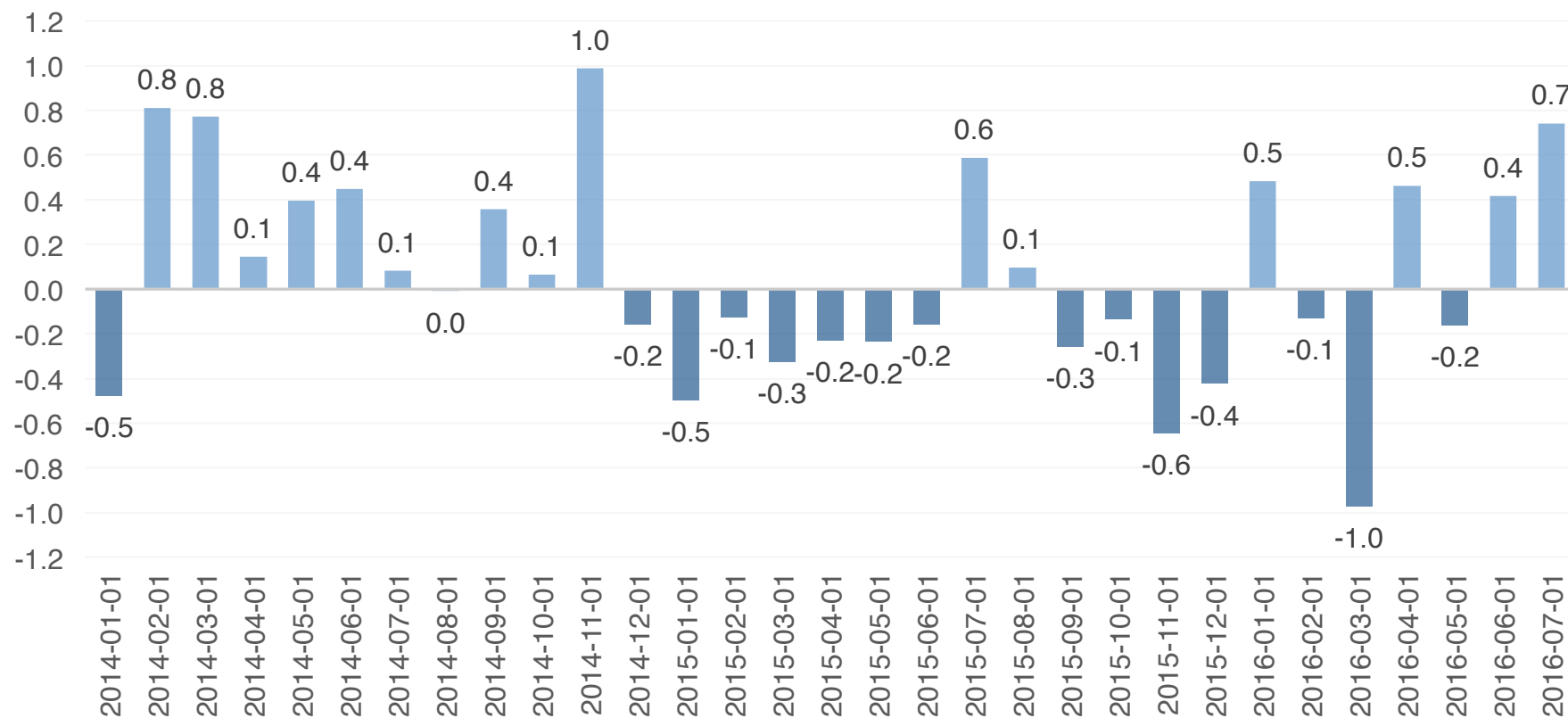
| | Last Week | Prior Week/Period | One Year Ago |
|--|-----------|--------------------|--------------|
| Ferrous (\$/gross ton, composite prices) | | | |
| No. 1 HMS | 210.17 | 210.17 | 210.83 |
| Shredded | 233.50 | 233.50 | 235.83 |
| Nonferrous (cents/lb., buying prices) | | | |
| Copper - Brass Ingot Makers | | | |
| Bare Bright | 212-213 | 213-214 | 226-228 |
| No. 1 Copper | 207-210 | 208-211 | 221-223 |
| No. 2 Copper | 191-193 | 192-194 | 201-204 |
| Aluminum - Secondary Smelters | | | |
| Old Cast | 56-58 | 56-58 | 56-58 |
| Old Sheet | 54-56 | 54-56 | 51-53 |
| Recovered Paper (\$/short ton, FOB seller's dock) | | | |
| OCC (11) | 126.67 | 114.58 (late July) | 102.50 |
| ONP (8) | 94.17 | 82.92 (late July) | 62.50 |
| Mixed Paper (1) | 73.75 | 66.67 (late July) | 44.58 |
| Plastic Scrap (cents/lb., FOB East Coast) | | | |
| HDPE Bottle Natl. Bales Curbside | 27-28 | 27-28 | 32-33 |
| PET Bottles MC Bales Curbside | 10.5-11 | 10-11 | 14.5-15 |

Sources: Scrap Price Bulletin, American Metal Market, Paper Stock Report, [PetroChemWire](#).

Uneven U.S. Industrial Production

Monthly Change in U.S. Industrial Production Jan 2014 – July 2016 (%)

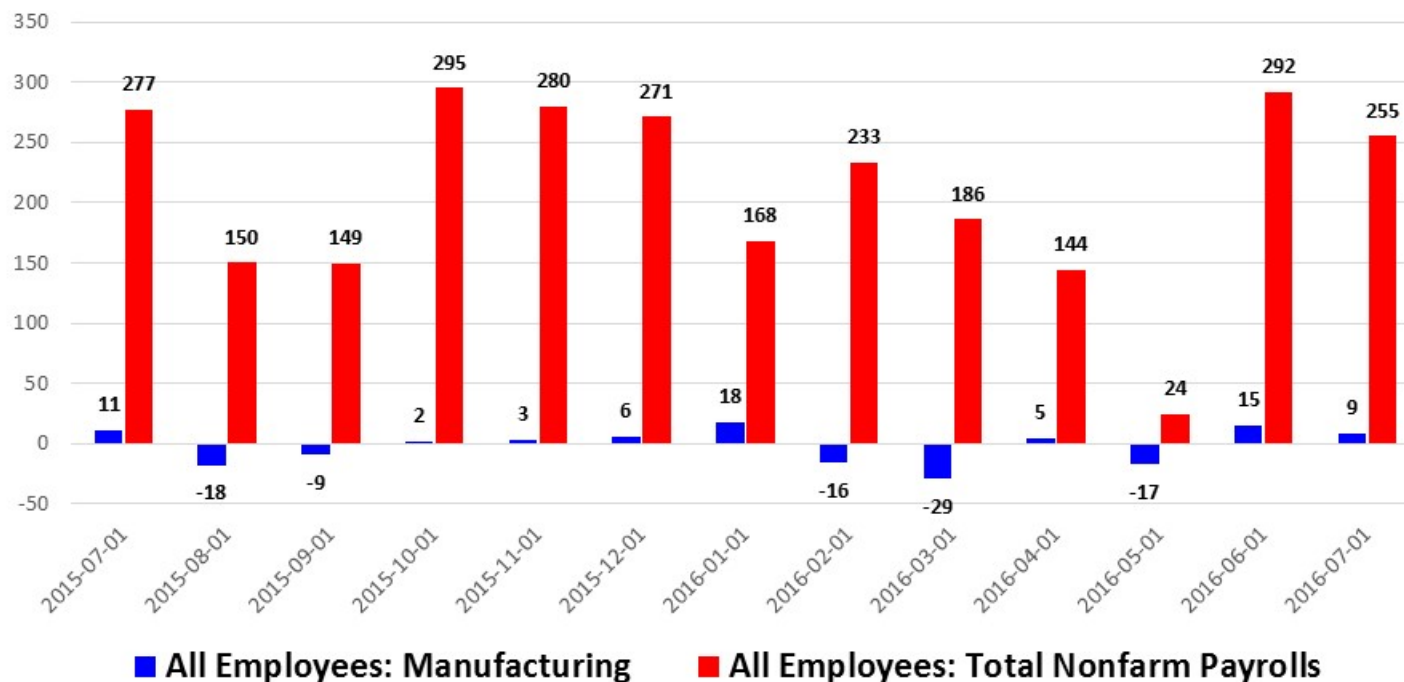
Source: U.S. Federal Reserve



Overall Job Growth, But Not for Manufacturers and Recyclers

Monthly Change in Total US Nonfarm Payrolls and Manufacturing Sector Jobs Since July 2015, (thousands of persons)

Source: Bureau of Labor Statistics



BLS reports that over the first 7 months of 2016, the economy added 1.3 million nonfarm payrolls.

Over the same period, the manufacturing sector lost 15,000 jobs. Recyclers have shed a similar number of jobs.

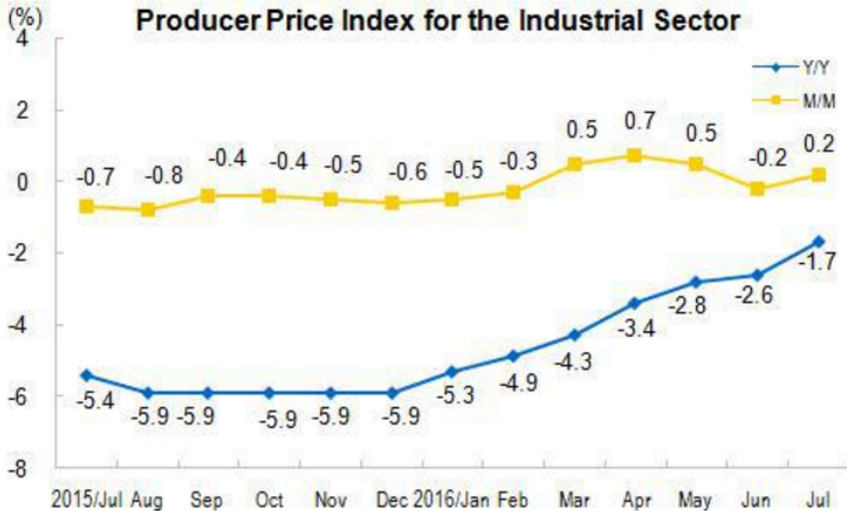
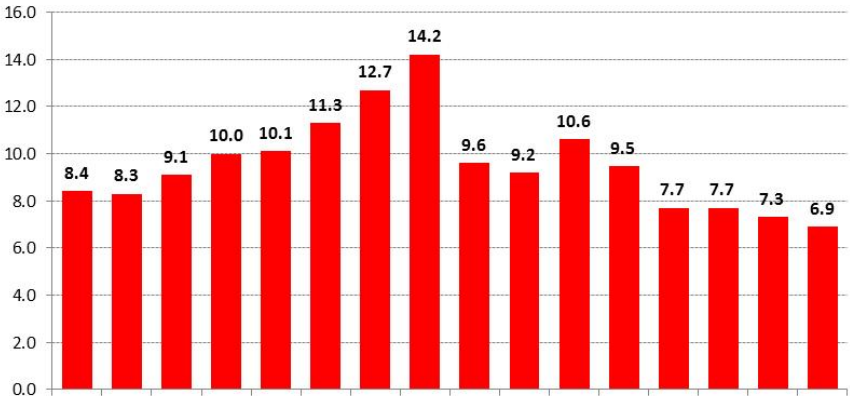
Slower Chinese Growth + Falling Prices = Deflationary Pressure and Weaker Scrap Demand



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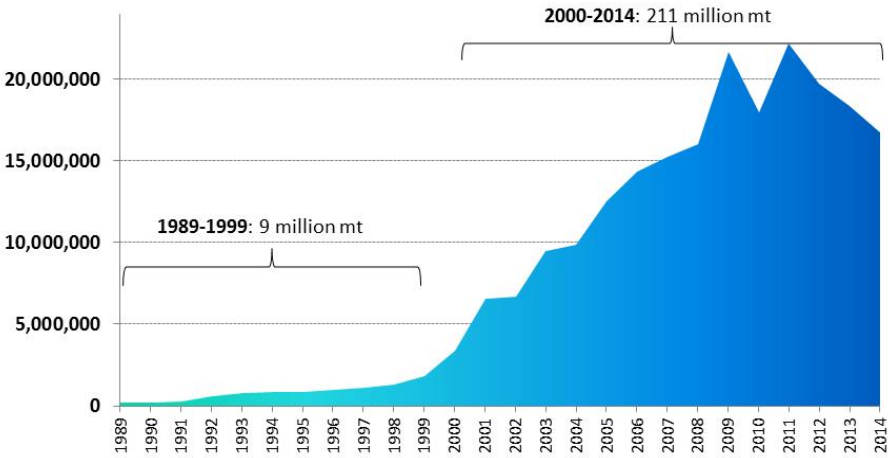
Real Annual GDP Growth in China (%), 2000-2015

Source: International Monetary Fund



Volume of Total U.S. Scrap Exports to Mainland China, 1989 - 2014 (metric tons)

Sources: US Census Bureau/US International Trade Commission

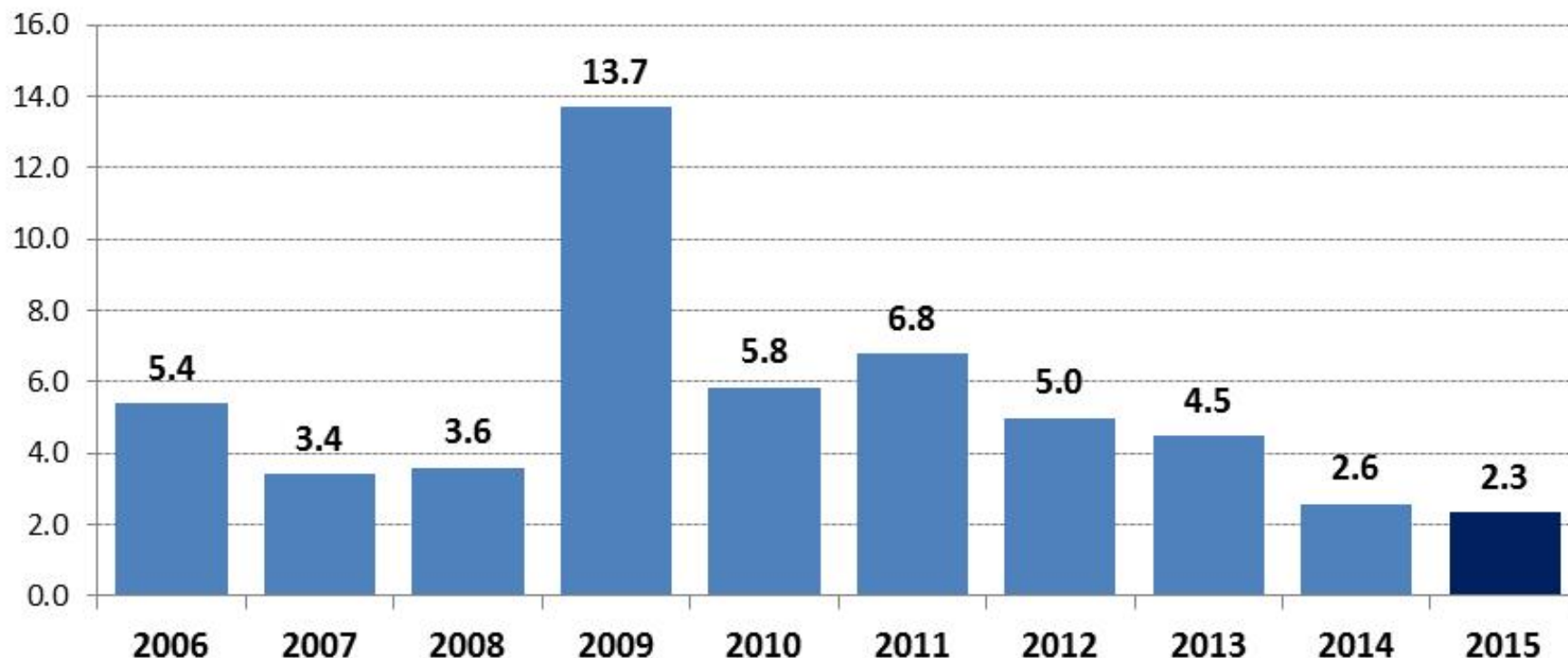


China's producer price index for industrial goods has posted year-on-year declines since March 2012 due in part to the correction in the Chinese property market.

And China Remains a Concern, Given...

Total Chinese Imports of Ferrous Scrap From All Origins, 2006 - 2015 (million metric tons)

Source: UN Comtrade Database



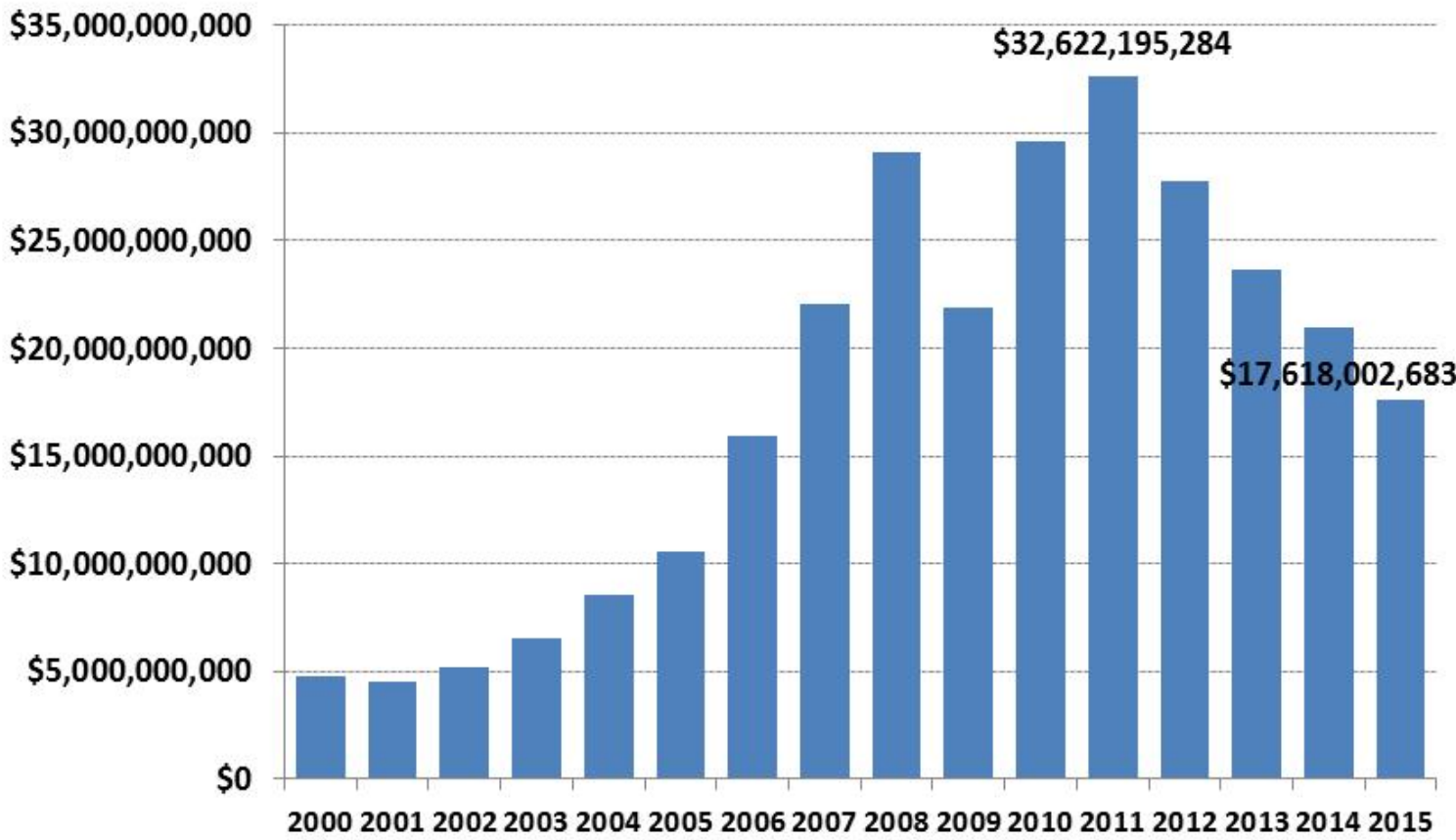
Declining Overseas Demand for U.S. Scrap: Total Scrap Export Sales (\$)



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Total U.S. Scrap Export Sales, 2000-2015 (\$)

Source: U.S. Census Bureau/U.S. International Trade Commission



Dollar Appreciation not Helping U.S. Recyclers



Recap: Scrap Industry Challenges



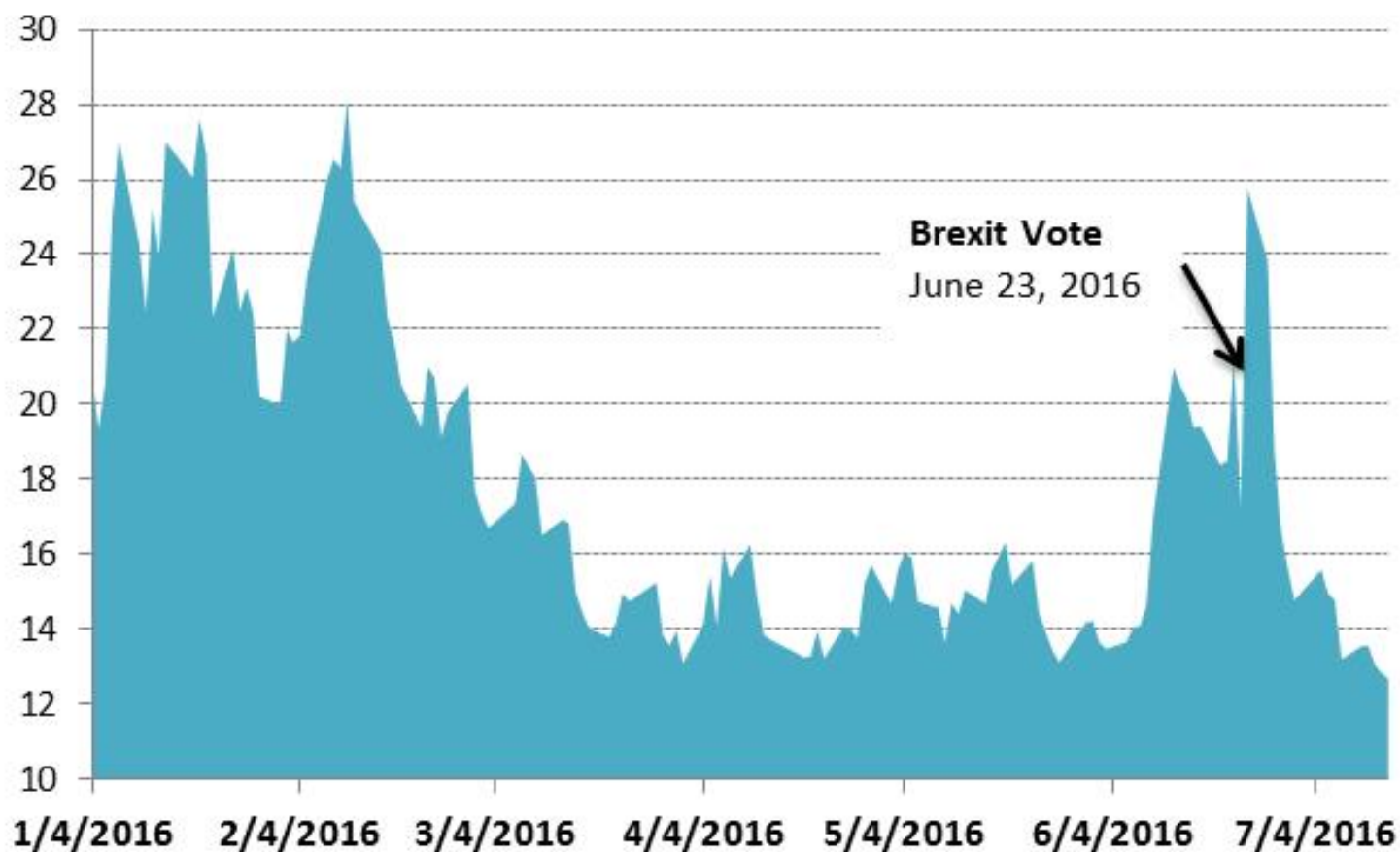
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Voice of the Recycling Industry

- Excess global production across a range of commodity markets, e.g. crude oil, iron ore, etc., weighs on prices as investors turn even more bearish on commodities.
- Stronger dollar hurting competitiveness of U.S. scrap exports/promoting imports.
- Weaker overseas scrap demand amid falling primary prices, slowdown in Chinese economic and manufacturing growth and substitution to ore and refined.
- China contributing to global deflationary pressure.
- Uneven U.S. manufacturing output across various industries and geographic regions.
- Disconnect between mostly positive macroeconomic indicators and difficult scrap market conditions widens.
- Falling commodity prices + soft manufacturing output + strong dollar + logistical & regulatory issues = Margins disappear, scrap industry consolidation.

VIX Spikes after Brexit, Then Drops Sharply

Year-to-Date CBOE Volatility Index (VIX)

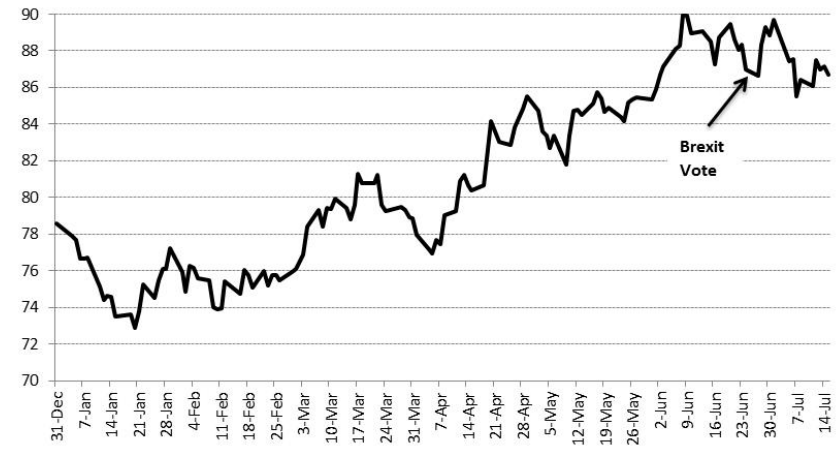


Markets Stabilizing After Brexit Vote

YTD US Dollar Index -2%



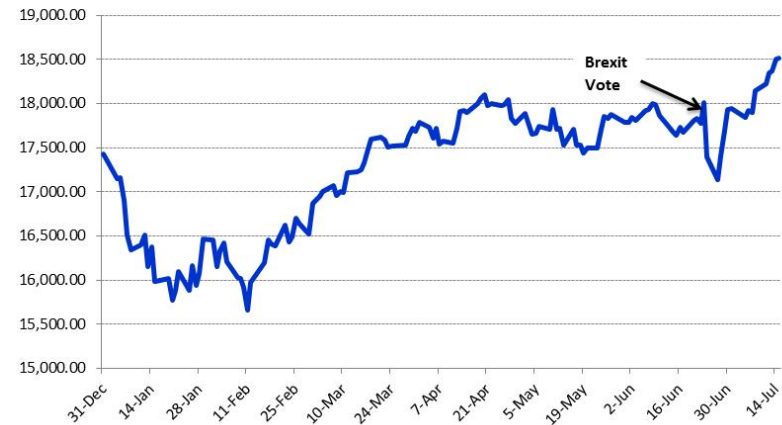
YTD Bloomberg Commodity Index +10%



YTD US 10 Year Treasury Note Yield



YTD Dow Jones Industrial Average +6%



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Iron and Steel Scrap

Iron and steel scrap, also referred to as ferrous scrap, comes from end of life products (old or obsolete scrap) as well as scrap generated from the manufacturing process (new, prime or prompt scrap). Obsolete ferrous scrap is recovered from automobiles, steel structures, household appliances, railroad tracks, ships, farm equipment and other sources.

The largest single source of obsolete ferrous scrap in the United States is used vehicle scrappage, which is closely related to new car sales. According to figures from the U.S. Bureau of Economic Analysis, light vehicle sales rose to more than 17.4 million units in 2015, the highest annual level on record. In addition to obsolete scrap, prompt scrap, which is generated from the manufacturing process, accounts for approximately half of the ferrous scrap supply.

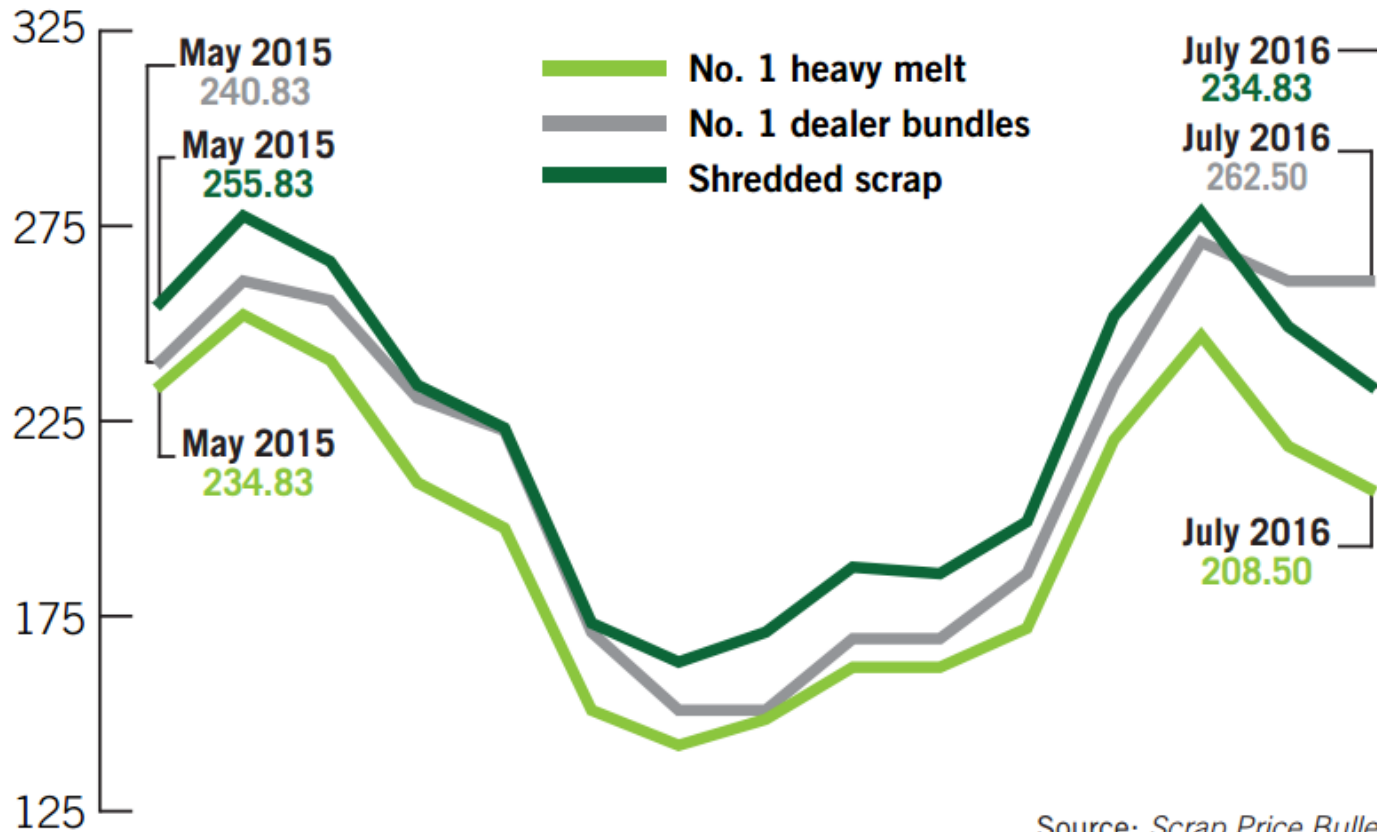


Today, ferrous scrap is the most recycled material in the United States and worldwide. In the U.S. alone, the U.S. Geological Survey estimates that 67 million metric tons of iron and steel scrap were purchased in 2015. While domestic ferrous scrap market participants have been facing heightened competition for available feedstock in recent years, expanding economic output in general and the recently improving conditions in the automotive and construction sectors in particular should bode well for future ferrous scrap supply and demand.

Ferrous Scrap Prices

Composite Prices: May 2015-July 2016

(monthly averages in dollars per gross ton)

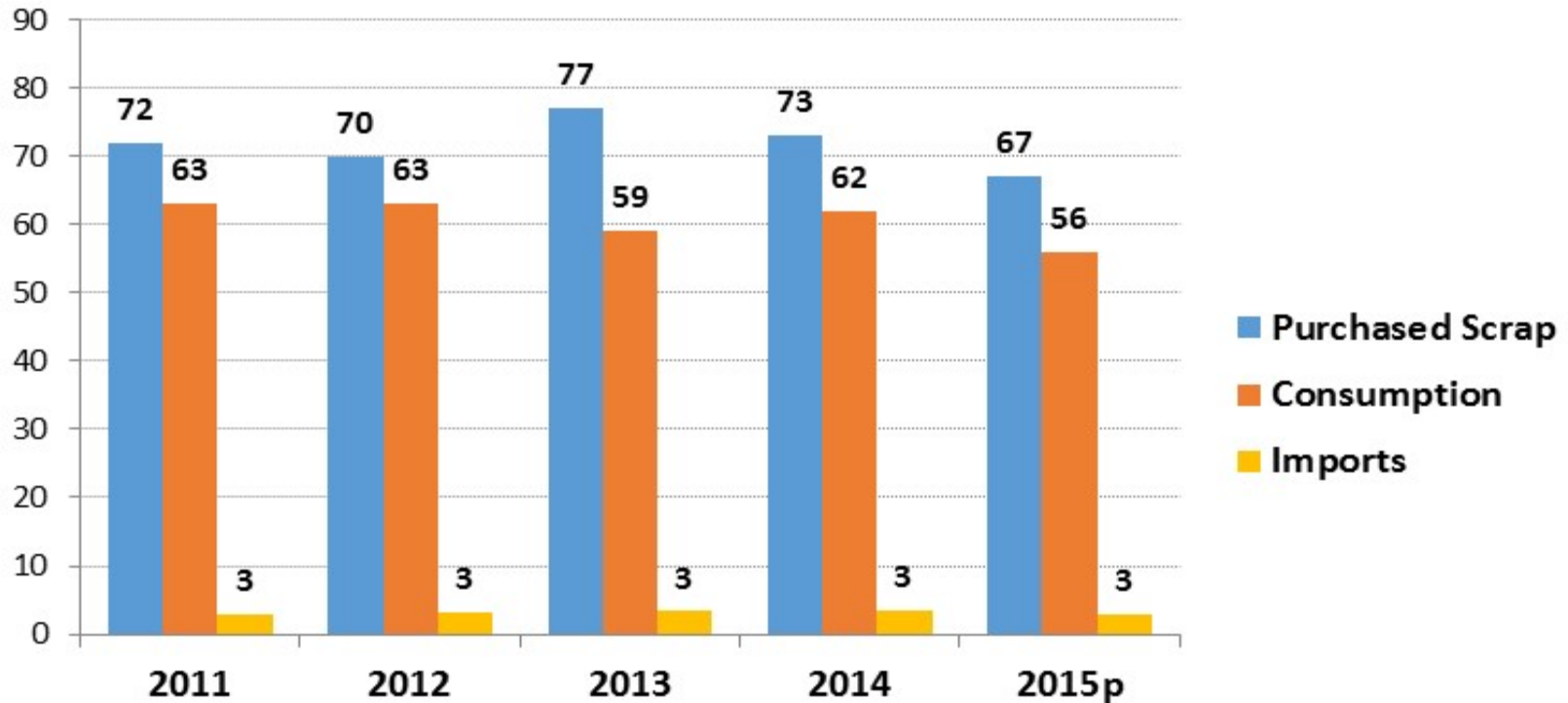


Source: Scrap Price Bulletin

Domestic Market Figures

U.S. Ferrous Scrap Purchases, Consumption, and Imports* 2011 - 2015 (million mt)

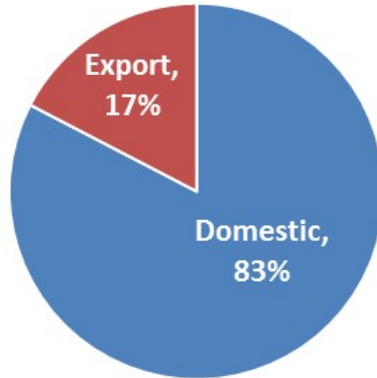
Sources: U.S. Geological Survey, U.S. Census Bureau, ISRI Estimates



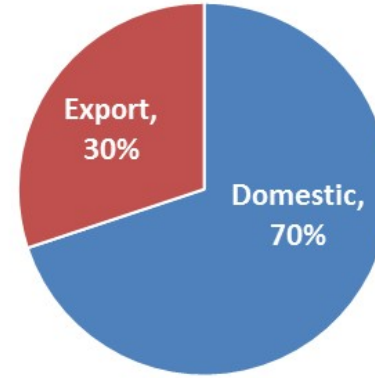
*Trade data exclude stainless steel and alloy steel scrap

Most of the Scrap Processed in the U.S. is Sold and Consumed Domestically

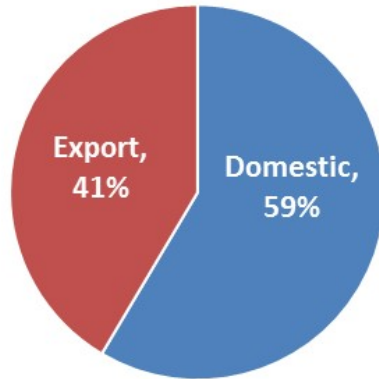
U.S. Iron and Steel Scrap



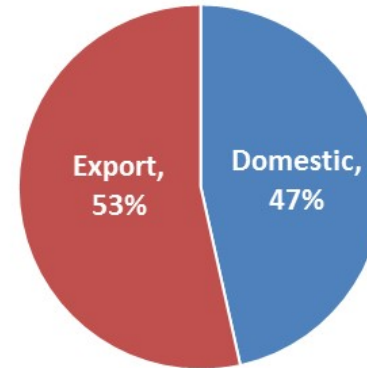
U.S. Aluminum Scrap Recovery



U.S. Recovered Paper and Fiber



U.S. Copper & Copper Alloy Scrap

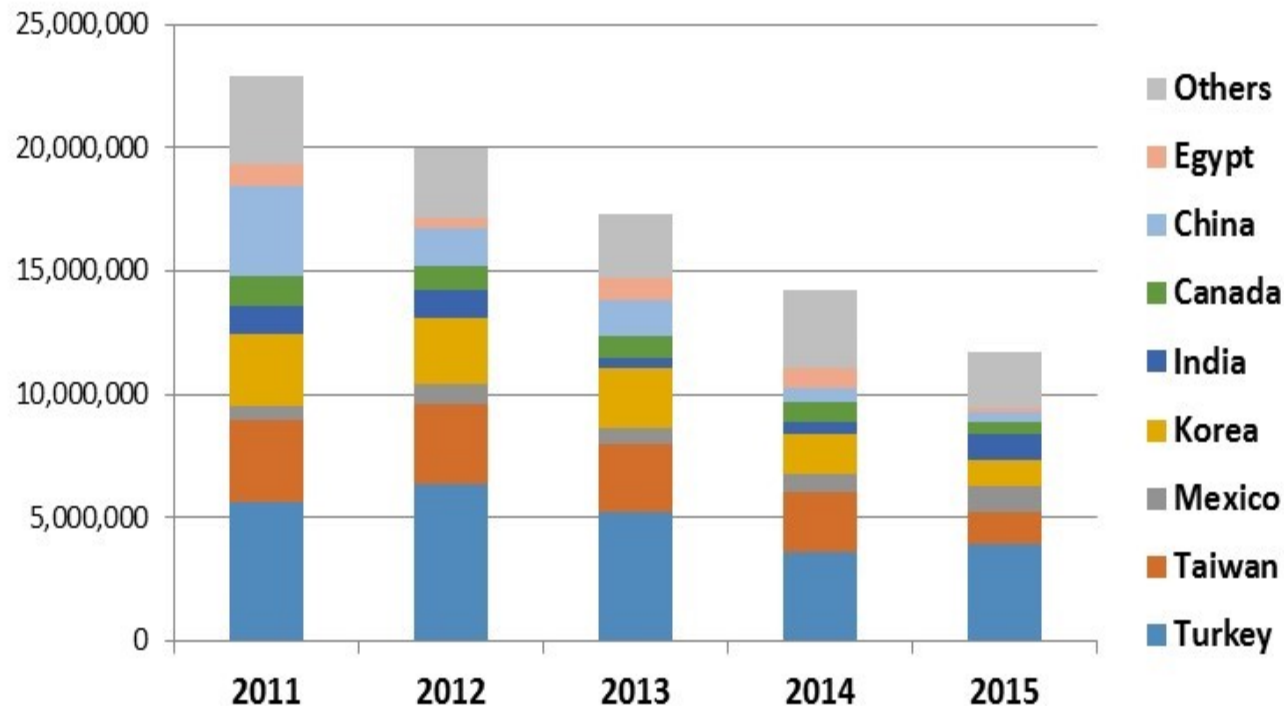


Slumping Export Demand

U.S. Ferrous Scrap Exports by Major Destination, 2011 - 2015

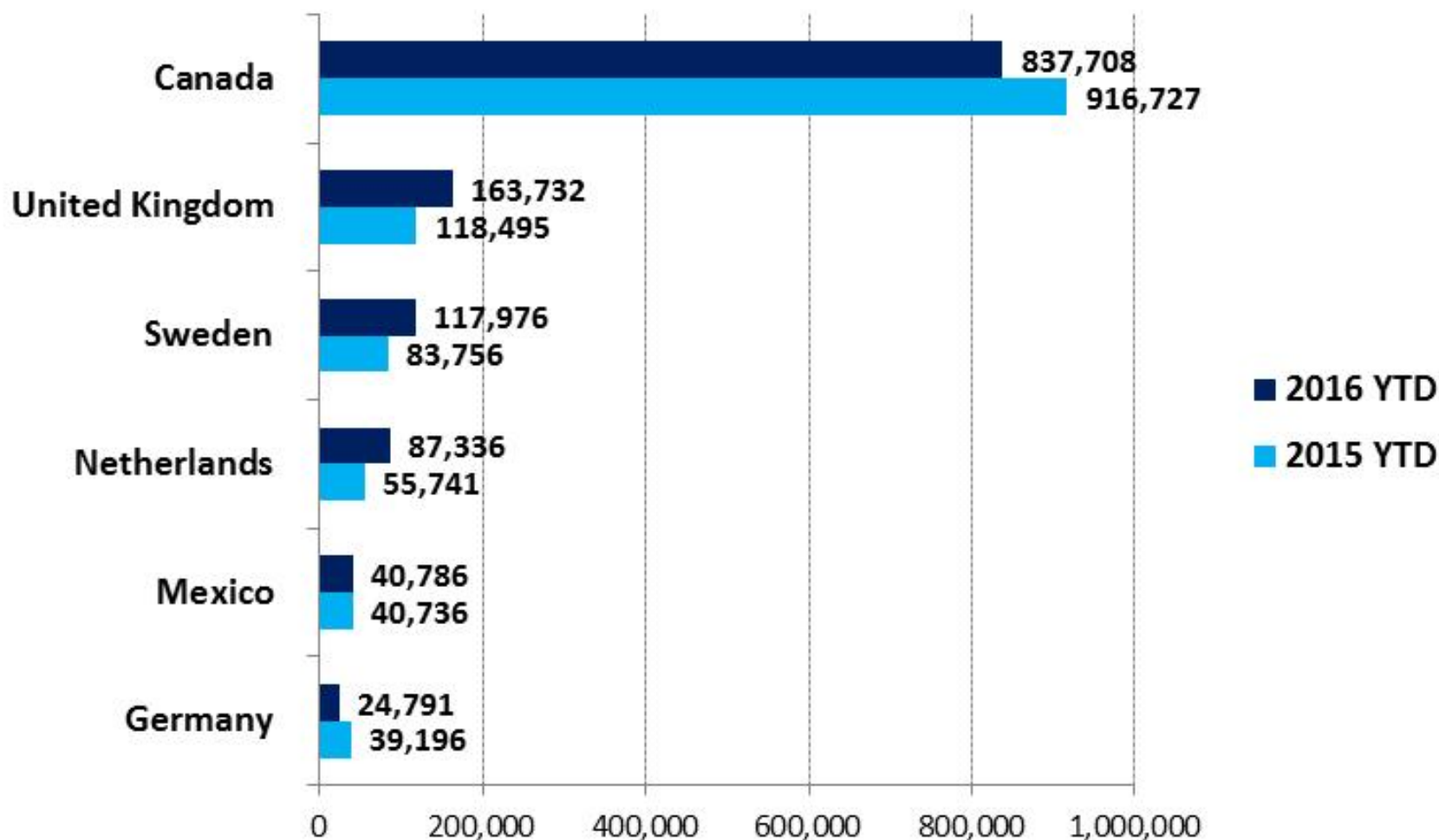
Metric tons

Sources: U.S. Census Bureau/U.S. International Trade Commission



Slower global economic growth, diminished Chinese demand for ferrous scrap imports and falling commodity prices have all impacted U.S. ferrous scrap export volumes since 2011. In the first half of 2016, U.S. ferrous scrap exports (again excluding stainless and alloy steel scrap) were down another 16% by volume to 5.1 million mt as compared to Jan-Jun 2015 and were off by a remarkable 29% year-on-year in dollar terms to \$1.2 billion.

YTD U.S. Ferrous Scrap Imports (ex-Stainless & Alloy Scrap) by Major Origin, Metric tons



Nickel and Stainless Steel

USGS figures show that 45 percent of the primary nickel consumed in the U.S. in 2015 went into stainless and alloy steel production, followed by nonferrous alloys and superalloys (43 percent), electroplating (7 percent), and other uses (5 percent). Nickel, hi-temp and stainless steel scrap comes in a variety of forms including wrought solids, clips, and turnings that are covered under ISRI specs from **Aroma** to **Zurik**. According to USGS, about 102,000 tons of nickel was recovered from purchased scrap in 2015, while 1.34 million metric tons of home and purchased stainless steel scrap were consumed in the U.S. last year.

The U.S. steel industry produced 1.81 million tons of austenitic (nickel-bearing) stainless steel in 2015—up by 8% from 2014, and 53% greater than the output of 1.18 million tons in 2009, the last year of the recession. Global production of austenitic stainless steel was at an all-time high in 2015, although growth rates declined; China produced a record-high 17.6 million tons, accounting for more than one-half of global output. ISSF reported total stainless steel melt shop production decreased by 0.3% year-on-year to 41.5 million metric tons in 2015.

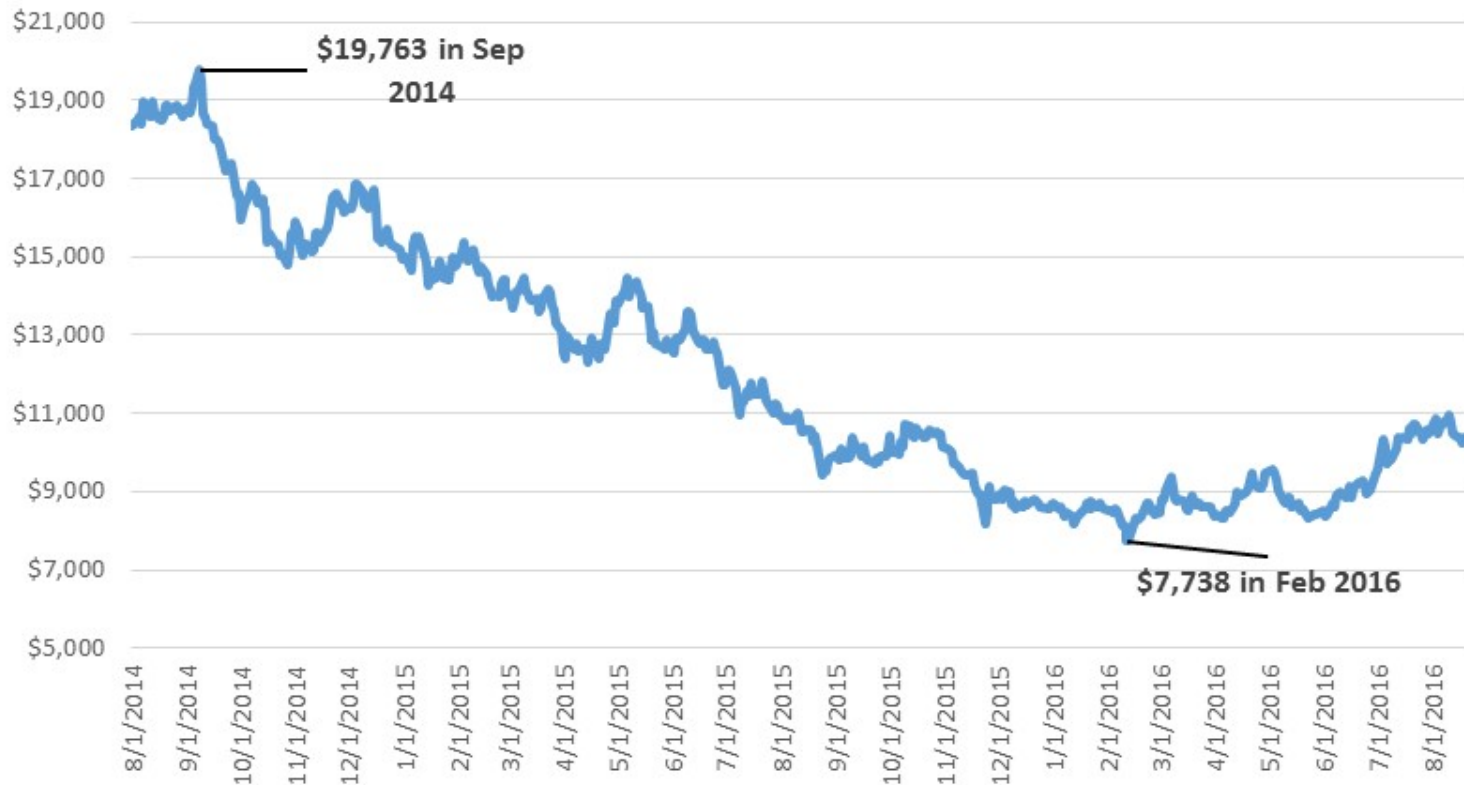
| The U.S. Nickel Industry | | | |
|--------------------------|----------------------------------|-------------------------|------------------------------|
| | Nickel Recovered from Scrap (mt) | Total Nickel Usage (mt) | Stainless Scrap Exports (mt) |
| 2011 | 88,800 | 213,000 | 646,000 |
| 2012 | 92,400 | 218,000 | 623,000 |
| 2013 | 88,800 | 200,000 | 643,000 |
| 2014 | 102,000 | 239,000 | 548,000 |
| 2015 | 101,900 | 226,000 | 514,000 |

Nickel Prices Improving Since 1Q 2016...

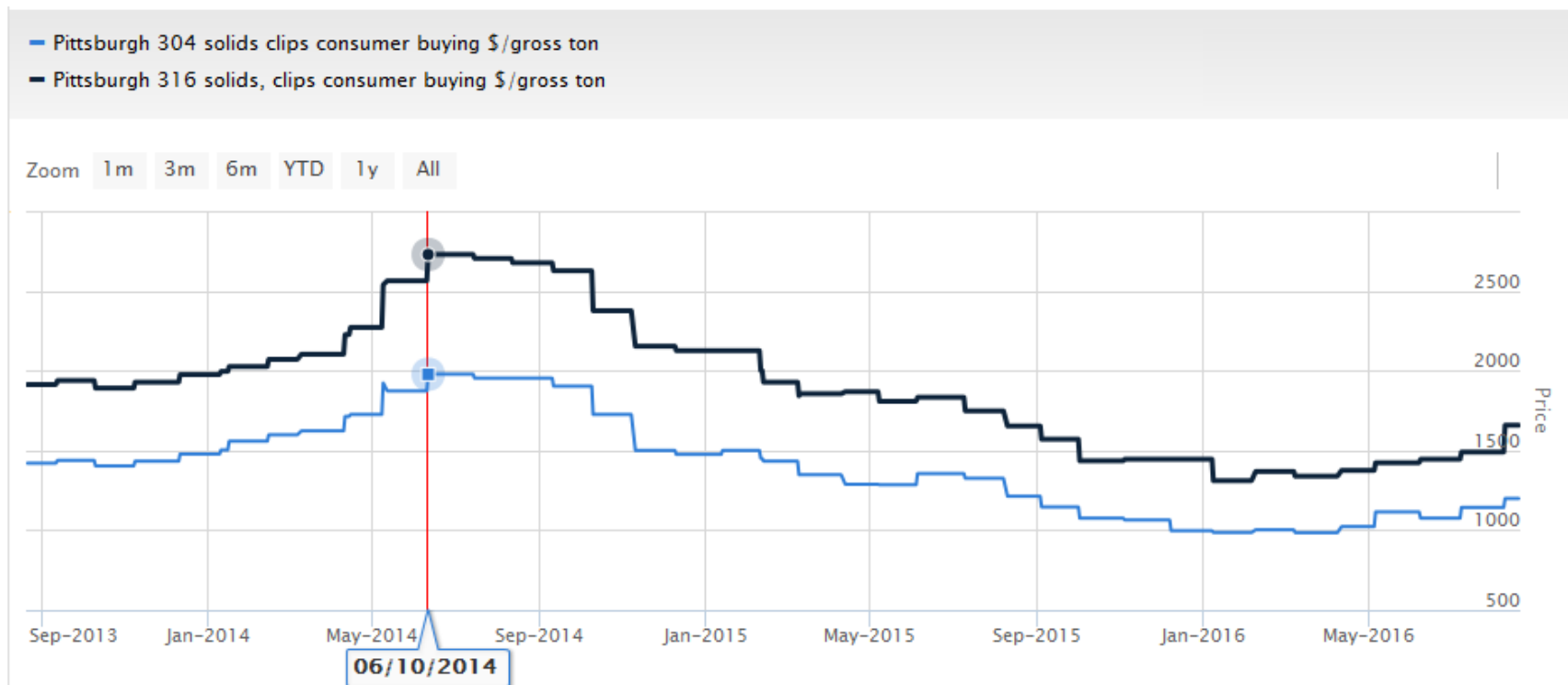
LME 3-mo. Official Nickel Price (\$/mt)

Aug 2014 - Aug 2016

Sources: LME/Fastmarkets



Stainless Steel Scrap Prices Following Nickel

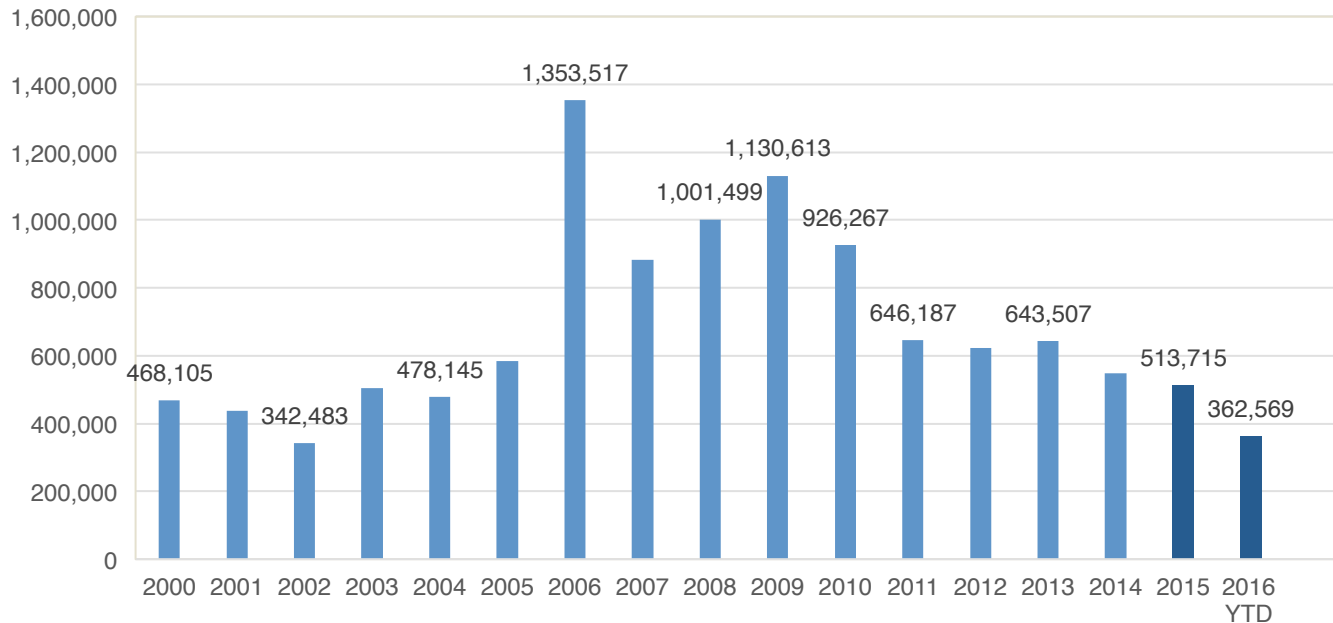


According to AMM, scrap prices for 304 solids in Pittsburgh fell from \$1,977.50 per gross ton in June 2014 to \$1,198.50 per gross ton in August 2016.

Trade Flows: U.S. Stainless Scrap Exports

Annual U.S. Stainless Steel Scrap Imports 2000-YTD2016 (in metric tons)

Sources: U.S. International Trade Commission



According to U.S. Census Bureau data, U.S. stainless steel scrap exports peaked in 2006 at just over 1.35 million metric tons. Between 2006 and 2015, stainless scrap exports declined 62 percent to less than 515,000 tons in 2015. Exports got off to a better start in the first half of 2016 (+44%) due to a spike in shipments to Canada and firm demand from India and Taiwan.

U.S. Stainless Scrap Export Market Gains and Losses Trade Flows since 2006



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| Country | 2006 (metric tonnage) | 2015 (metric tonnage) | % Change | Vol. Change (metric tonnage) |
|----------------|--------------------------|--------------------------|----------|---------------------------------|
| Korea | 815,175 | 29,914 | -96% | -785,261 |
| Finland | 49,872 | 7,775 | -84% | -42,097 |
| China | 184,438 | 150,594 | -18% | -33,844 |
| United Kingdom | 19,704 | 511 | -97% | -19,193 |
| Bangladesh | 16,139 | 0 | -100% | -16,139 |
| Austria | 15,108 | 501 | -97% | -14,607 |
| Italy | 13,716 | 340 | -98% | -13,376 |
| Israel | 8,901 | 24 | -100% | -8,877 |
| Canada | 32,112 | 24,779 | -23% | -7,333 |
| Thailand | 7,986 | 2,390 | -70% | -5,596 |
| Malaysia | 1,124 | 2,414 | 115% | 1,290 |
| Belgium | 1,153 | 2,610 | 126% | 1,457 |
| Sweden | 49 | 1,725 | 3420% | 1,676 |
| Mexico | 97 | 1,856 | 1813% | 1,759 |
| Japan | 14,032 | 19,867 | 42% | 5,835 |
| Spain | 9,166 | 17,940 | 96% | 8,774 |
| India | 48,370 | 57,251 | 18% | 8,881 |
| Hong Kong | 2,299 | 15,673 | 582% | 13,374 |
| Taiwan | 94,009 | 115,969 | 23% | 21,960 |
| Pakistan | 1,902 | 53,694 | 2723% | 51,792 |

Nonferrous metals, including aluminum, copper, lead, nickel, tin, zinc, and others, are among the few materials that do not degrade or lose their chemical or physical properties in the recycling process. As a result, nonferrous metals have the capacity to be recycled an infinite number of times.

While in terms of volume, nonferrous scrap made up just 6 percent of the total quantity of material recycled in the United States last year, by value ISRI estimates that nonferrous metal scrap — including highly valued precious metal scrap — accounted for more than half of total U.S. scrap recycling industry earnings in 2015. More than 8 million metric tons of nonferrous scrap valued at approximately \$32 billion was processed in the United States last year from a wide array of consumer, commercial, and industrial sources: everything from copper and precious metal circuitry in electronic devices, to soft-drink containers, automobile batteries and radiators, aluminum siding, airplane parts, and more.

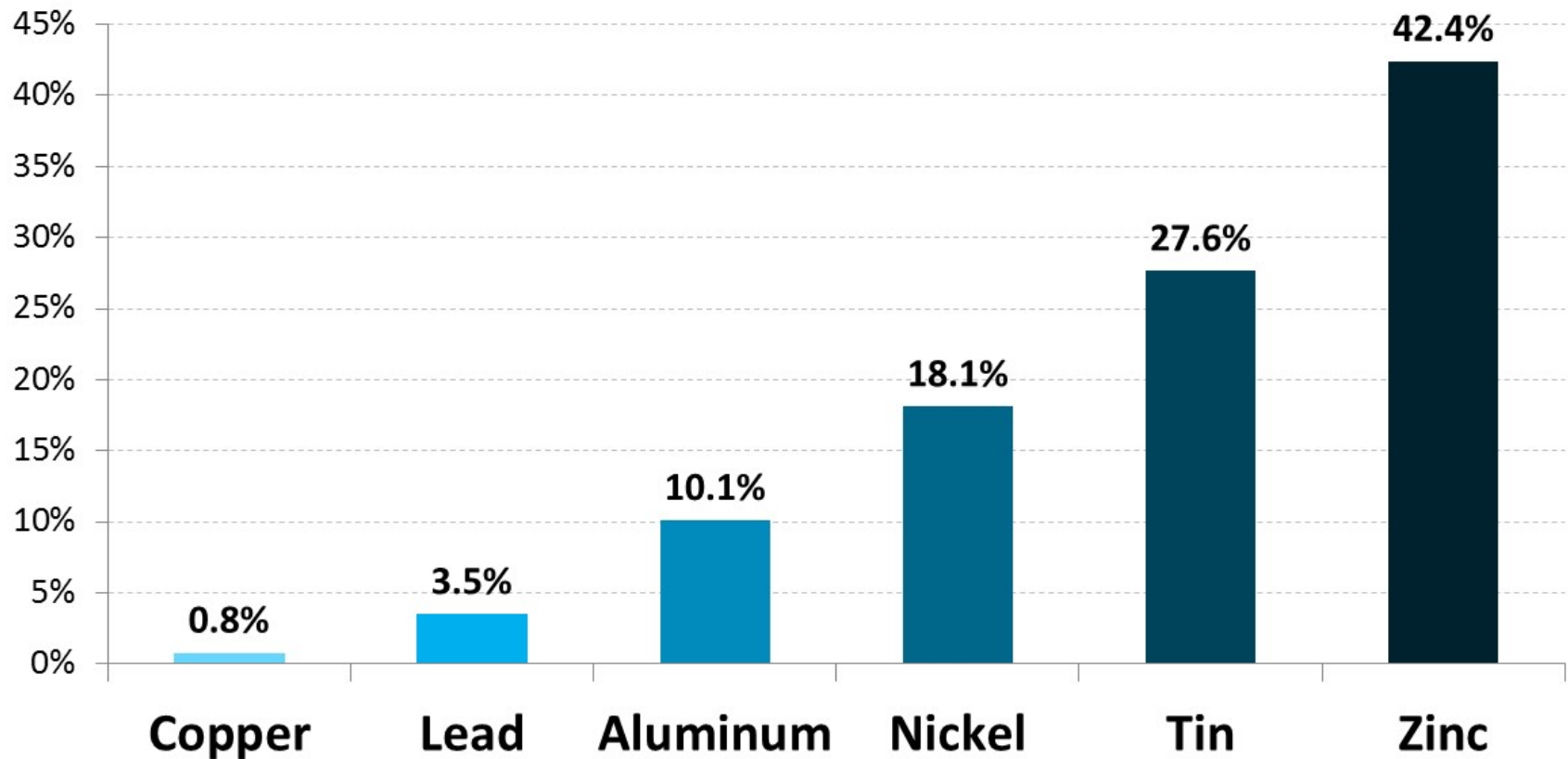
Nonferrous scrap is then consumed by secondary smelters, refiners, ingot makers, foundries and other industrial consumers in the U.S. and more than 70 countries worldwide. These consumers rely on nonferrous scrap as a competitive, environmentally-friendly and energy-efficient input to make brand new products, continuing the nonferrous metal life cycle. The BIR estimates that almost 40 percent of the world's demand for copper is met using recycled material, while more than 80 percent of the zinc available for recycling is eventually recycled.

Year-to-Date Nonferrous Metal Prices



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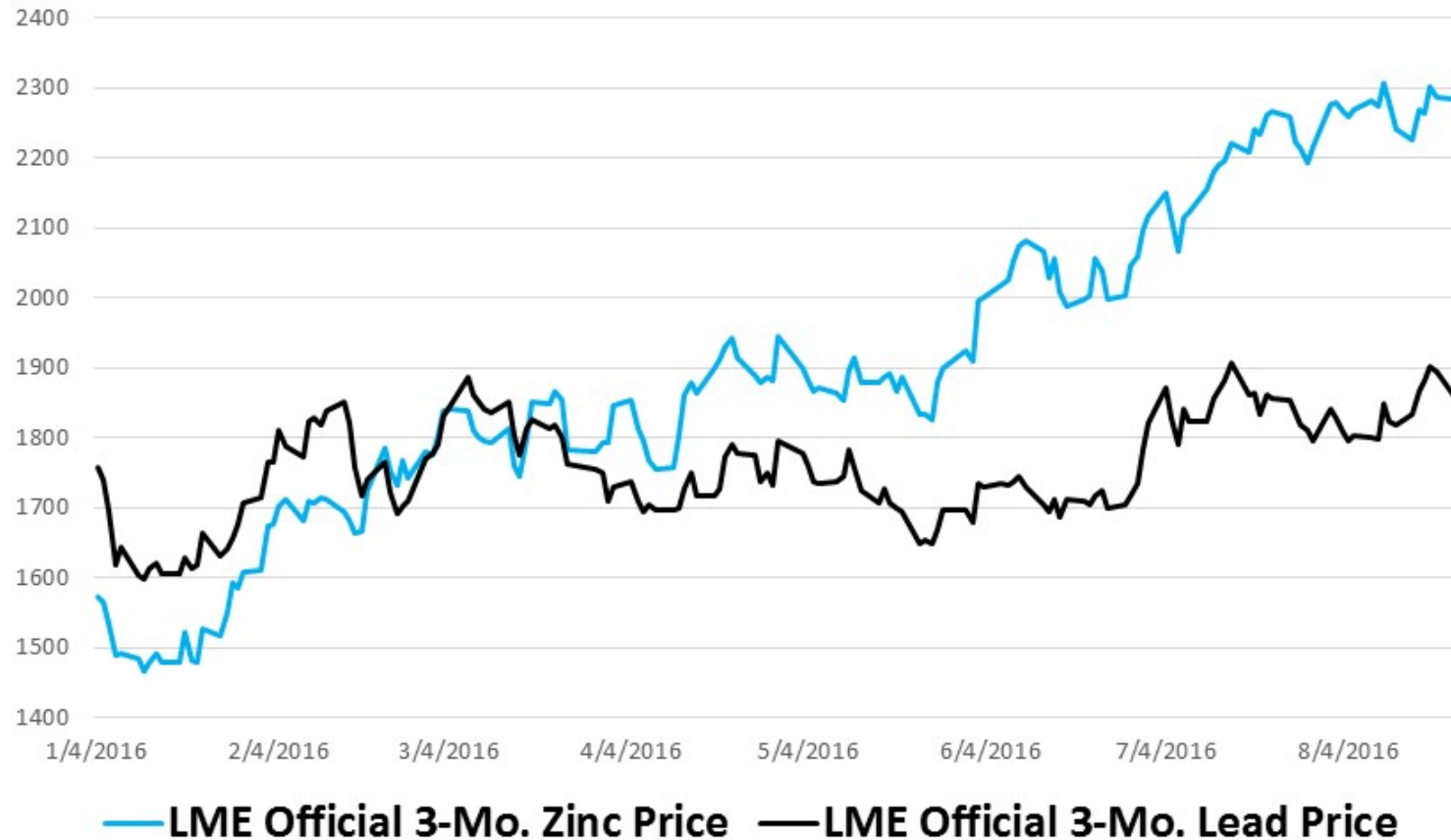
Change in LME Official 3-Mo. Nonferrous Metal Asking Prices from Dec 31, 2015 - Aug 23, 2016



- According to preliminary data from the International Lead Zinc Study Group, the global market for refined zinc metal was in supply deficit of 138,000 metric tons in the first half of 2016.
- ILZSG reports that a 6.7% drop in world zinc mine production and 4.2% decline in refined zinc metal production were met by a 7.1% increase in Chinese zinc metal usage.
- Reuters reports that “China's huge zinc smelting industry has slashed its fees for turning ore concentrates into refined metal by 20 percent as competition for dwindling global mine output heats up... The move could signal an impending squeeze in refined zinc supplies and a further run-up in prices that have already gained 40 percent this year, because smelters typically lower their treatment charges (TCs) to attract raw material when ore supplies decline.
- Mined zinc production is down this year in Australia, India, Ireland and Peru.
- The premium of the zinc price over sister metal lead rose to nearly \$500 last week in August, the strongest premium since 2007.
- ILZSG reports the global lead market was in a supply surplus of 37,000 mt in Jan-Jun 2016.

YTD Zinc and Lead Prices

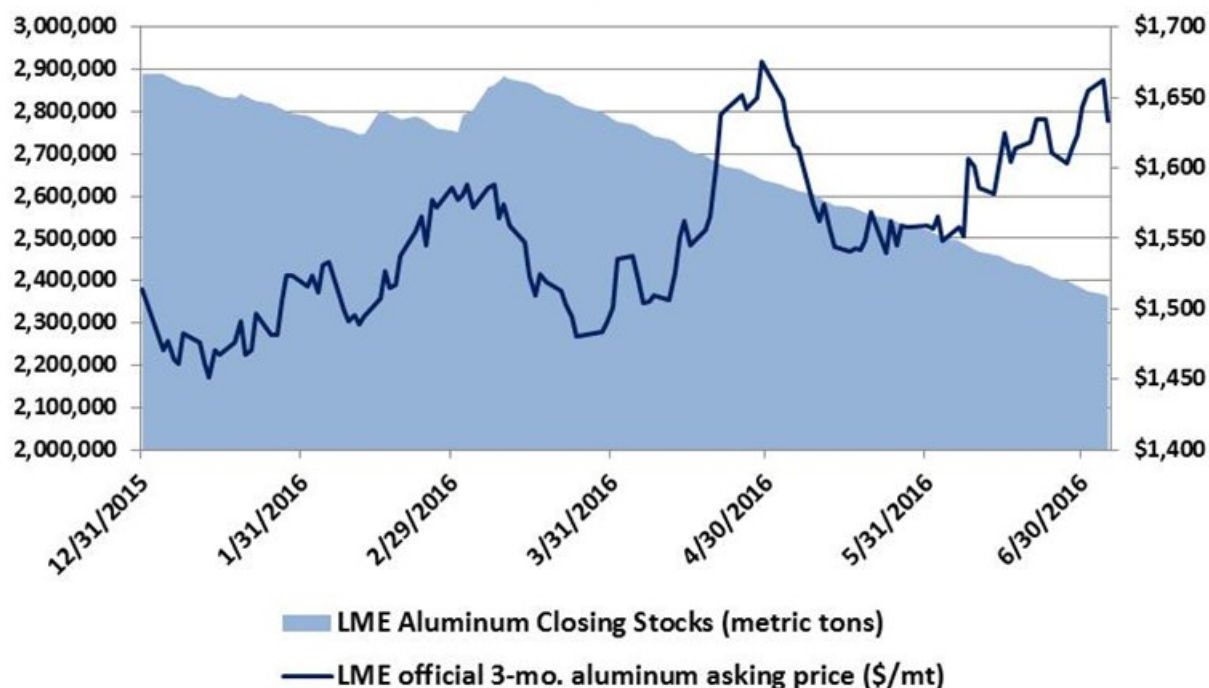
YTD LME Official 3-mo. Lead and Zinc Prices (\$/mt)



- Even as U.S. physical aluminum market premiums have dropped to multi-year lows, primary aluminum prices at the LME have shown greater resilience amid falling stocks levels. LME prices are up 10% YTD while LME closing aluminum stocks have dropped by 660,000 metric tons since the end of last year.
- Data from the International Aluminium Institute show Chinese primary aluminum production declined from 12.8 million metric tons during Jan-May 2015 to 12.4 million metric tons during Jan-May 2016, but market participants remain concerned about excess Chinese production capacity, especially if prices continue to climb higher, despite announced capacity cutback plans from a number of major Chinese smelters.
- Preliminary Aluminum Association estimates indicate that aluminum demand in the United States and Canada (shipments by domestic producers plus imports) totaled an estimated 13,329 million pounds through the first half of 2016, up 1.9 percent over the same period last year. Demand for semi-fabricated (mill) products totaled 9,311 million pounds, down four-tenths of one percent. Apparent consumption (demand less exports) in domestic markets totaled an estimated 11,745 million pounds, up seven-tenths of one percent year-to-date.

LME Aluminum Prices and Stocks

Year-to-Date LME Official 3-mo. Aluminum Asking Prices and Closing Aluminum Stocks



The London Metal Exchange announced plans to freeze maximum rental rates for five years.

Under the proposal, the exchange would set the initial schedule of warehouse rents and free-on-truck (FOT) charges by calculating the average of the highest published charges for the years 2015-16 and 2016-17.

A set of charges would be set for each metal and each country. The LME has previously said that the average stock-weighted increase in rents this year was 7 percent, against 3 percent in the previous two years. FOT charges rose by 9 percent, up from 2 percent for the past two years.

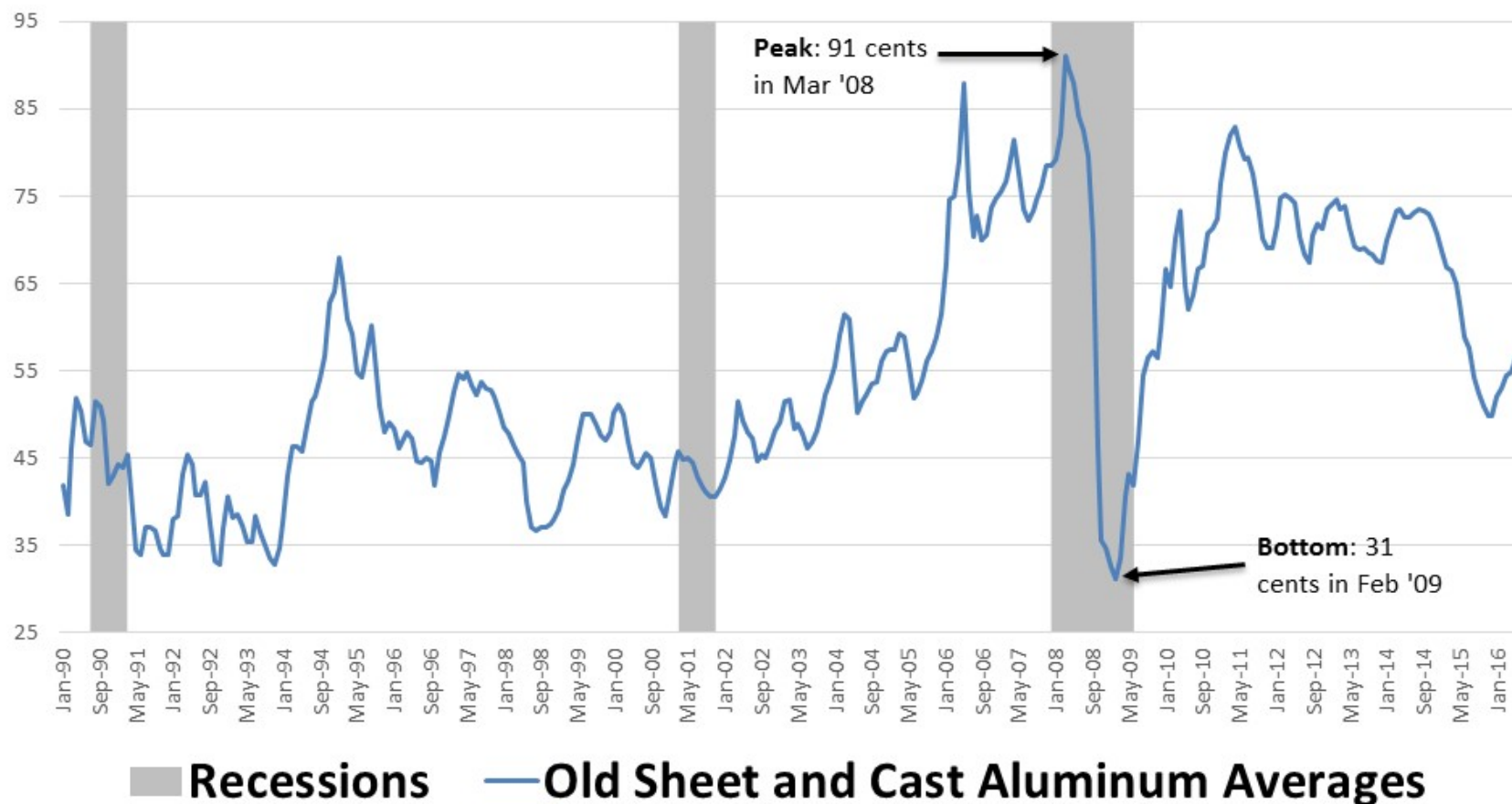
The exchange, the world's oldest and largest market for industrial metals, added that once the freeze ended, rates would rise annually based on the consumer price index.

The LME launched a consultation on the proposal, which close on Aug. 19, with plans to publish its conclusions by the end of September.

Source: Reuters

Aluminum Scrap Prices in Historical Perspective

Average Monthly Old Aluminum Sheet and Cast Prices (cents/lb.) and U.S. Recessions, Jan 1990 - Jun 2016



Aluminum Scrap Consumption in the U.S.

Of the more than 3.4 million tons of aluminum recovered from purchased scrap in the United States late year, USGS estimates that about 54 percent came from new (manufacturing) scrap and 46 percent from old scrap (discarded aluminum products). The aluminum recovered from old scrap, such as aluminum cans and other obsolete products was equivalent to about 30 percent of total U.S. apparent consumption of aluminum, according to the USGS figures.

By type of consumer, the government statistics show that secondary smelters, which use aluminum scrap to create a variety of new aluminum and aluminum alloy shapes including ingots, sows, and other products, were the largest consumers of domestically purchased aluminum scrap last year, recovering over 1.68 million metric tons of aluminum by metallic content. The next largest consumers of aluminum scrap in 2015 (in order) were independent mill fabricators (1.67 million metric tons), foundries (103,000 metric tons), and other consumers (3,000 metric tons).

U.S. Aluminum Scrap Consumption by Consumer Type, 2015
(thousand mt, metallic content)



- According to ICSG data, the global refined copper market posted a deficit of 65,000 tons in May, bringing the year-to-date deficit to 222,000 tons, as compared to a deficit of 39,000 tons in the first 5 months of 2015.
- World refined copper production is estimated to have increased by about 3.5% (330,000 t) in the first 5 months of 2016 compared with refined production in the same period of 2015: primary production was up by 3% and secondary production (from scrap) was up by 5%. The main contributor to growth was China (+7%).
- In the first five months of 2016, world apparent refined usage is estimated to have increased by around 5% (510,000 t) compared with that in the same period of 2015 mainly due to strong Chinese apparent demand. Chinese apparent demand increased by around 12% based on a 22% increase in net imports of refined copper according to ICSG data.
- The US has opened a new front with a complaint to the World Trade Organization (WTO) about Chinese export duties on antimony, cobalt, **copper**, graphite, **lead**, magnesia compounds, talc, tantalum and **tin**. Duties on these exports range from 5-20% and, according to the Office of the U.S. Trade Representative (USTR), "disadvantage U.S. producers by raising the prices of these raw materials for downstream manufacturers outside of China." (*Reuters*)

Copper Scrap Use in the U.S.

According to the U.S. Geological Survey, in 2015 old scrap provided 160,000 metric tons of copper and purchased new scrap – derived from fabricating operations – contributed 670,000 metric tons of contained copper. Major consumers of copper and copper alloy scrap in the United States last year included brass mills (79 percent), smelter, refineries and ingot makers (15 percent) and chemical plants and miscellaneous manufacturers (6 percent).

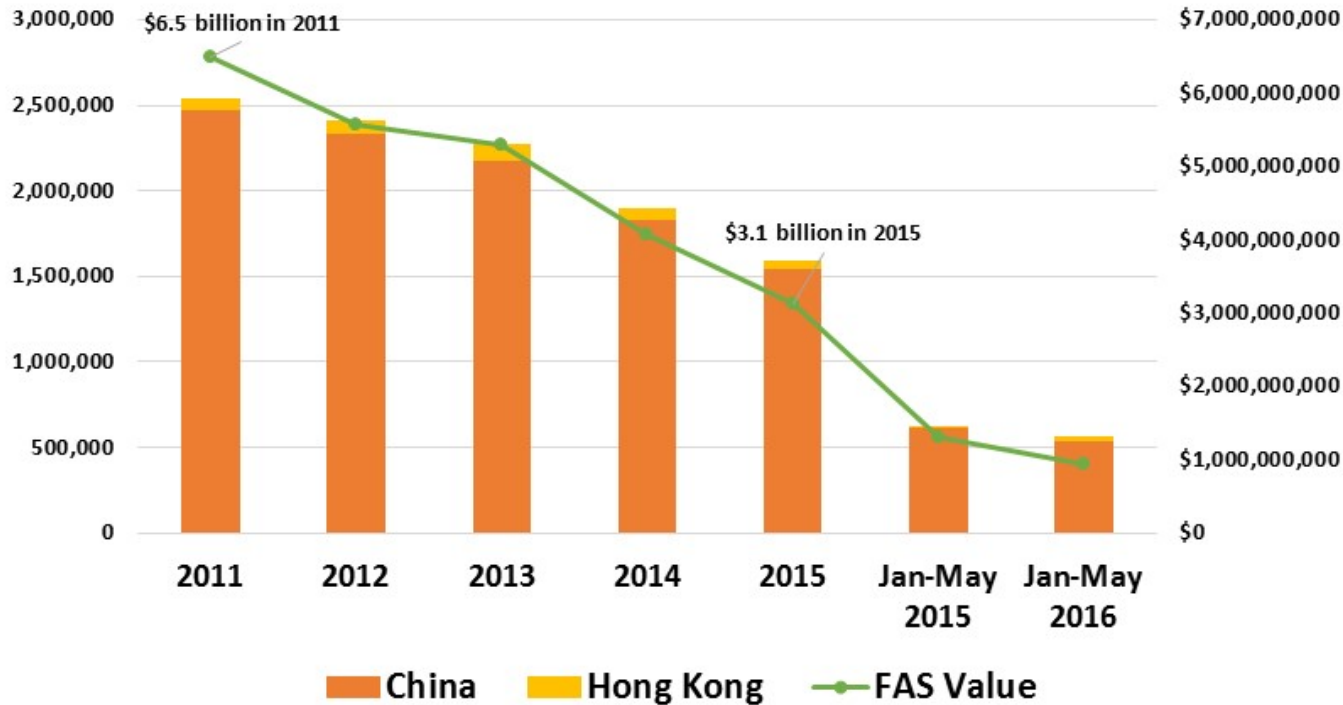
In 2015, ISRI estimates that copper scrap usage in the United States represented 34 percent of total U.S. apparent consumption of refined copper. Globally, the International Copper Study Group has estimated world copper recycling input rates of between 33-35 percent in recent years, while the overall recycling efficiency rate (the efficiency with which old and new scrap are collected and recycled) has regularly exceeded 60 percent. The Bureau of International Recycling estimated that global consumption of copper scrap exceeded 10 million metric tons in 2011, although more recent data from ICSG indicate global copper scrap consumption of less than 9 million metric tons per year.

| The U.S. Copper Industry | | | |
|--------------------------|----------------------------------|-------------------------|---------------------------|
| | Copper Recovered from Scrap (mt) | Total Copper Usage (mt) | Copper Scrap Exports (mt) |
| 2011 | 780,000 | 2,380,000 | 1,243,000 |
| 2012 | 820,000 | 2,420,000 | 1,189,000 |
| 2013 | 810,000 | 2,410,000 | 1,155,000 |
| 2014 | 820,000 | 2,380,000 | 1,045,000 |
| 2015 | 830,000 | 2,450,000 | 954,000 |

Nonferrous Scrap Exports to China + Hong Kong

U.S. Exports of Major Nonferrous Scrap Metals to Mainland China + Hong Kong, 2011 - YTD 2016 (metric tons and US\$)

Sources: U.S. Census Bureau/U.S. International Trade Commission



Major US NF Scrap
Exports to China + HK
by **volume**:

2011: 2.5 million tons

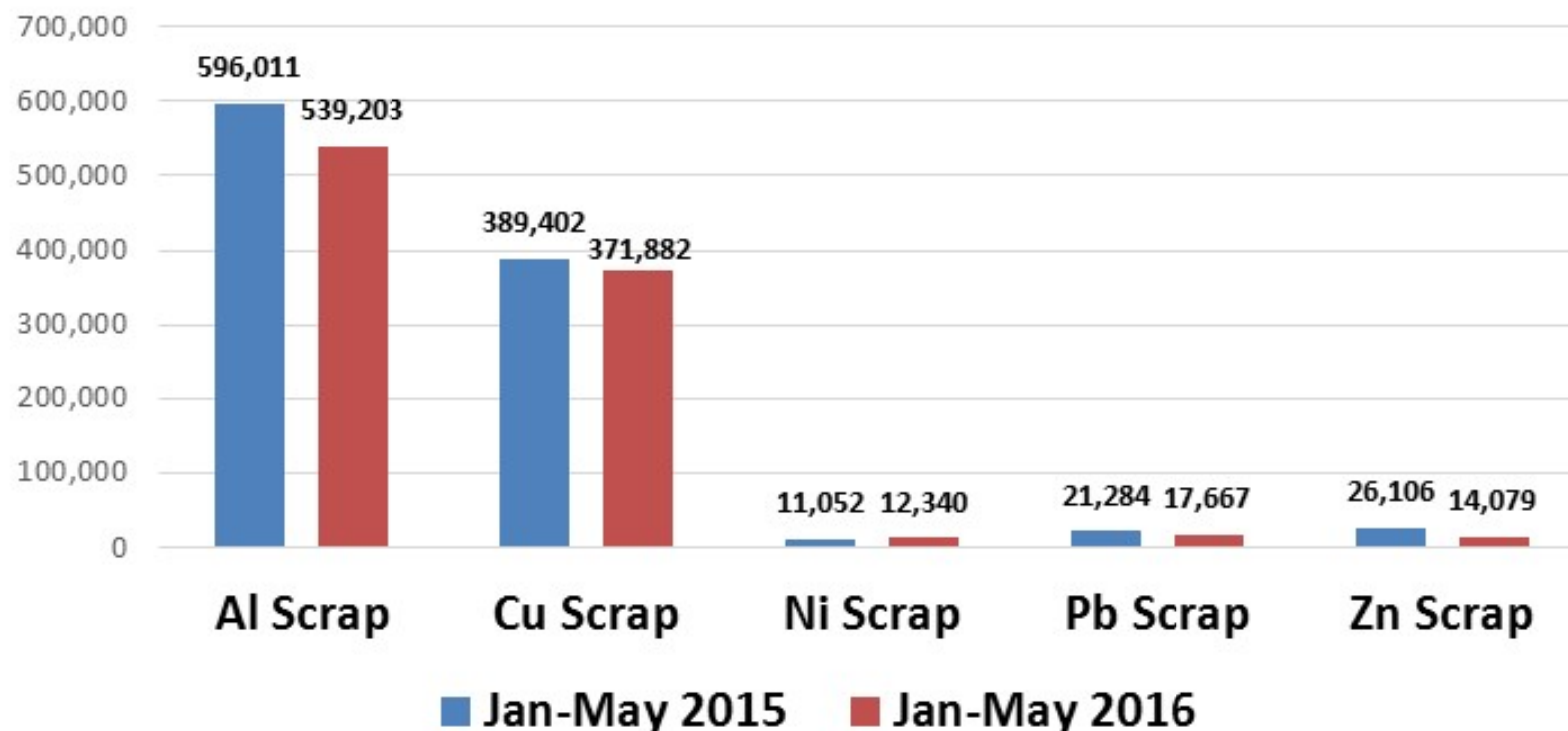
2015: 1.6 million tons

YTD 2016: -10%

YTD U.S. Nonferrous Scrap Exports by Metal

Year-to-Date 2016 U.S. Nonferrous Scrap Exports, Jan-May 2016 vs. Jan-May 2015 (metric tons)

Sources: U.S. Census Bureau/U.S. International Trade Commission



YTD Aluminum Scrap Export Market Gains

| Country | 2015 YTD | 2016 YTD | Volume CHG | % CHG |
|----------------|----------|----------|------------|-------|
| Malaysia | 1,178 | 16,896 | 15,718 | 1335% |
| Hong Kong | 7,477 | 16,254 | 8,777 | 117% |
| Indonesia | 6,955 | 9,723 | 2,768 | 40% |
| Pakistan | 2,527 | 4,567 | 2,040 | 81% |
| Japan | 5,697 | 7,470 | 1,773 | 31% |
| Vietnam | 1,693 | 3,208 | 1,515 | 90% |
| Argentina | 598 | 1,908 | 1,310 | 219% |
| Belgium | 216 | 1,286 | 1,070 | 497% |
| France | 211 | 1,176 | 965 | 456% |
| Costa Rica | 112 | 679 | 567 | 506% |
| Philippines | 107 | 671 | 564 | 527% |
| United Kingdom | 57 | 609 | 552 | 970% |

YTD Copper Scrap Export Market Gains

| Country | 2015 YTD (mt) | 2016 YTD (mt) | Volume CHG | % CHG |
|-----------------|------------------|------------------|------------|----------|
| Canada | 26,165 | 30,738 | 4,573 | 17.50% |
| India | 8,611 | 11,598 | 2,987 | 34.70% |
| Netherlands | 4,249 | 6,720 | 2,471 | 58.20% |
| Vietnam | 125 | 1,740 | 1,615 | 1295.40% |
| Korea | 12,734 | 13,580 | 846 | 6.60% |
| Slovak Republic | 2,864 | 3,406 | 542 | 18.90% |
| Malaysia | 104 | 503 | 399 | 385.30% |
| Austria | 2,246 | 2,610 | 364 | 16.20% |
| Sweden | 383 | 701 | 318 | 82.90% |
| Peru | 23 | 285 | 262 | 1159.80% |
| France | 139 | 372 | 233 | 168.10% |
| Pakistan | 1,120 | 1,321 | 201 | 17.90% |

- About ISRI
- Scrap Metal Market Drivers: Commodities, Manufacturing and China
 - *Brexit and Other Risk Factors*
- Market Updates
 - *Ferrous*
 - *Stainless and Nickel*
 - *Nonferrous Market Update*
- **Outlook**

Fed Projections for Domestic Economy

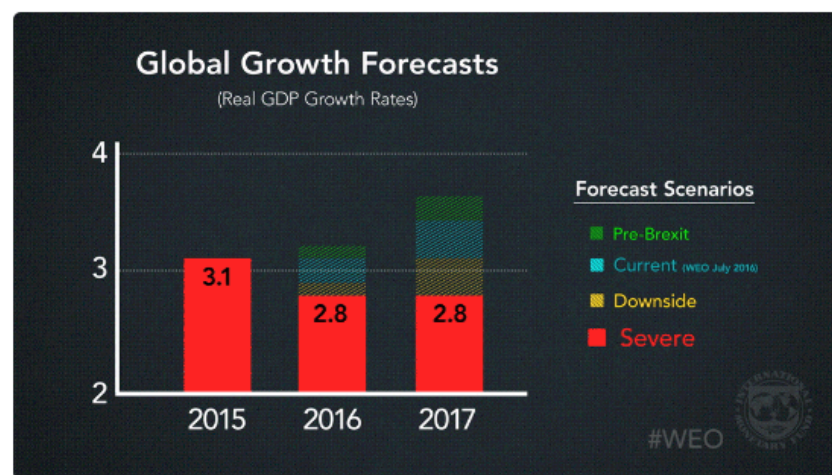
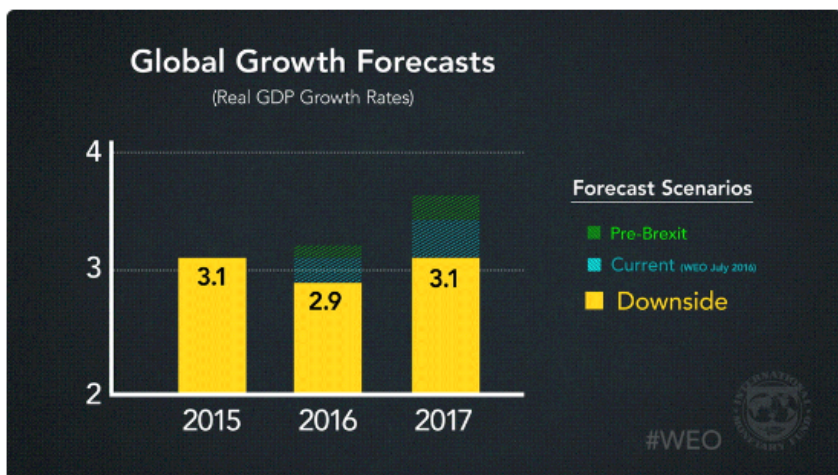
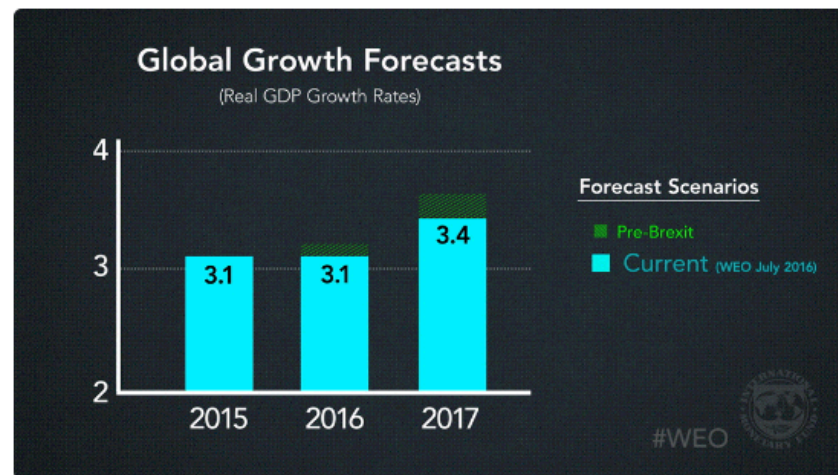
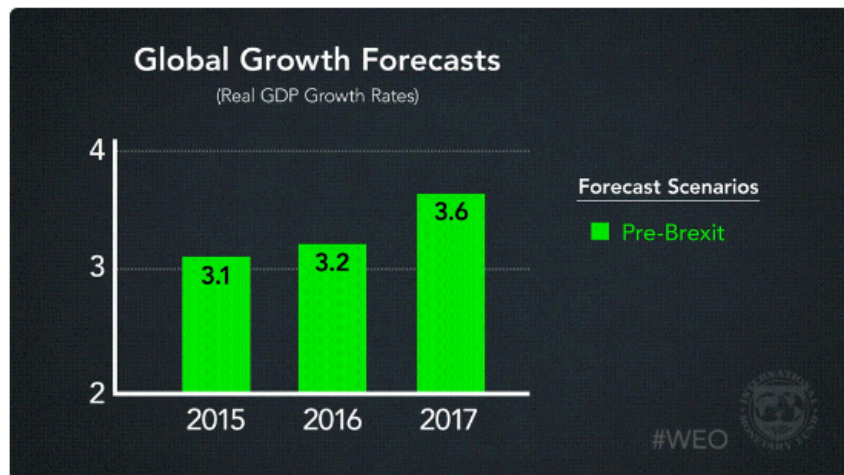


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Voice of the Recycling Industry

| Variable | Central tendency | | | |
|-------------------------|------------------|------------------|------------------|------------------|
| | 2016 | 2017 | 2018 | Longer run |
| Change in real GDP | 1.9 - 2.0 | 1.9 - 2.2 | 1.8 - 2.1 | 1.8 - 2.0 |
| <i>March projection</i> | <i>2.1 - 2.3</i> | <i>2.0 - 2.3</i> | <i>1.8 - 2.1</i> | <i>1.8 - 2.1</i> |
| Unemployment rate | 4.6 - 4.8 | 4.5 - 4.7 | 4.4 - 4.8 | 4.7 - 5.0 |
| <i>March projection</i> | <i>4.6 - 4.8</i> | <i>4.5 - 4.7</i> | <i>4.5 - 5.0</i> | <i>4.7 - 5.0</i> |
| PCE inflation | 1.3 - 1.7 | 1.7 - 2.0 | 1.9 - 2.0 | 2.0 |
| <i>March projection</i> | <i>1.0 - 1.6</i> | <i>1.7 - 2.0</i> | <i>1.9 - 2.0</i> | <i>2.0</i> |

IMF Revised Global Growth Forecasts



Source: International Monetary Fund World Economic Outlook Update (July 2016).

Macquarie Price Forecasts



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| | Q2 2016 | Q3 2016 | Q4 2016 | CY 2016 | CY 2017 | CY 2018 |
|-----------------|----------|----------|----------|----------|----------|----------|
| Copper | \$4,729 | \$4,800 | \$4,600 | \$4,700 | \$4,788 | \$4,725 |
| Aluminum | \$1,572 | \$1,400 | \$1,400 | \$1,472 | \$1,363 | \$1,400 |
| Zinc | \$1,918 | \$2,000 | \$2,100 | \$1,924 | \$2,325 | \$2,593 |
| Nickel | \$8,823 | \$9,250 | \$10,500 | \$9,268 | \$11,625 | \$13,000 |
| Lead | \$1,719 | \$1,800 | \$1,870 | \$1,783 | \$1,940 | \$2,178 |
| Tin | \$16,937 | \$15,750 | \$15,250 | \$15,860 | \$15,250 | \$16,000 |

Source: Macquarie Research, July 2016

Outlook Going Forward...



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- Few expecting a V-shaped commodity market recovery, but soft prices have impacts for supply that can set a floor for the market
- Sentiment recently better towards commodities, e.g. crude oil, but most analysts still expect prices to remain lower for longer
- Need for cutbacks in excess global primary commodity capacity and production/draw down stocks in order to rebalance commodity markets
- Need for U.S. exporters to develop new overseas markets
- Focus on safety, operational efficiency, **QUALITY** and product diversification
- Targeted investment in technology and acquisitions
- Cyclical, evolving industry with long-term positive trends
- Opportunities for ISRI and partners to educate policymakers and the public about the economic and environmental benefits of recycling
- **Scrap recyclers are resilient!**