



Changes in the Waste Stream - the Future of the Curbside Material Mix

U.S. EPA SMM Webinar

March 31 2016

Changes in the Waste Stream - the Future of the Curbside Material Mix

**Dylan de Thomas
Resource Recycling,
Inc.**

**U.S. EPA SMM Webinar
Series**

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WHAT ARE RECYCLABLES?



- Raw materials
- Compete with other raw materials
- Commodities with fluctuating value

SECONDARY VS. VIRGIN



- Predictability of quantity
- Predictability of quality



EREF STUDY ON PRICE VOLATILITY OF RECYCLABLES



- More volatile than commodities studied
- Paper had the most volatility

SUPPLY & DEMAND



- You don't sell scrap, someone buys it
- Can't turn off the spigot anymore

GOALS:



- Aspirational not realistic
- Long-term strategies
- Beware of aggressive reporting

SUMMARY



- Raw materials
- Need a buyer



The Evolution of Materials Use



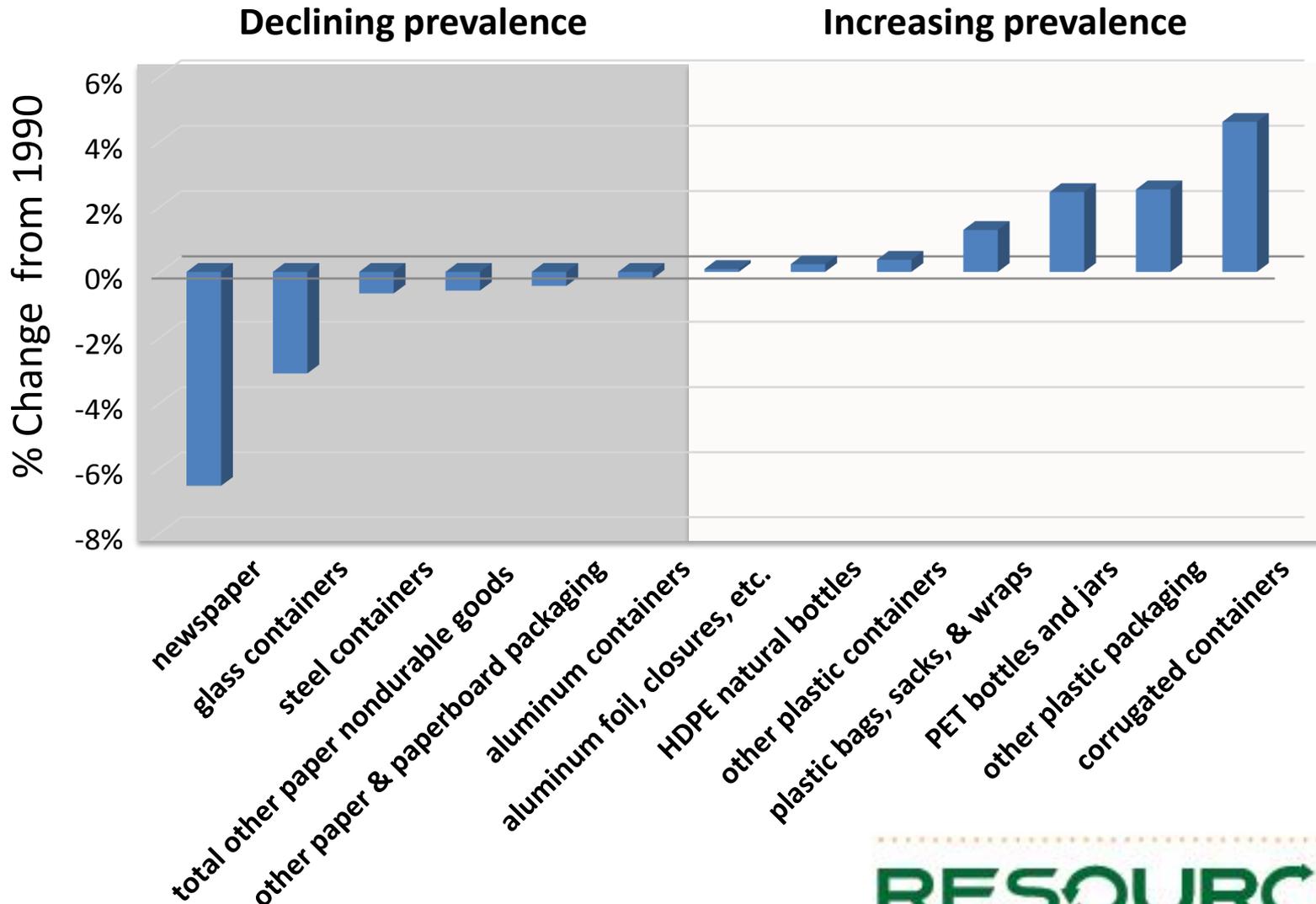
The Evolution of Materials Use



Source: Chaz Miller, NW&RA

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Change in Paper and Packaging in 2012 since 1990



SOURCE: Resource Recycling Systems, 2014

PAPER: 2000 - 2013



- 19,140,000 ton loss
- 22% decrease
- Mostly printed paper
- Online shopping

PLASTIC: 2000 - 2013



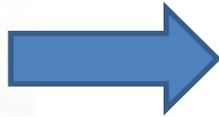
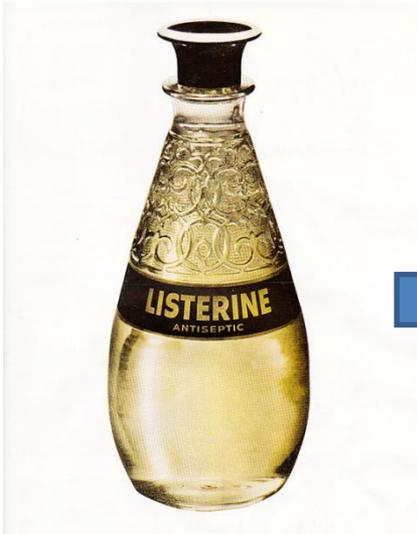
- 6,960,000 ton gain
- 27% increase
- Packaging is 43%
- Durables on the rise

The Evolution of Packaging



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The Evolution of Packaging



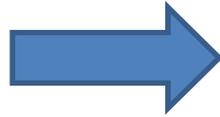
Glass bottle, metal cap to
PET bottle, PP cap



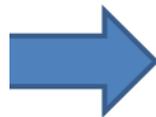
Glass jars, metal cap to PET
jar, PP cap

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The Evolution of Packaging



Glass bottle, metal cap to
HDPE bottle, PP cap



HDPE Bottle, PP Cap
to **multi-layer,**
flexible film pouch

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The Evolution of Packaging



*Pharma /
Over-the-counter*



Baby Food & Formula



*Cookies /
Crackers*



Coffee



Shaving



Pet Food



Nuts



Personal Care



Juice



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Market Drivers Fueling the Shift

- Brand differentiation in an increasingly competitive environment
- Customers preference
 - Convenience is king
 - “On-the-go” lifestyles among increasingly time poor consumers
 - Trend of smaller, single-serving sizes
- Performance is key
 - Highly technical
 - Logistical advantages
 - “Doesn’t matter if it’s sustainable if it doesn’t perform”

EVOLVING TON & MRFS



- Less paper
- More glass
- More plastic
- Lower revenues
- Higher costs

Lightweighting



What MRFs Have to Do With It

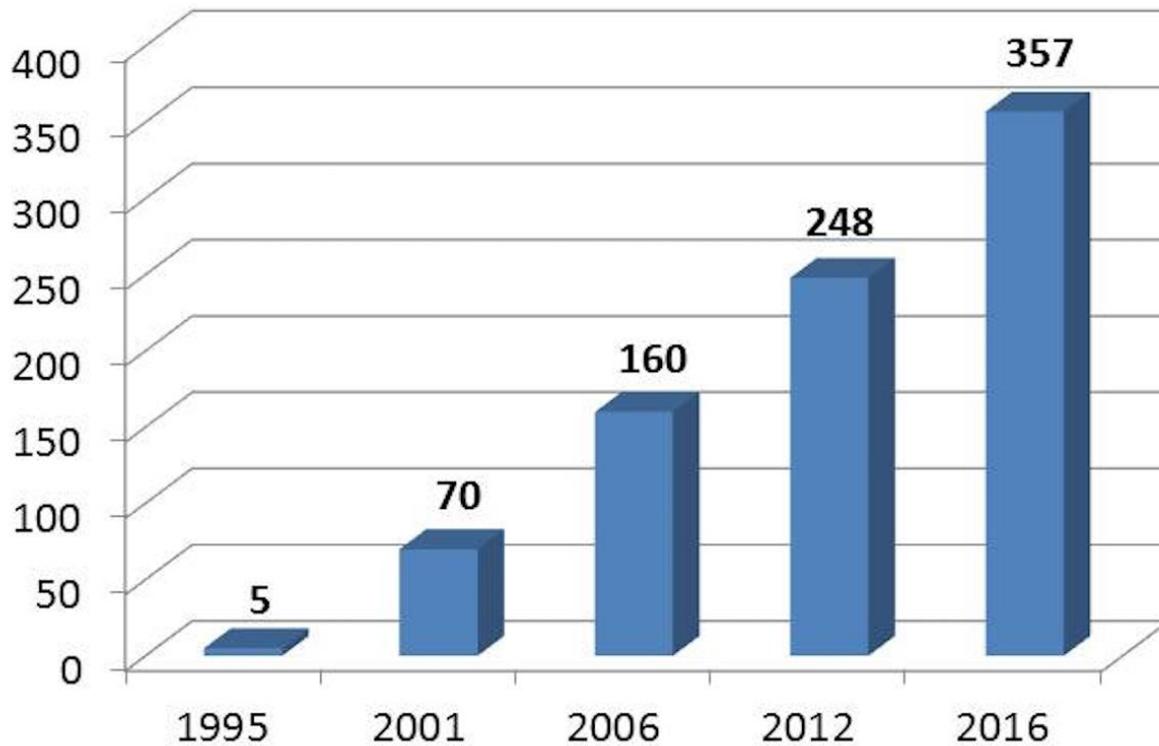


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What MRFs Have to Do With It

- MRFs are manufacturing facilities producing a feedstock
- Quality matters
- Single-stream MRFs the standard
- Many designed and built before/for “old” material mix

Growth of Single-Stream Processing in No. Am.



Source: Government Advisory Associates, Inc., 2013
& Resource Recycling, 2016

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What's Going Into the Bale?

- Processing changes & innovations
- Bale specs changing/being developed
- Even in down markets, secondary processors emerging



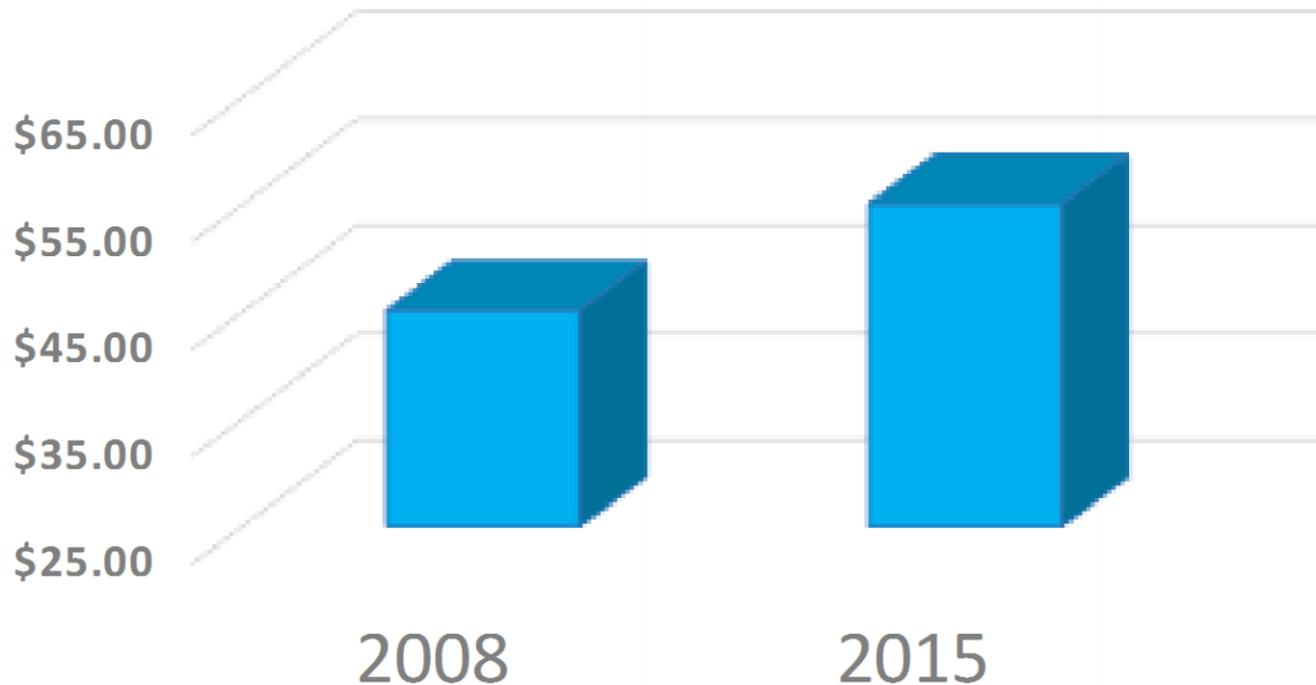
From Processors to Reclaimers

- ...And from MRFs and PRFs to markets
- Bale yields
- Increased processing costs



Rising Operating Costs

O&M COSTS AT MRFs are UP OVER 20%



Source: Resource Recycling Systems, 2015

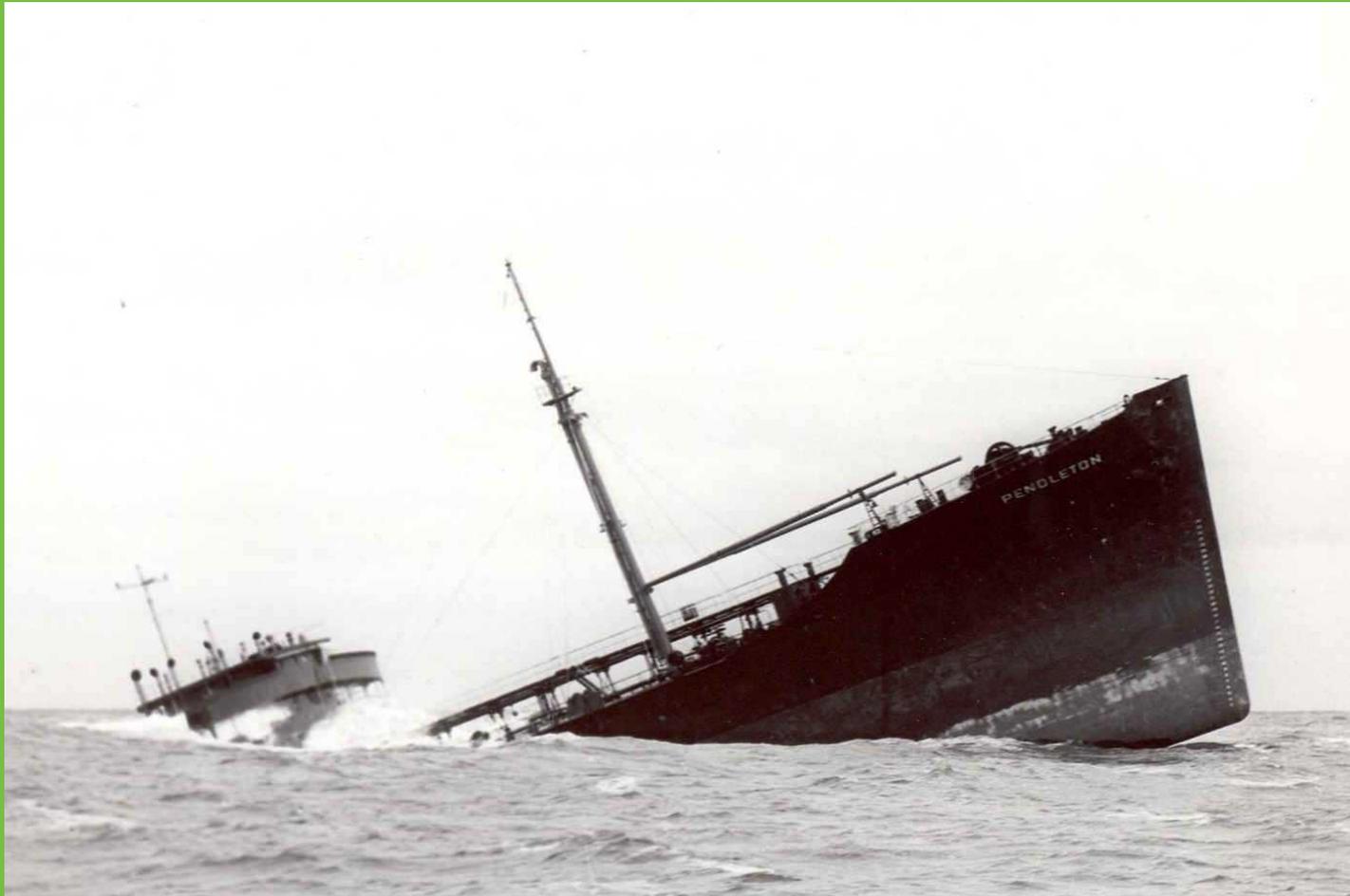


SUMMARY



- Input stream is changing
- MRFs are challenged
- How are markets reacting?

MARKETS



The Big Picture

- Strong dollar +
- Excess production of crude and other commodities +
- Changes in China +
- = Down market, disappearing margins, hurting industry

Strong U.S. Dollar

FRED 

— Trade Weighted U.S. Dollar Index: Broad



Source: Board of Governors of the Federal Reserve System (US)
research.stlouisfed.org

myf.red/g/3WJg

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Low Oil Prices

Crude oil (barrel)

\$39.59 -\$27.01 -40.56%

At market close 03/24/2016



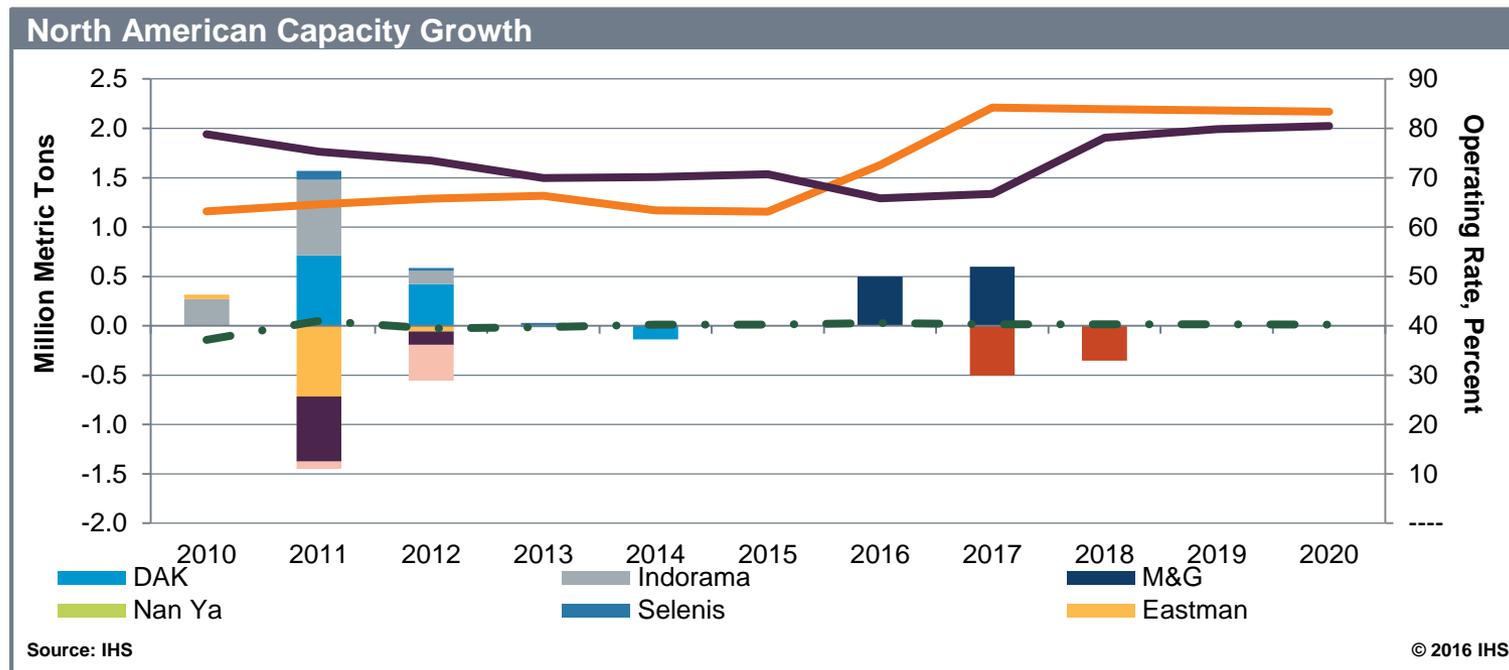
Source: Reuters

The New York Times

Source: New York Times, Mar. 24, 2016



Excess Capacity

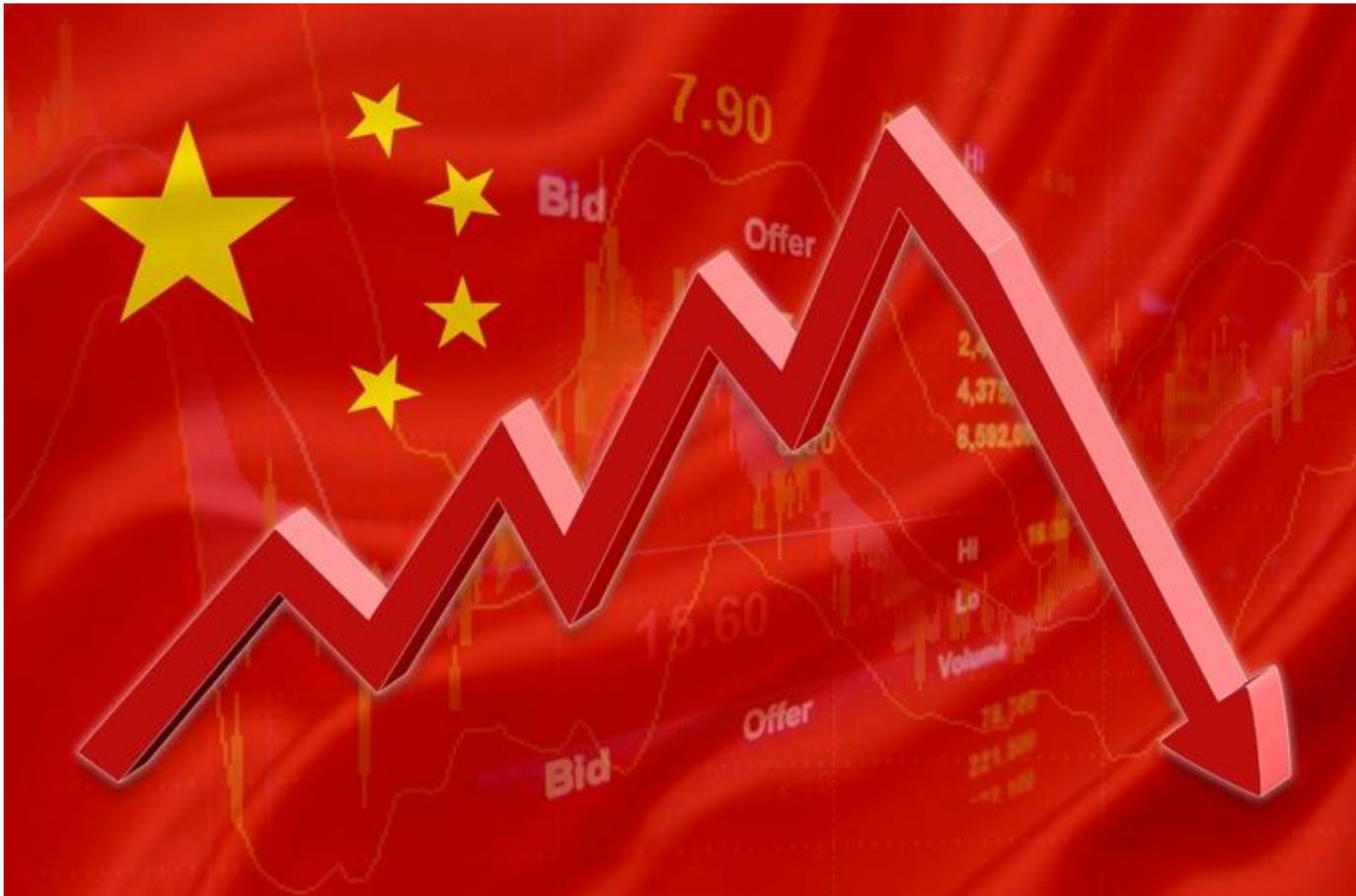


US containerboard stocks at 11-year high in February but now on seasonal downhill slope -- mills run at 95%

OAKLAND, CA, March 18, 2016 (PPI Pulp & Paper Week) - US corrugated box shipments showed modest growth in February and containerboard inventories dropped by 61,000 tons after their big surge in January.



Changes in China...



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It's Not Just the Green Fence...

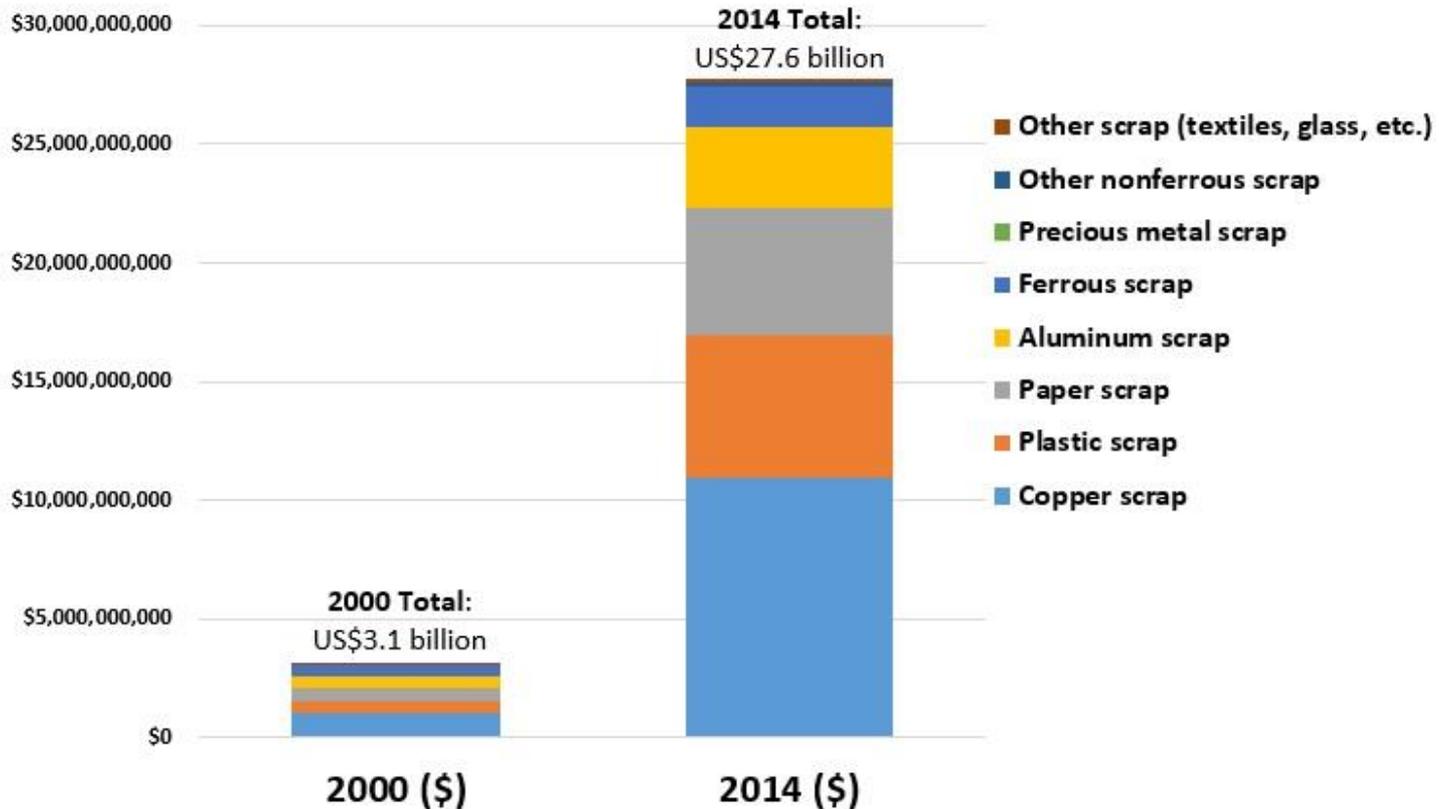


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Context of China

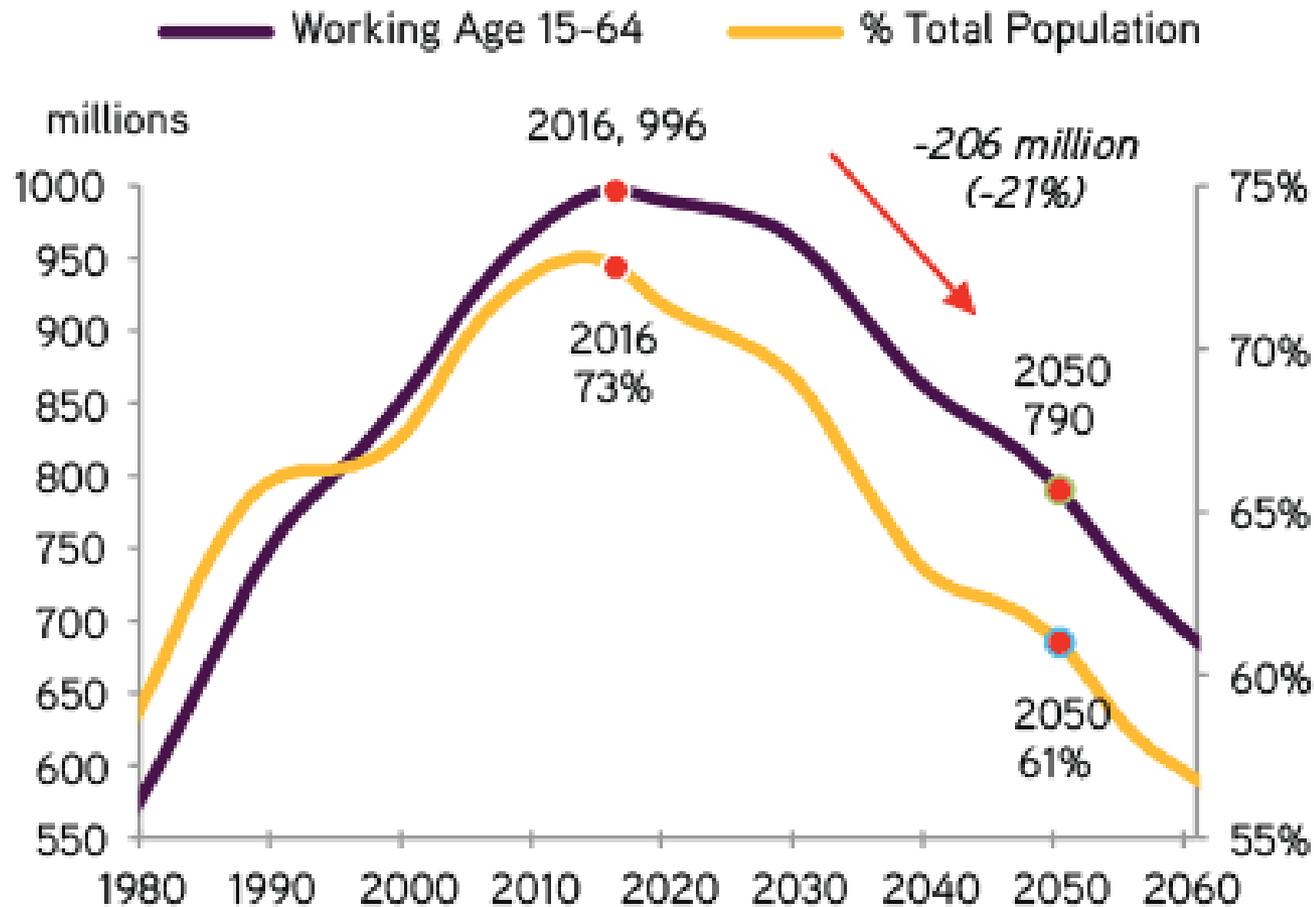
Value of Chinese Scrap Imports from All Origins (US\$)

Source: UN Comtrade Database



China's Working-Age Population Peaking

China: Working Age 15-64

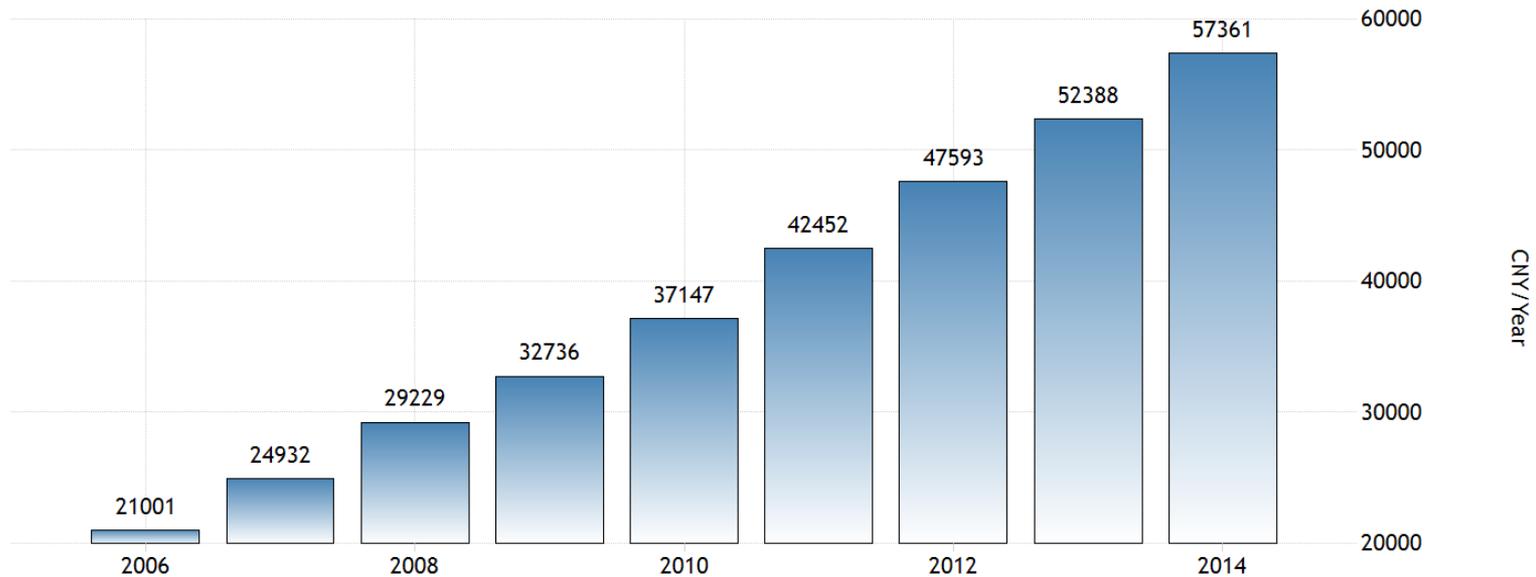


Source: U.N. World Population Prospects, 2016

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Which Has Led to Rising Wages

CHINA AVERAGE YEARLY WAGES



SOURCE: WWW.TRADINGECONOMICS.COM | MOHRSS, CHINA

Source: TradingEconomics.com, 2016

China's Shifting Labor Landscape

Going from this:



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China's Shifting Labor Landscape

To this:



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China's Shifting Labor Landscape

From this:



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China's Shifting Labor Landscape

To this:



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China's Urbanization "Trick"



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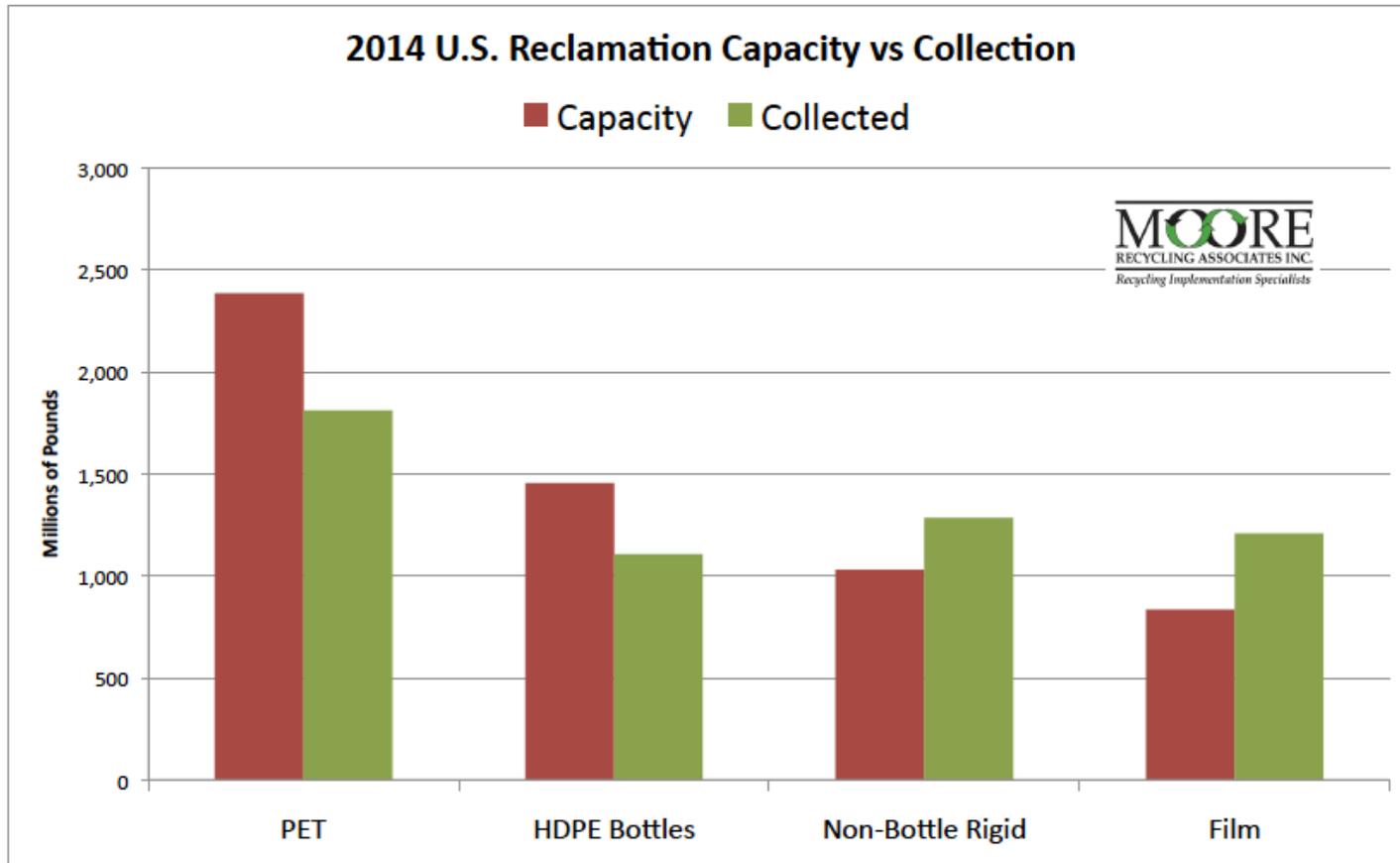
Which Leads (in Part) To...

Annual and YTD U.S. Plastic Scrap Exports (metric tons)

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

| Country | 2011 | 2012 | 2013 | 2014 | JAN-NOV 2014 | JAN-NOV 2015 | YTD % CHG |
|--------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------|
| China | 1,161,164 | 1,173,592 | 1,007,261 | 1,088,643 | 1,012,900 | 814,012 | -20% |
| Hong Kong | 606,635 | 479,093 | 433,690 | 563,208 | 515,358 | 562,824 | 9% |
| Canada | 145,531 | 146,196 | 137,924 | 177,858 | 161,225 | 218,051 | 35% |
| India | 72,436 | 85,342 | 103,939 | 86,397 | 83,023 | 85,944 | 4% |
| Taiwan | 16,002 | 16,194 | 26,683 | 29,361 | 26,772 | 48,371 | 81% |
| Indonesia | 20,593 | 23,311 | 64,404 | 81,699 | 75,249 | 43,602 | -42% |
| Vietnam | 34,936 | 13,582 | 22,993 | 36,076 | 33,572 | 42,001 | 25% |
| Malaysia | 15,444 | 23,193 | 50,889 | 31,664 | 29,883 | 30,653 | 3% |
| Mexico | 20,904 | 24,007 | 22,041 | 23,584 | 21,600 | 20,211 | -6% |
| Korea | 5,601 | 5,070 | 9,979 | 14,868 | 13,887 | 9,591 | -31% |
| El Salvador | 1,268 | 1,868 | 2,142 | 4,591 | 4,471 | 6,082 | 36% |
| Thailand | 3,194 | 998 | 3,740 | 14,247 | 12,884 | 5,091 | -61% |
| Others | 24,169 | 18,650 | 23,651 | 19,493 | 18,367 | 21,768 | 19% |
| TOTAL | 2,127,877 | 2,011,096 | 1,909,336 | 2,171,689 | 2,009,191 | 1,908,201 | -5% |

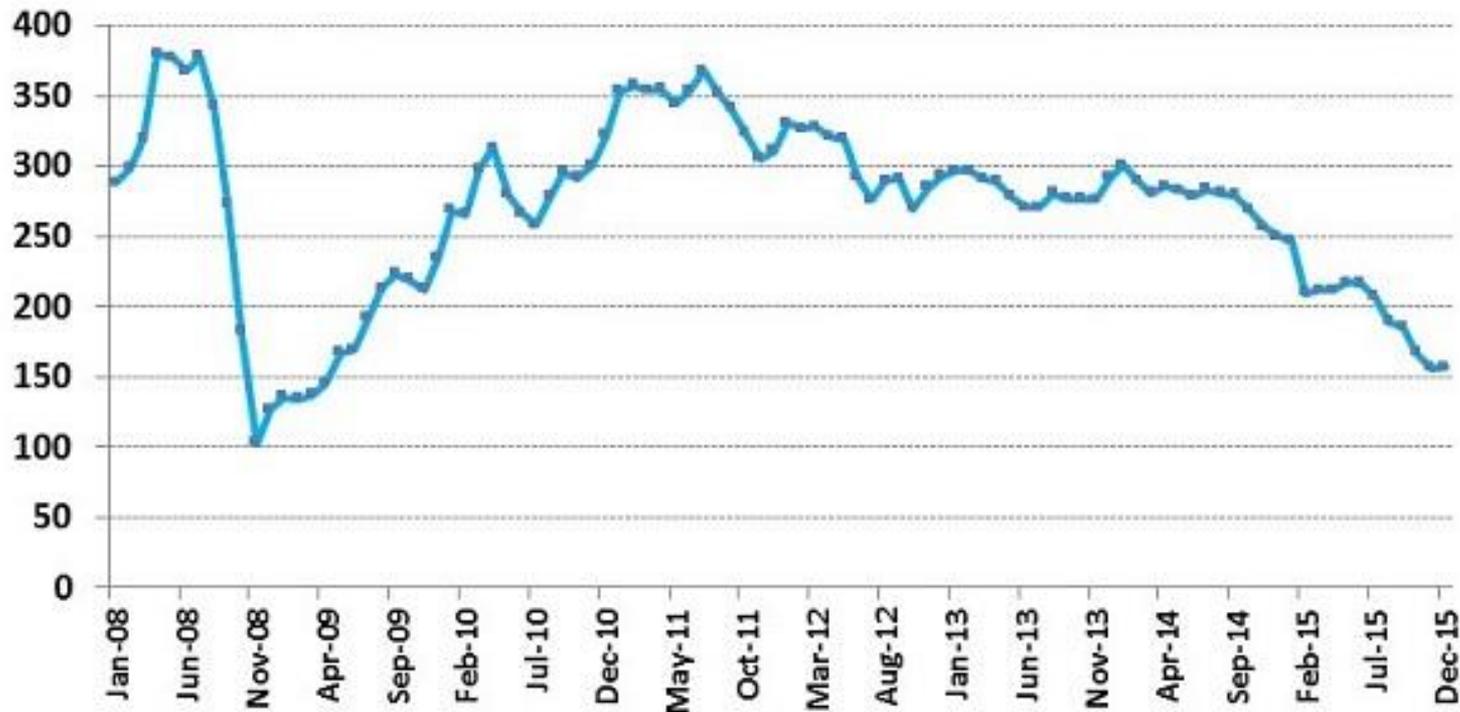
Which Combined with (Some) Domestic Overcapacity...



Aggregate Scrap Material Values

ISRI Index: Jan 2008 - Dec 2015

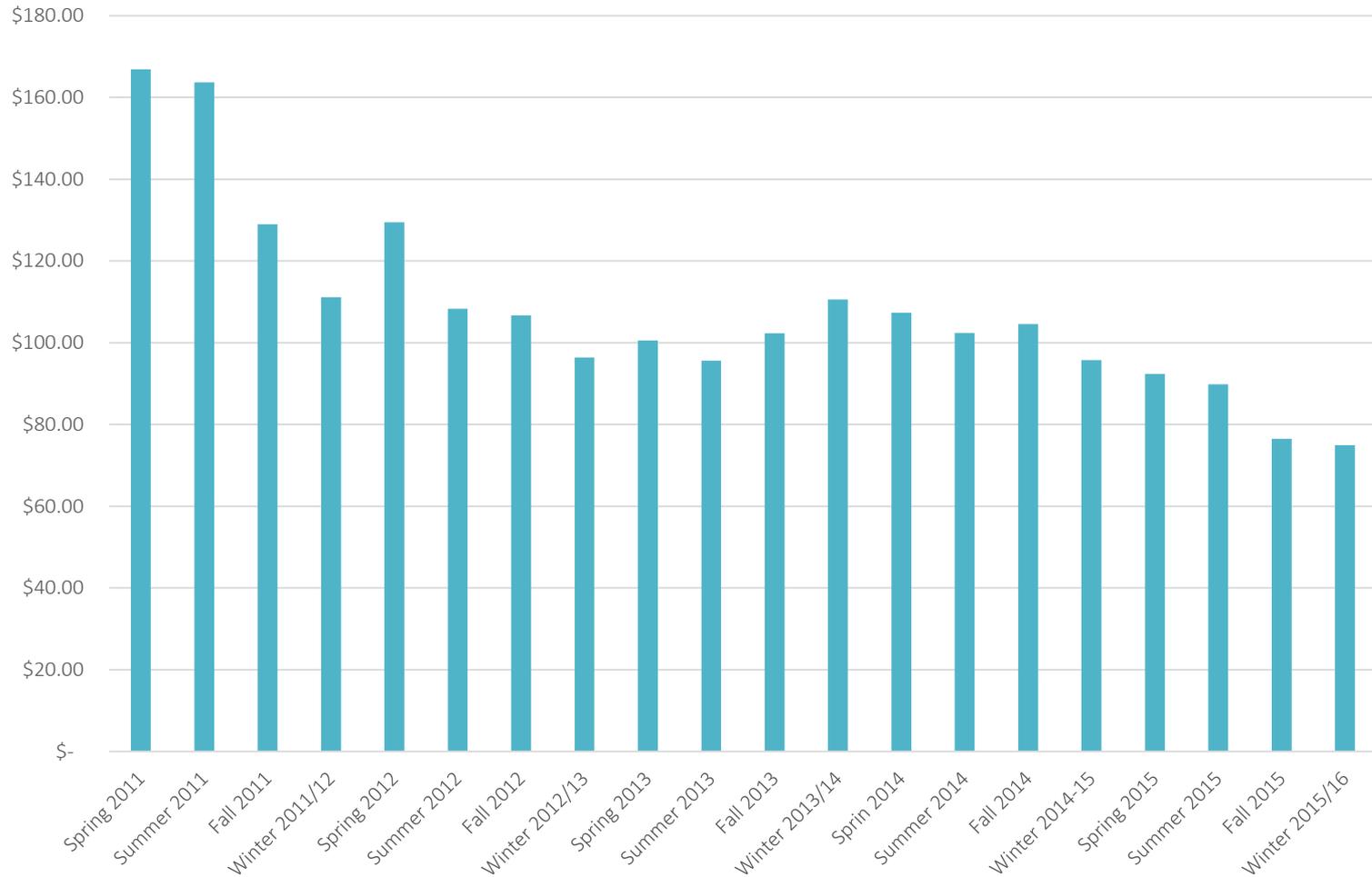
(Jan 1998 = 100)



Source: Institute of Scrap Recycling Industries, 2016

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Value of a Commingled Ton



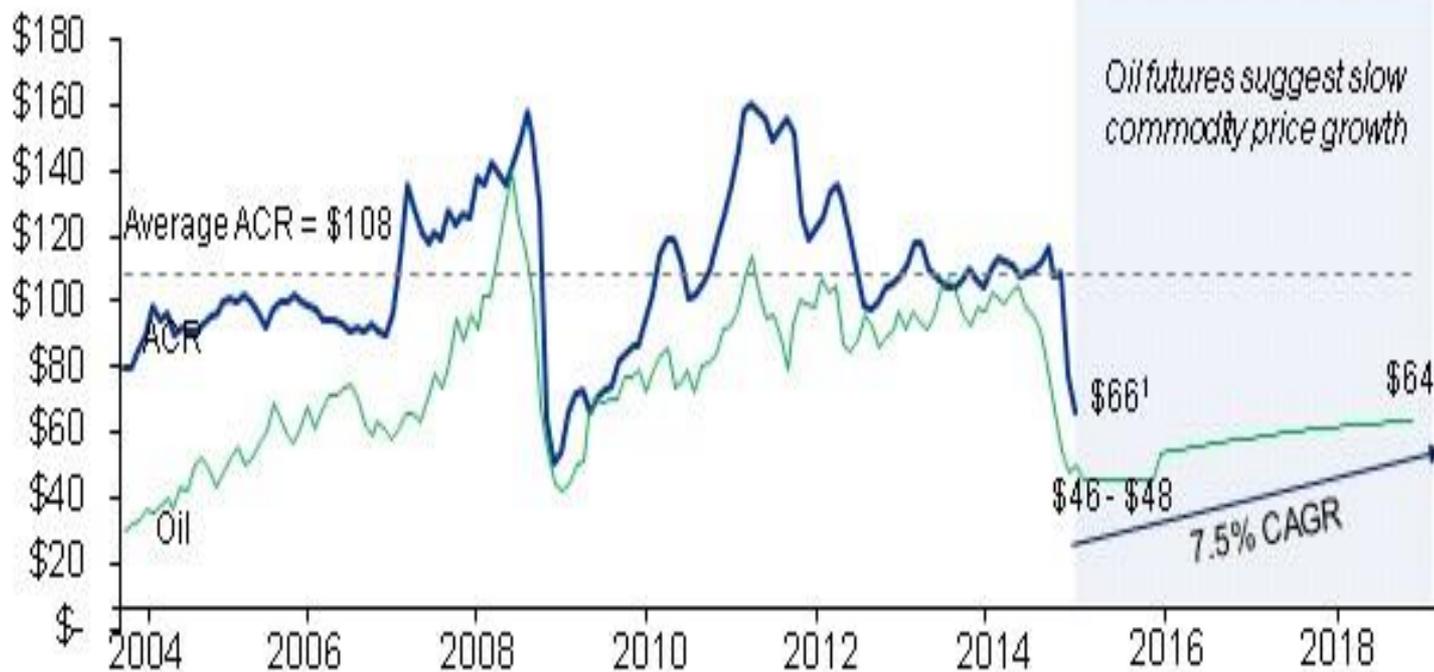
Source: Scott Mouw, NC DNER, 2016



OIL PRICES & RECYCLABLES: RECOMMUNITY



ACR vs Oil Prices



SUMMARY



- Recyclables are raw materials that need buyers
- The raw material mix is changing
- Buyers face limits in what they can pay



RECYCLING IS NOT FREE



- Additional charge on monthly bills
- People know that recycling is not free

CONTRACT SMARTER



- “Joint Advisory on Designing Contracts for Processing of Municipal Recyclables”
- NWRA & SWANA

CONTRACT PROVISIONS



- Clear definitions
- Contamination levels
- Residue levels
- Processing fees
- Revenue sharing
- Input audits
- Education

PROCESSING CHARGES



- Handling Fee for fully rejected load which the customer removes?
- Add disposal fee if the customer does not remove?
- Handling Fee for excess contaminated single stream?
- Downgrade contaminated OCC from commercial sources?

CLOSING THOUGHTS



- Unusual challenges
- Don't have all the answers



Some Good News...

- SE Asian markets growing
- Markets cyclical
- Low oil also means fuel savings
- Ample domestic capacity, esp. plastic
- Innovations abound
- Acting local...



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Thank You!

Dylan de Thomas

503-233-1305 ext. 116

dylan@resource-recycling.com

www.resource-recycling.com

***Save the Date for the Resource
Recycling Conference Aug 30-
Sept. 1 in New Orleans***

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FOR MORE INFORMATION:

Chaz Miller

202-364-3742

www.environmentalistseveryday.org

cmiller@wasterecycling.org