



Changing Landscape of the Steel Industry

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Steel Research Associates, LLC
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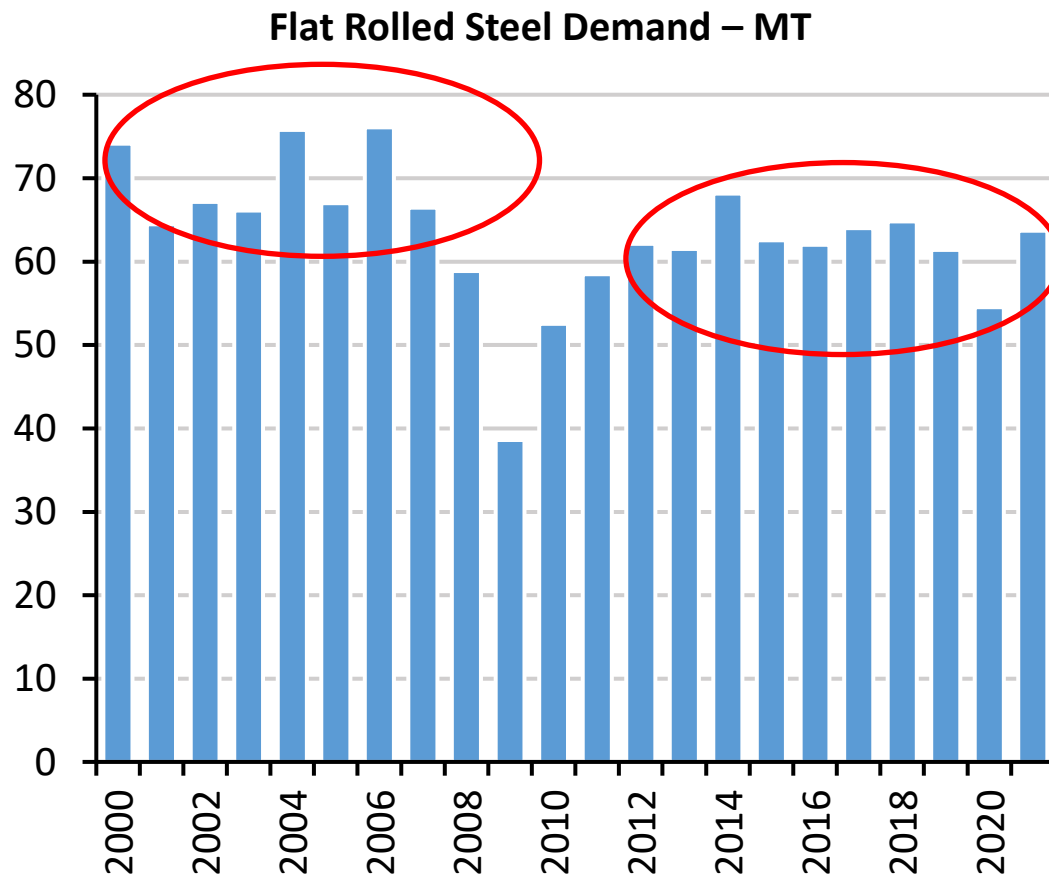
Introduction

The industry is going through a fundamental transformation

- Industry mega trends
 - New technology replacing old
 - Indirect trade & other trade issues
 - Consolidation across the spectrum
 - Step-change in prices
 - Raw material challenges
 - ESG and its many implications
- Purpose of today
 - Guide you through the changing landscape
 - Present you with a different way of thinking

Steel Supply & Demand

Flat rolled steel demand has not returned to pre-financial crisis levels



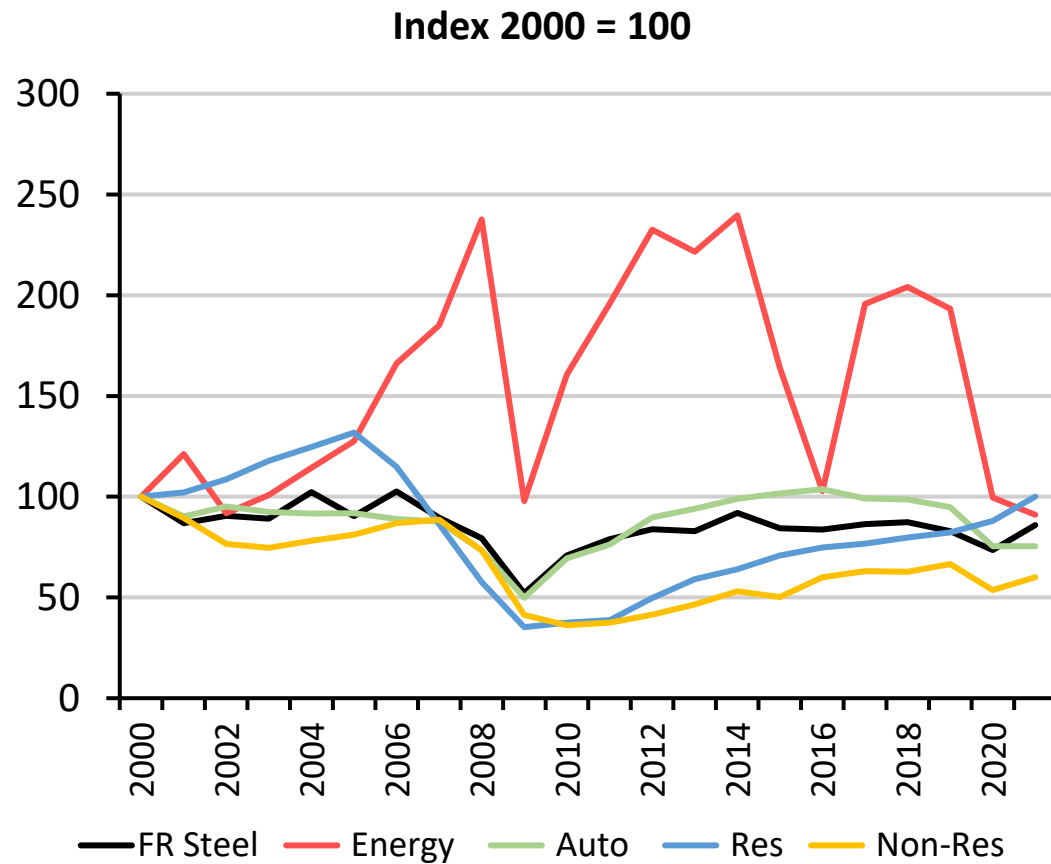
Source: AISI, SRA analysis & estimates

Key Issues to Consider

- Construction (largest market for steel) still lagging
 - Non-residential down ~ 35%
 - Residential down ~ 25%
- Indirect imports are growing
 - Steel content of finished goods (auto, appliance, etc.)
 - Off-shoring of manufacturing
- Down-gauging from increased strength of steel
 - Tonnage decreasing
 - Area (square feet) increasing
- Material substitution trends
 - Aluminum
 - Glass
 - Plastics

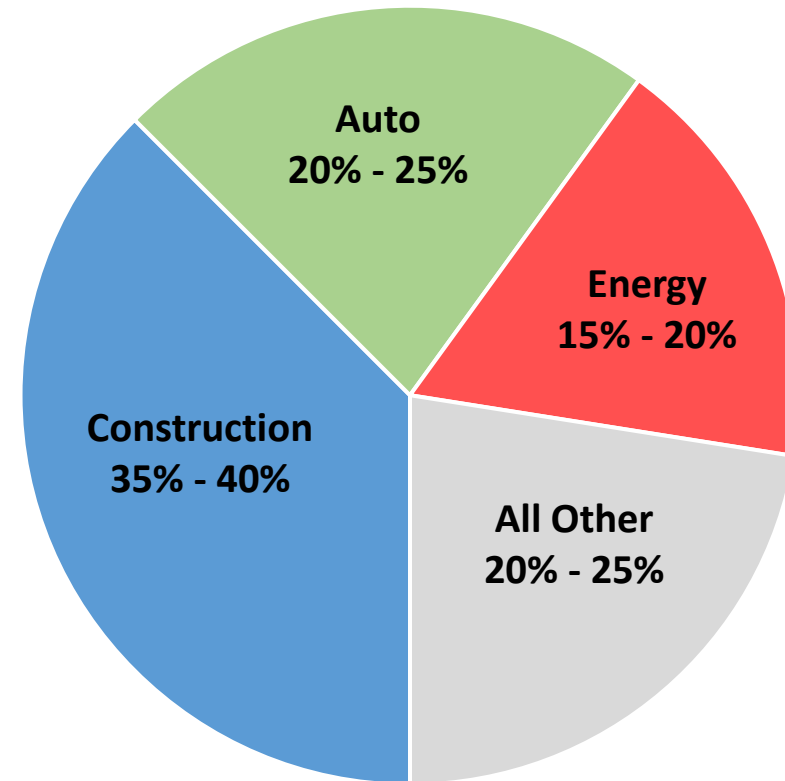
Steel Supply & Demand

Major demand drivers are not on the same business cycles



Source: Various industry trade resources, SRA analysis & estimates

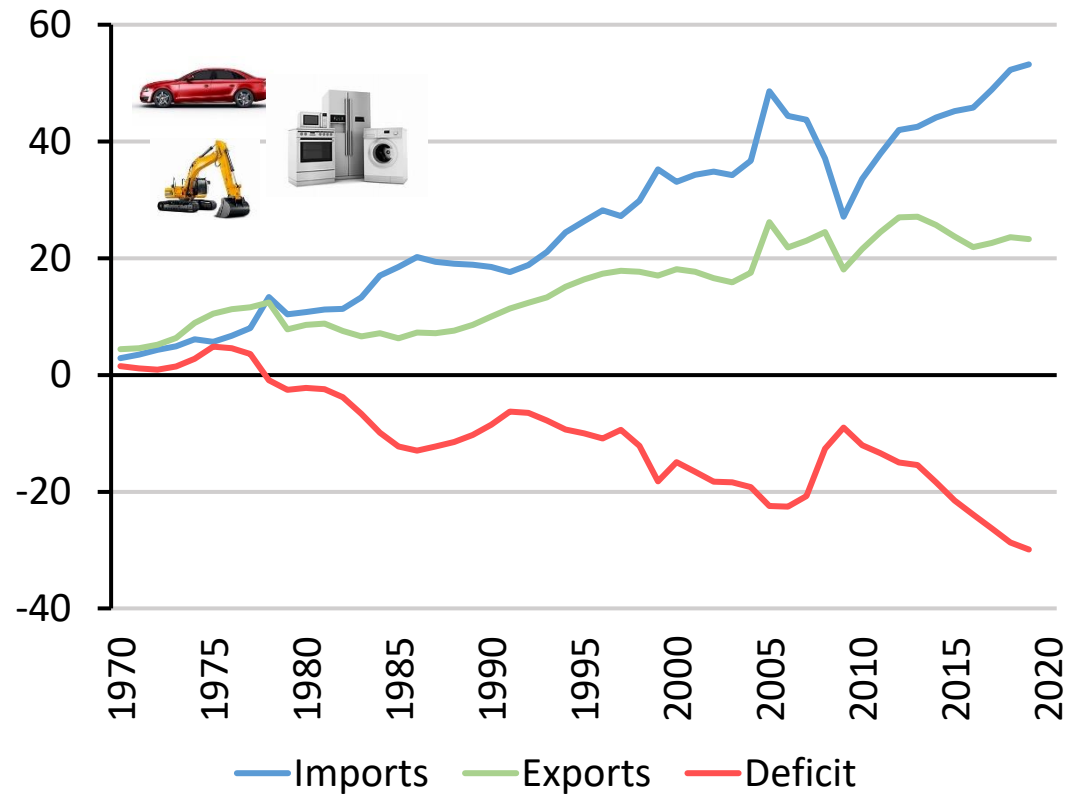
Approximate Steel Demand



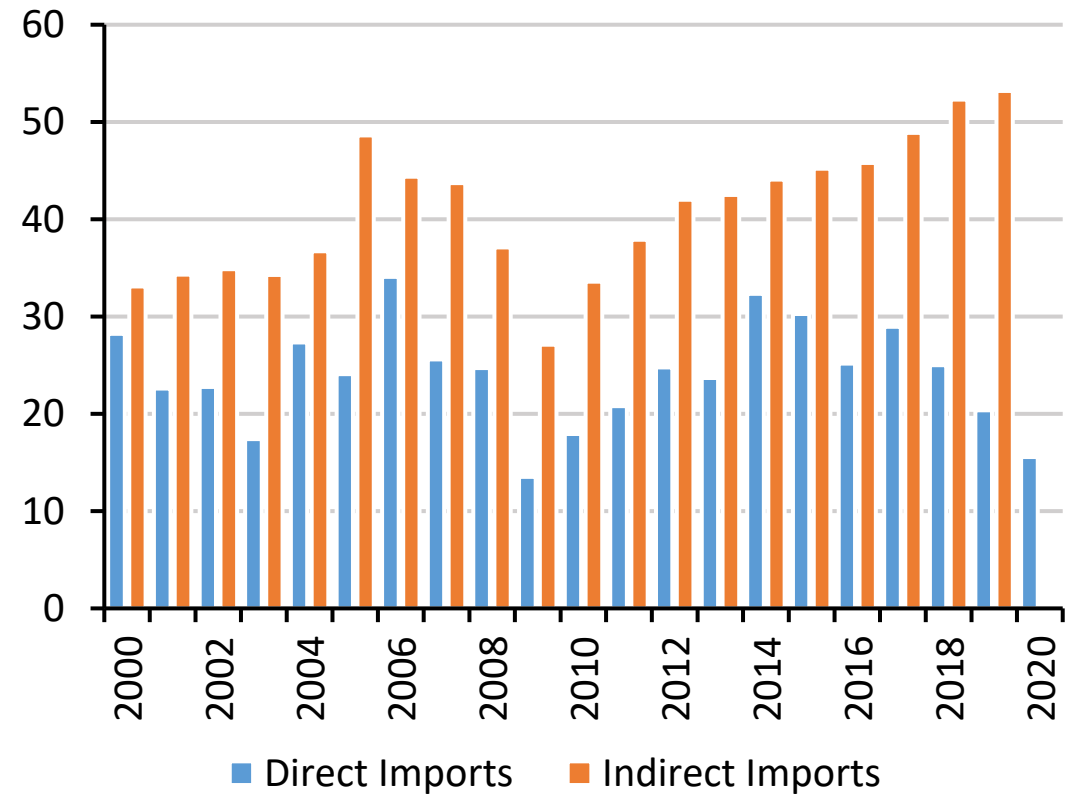
Steel Supply & Demand

Indirect trade is bigger than you think

USA Indirect Trade – MT



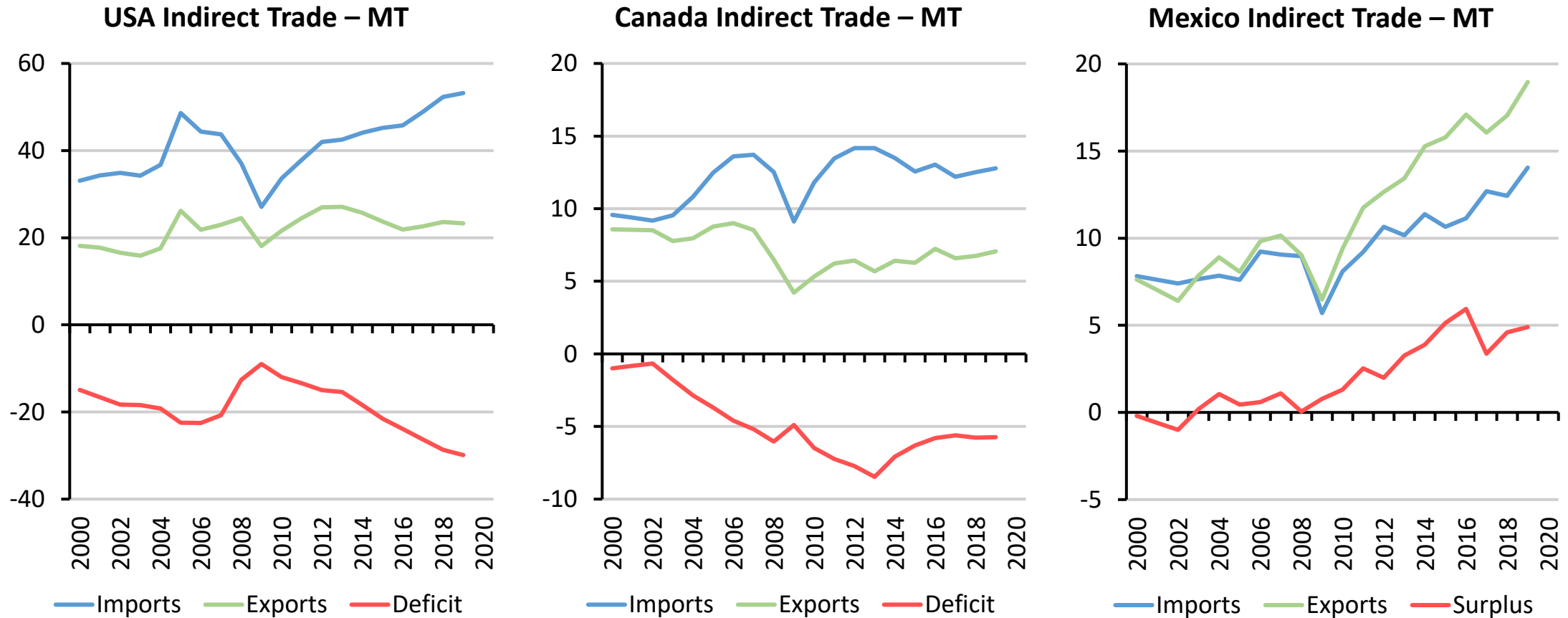
USA Indirect Imports > Direct Imports - MT



Source: AISI, WSA. Indirect trade = steel content of finished goods imports & exports (2020 data not available).

Steel Supply & Demand

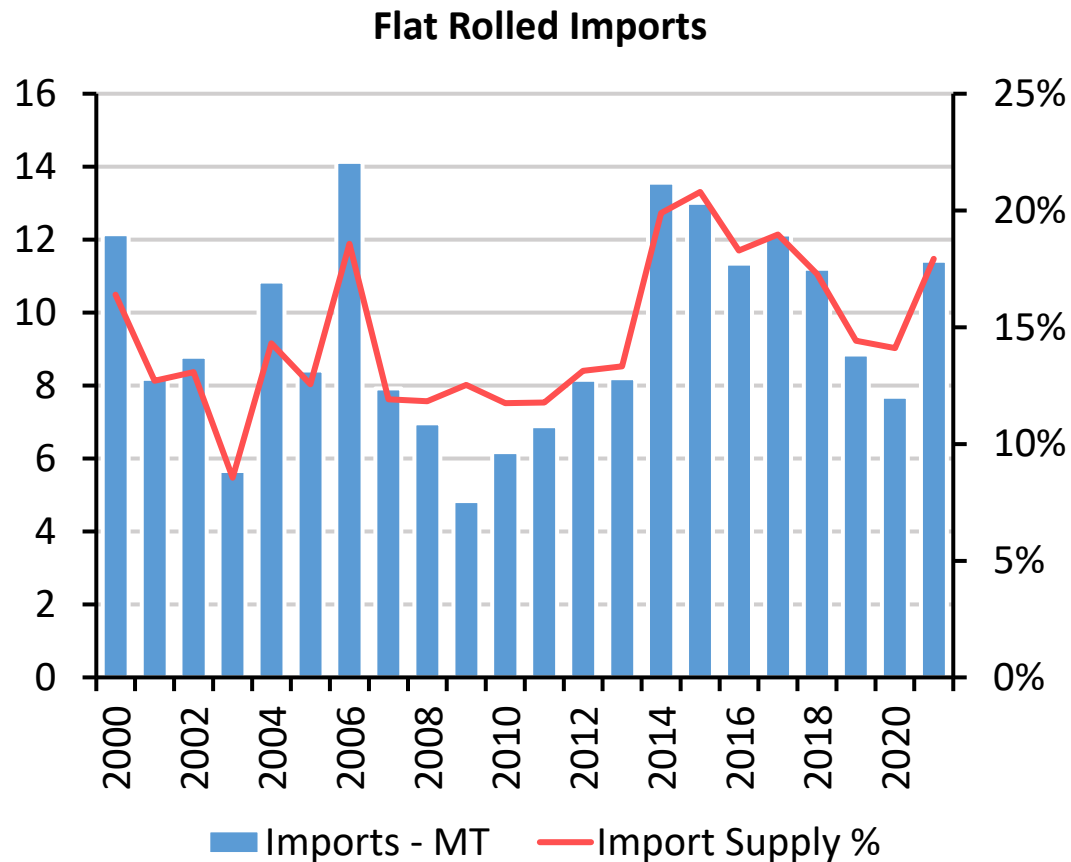
Mexico is the only NAFTA country with an indirect trade surplus



Source: AISI, WSA. Indirect trade = steel content of finished goods imports & exports (2020 data not available).

Steel Supply & Demand

Finished imports are starting to tick up



Source: AISI, SRA analysis & estimates

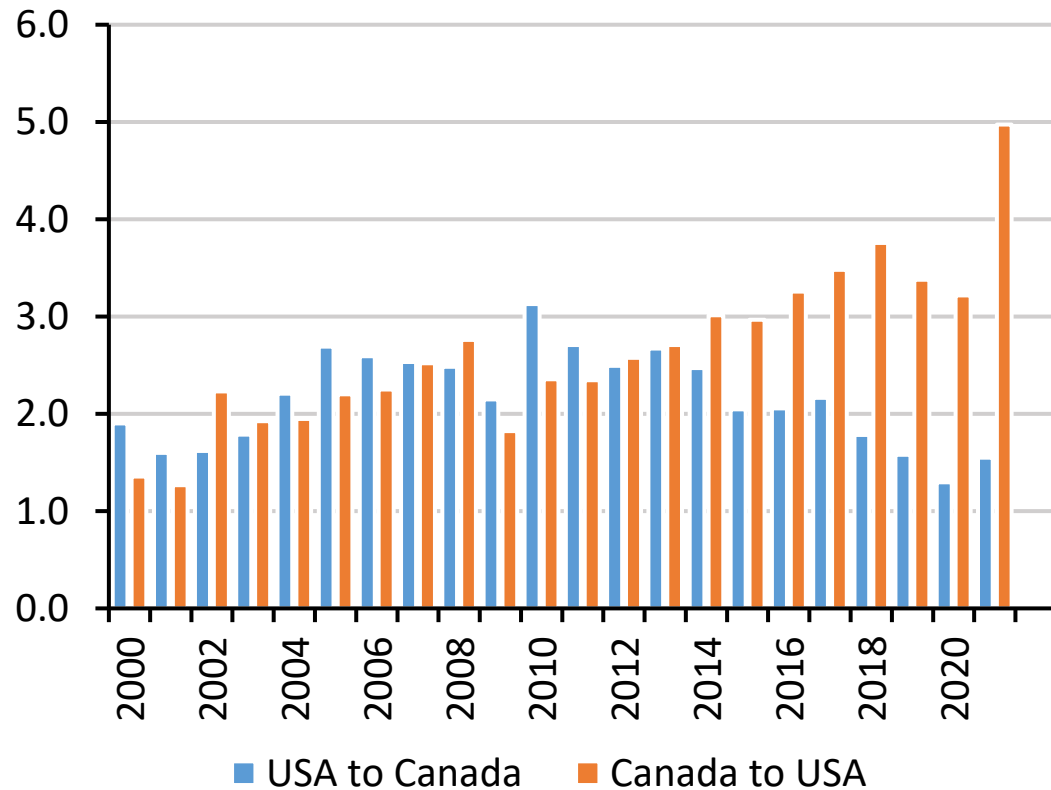
Key Issues to Watch

- Section 232
 - Easing of restrictions from Western Europe
 - Other countries/regions likely to follow
- 2016 major AD/CVD trade cases
 - First five-year sunset review under way
 - HRC, CRC, Coated flat products
- New domestic capacity coming on-line in 2022
 - SDI-TX 3.0 MT
 - Nucor-KY 1.4 MT
 - North Star-OH 0.9 MT
 - Total 5.3 MT
- Carbon border adjustment mechanism (CBAM)?

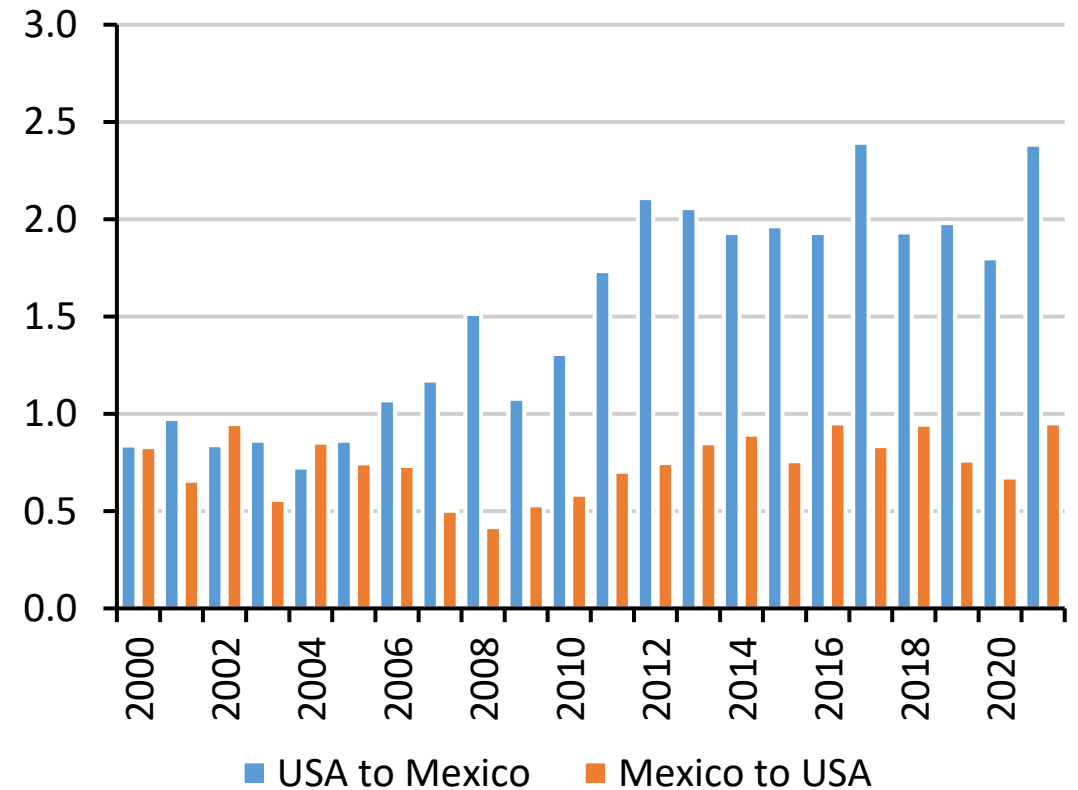
Steel Supply & Demand

USA trade with Canada & Mexico are mirror opposites

USA & Canada Flat Rolled Trade – MT



USA & Mexico Flat Rolled Trade – MT



Source: AISI, SRA analysis & estimates

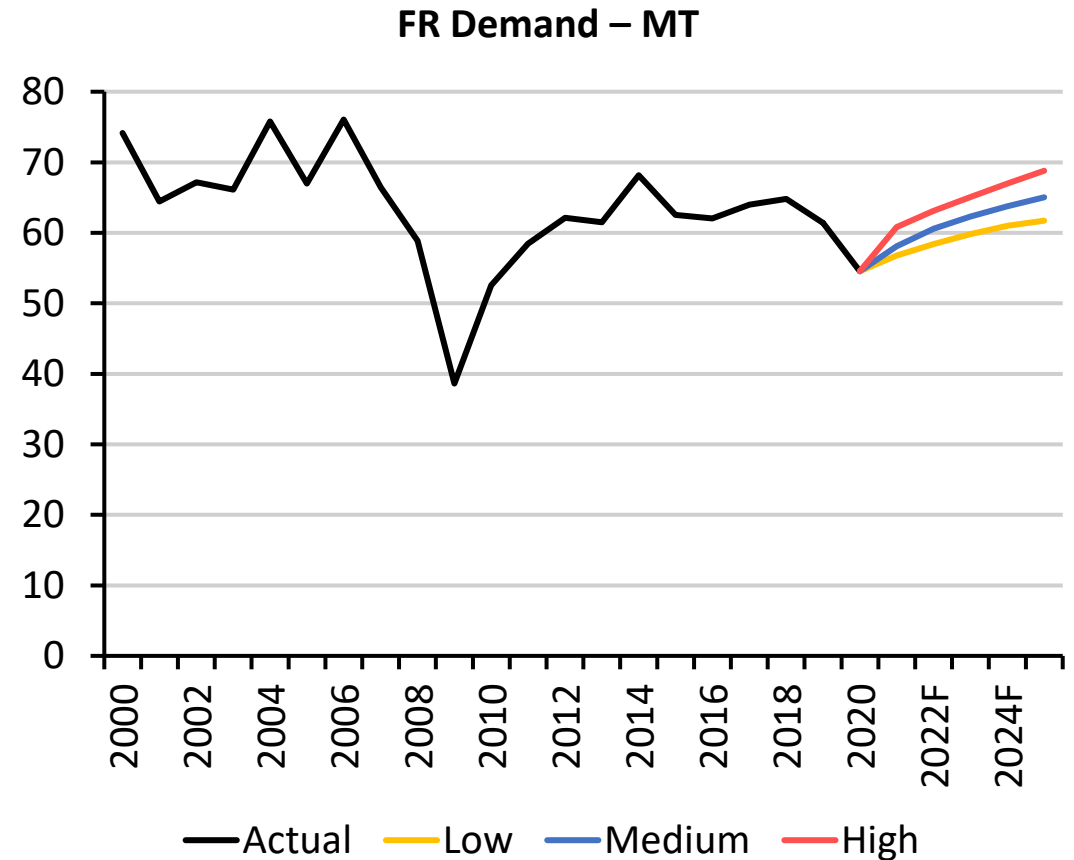
Steel Supply & Demand

CV-19 impact will be less than the Great Financial Crisis

- Excesses not in the economy like before

<u>Indicator</u>	Pre <u>CV-19</u>	Pre <u>GFC</u>
Non-res constr. (sq. ft.)	1.1 Bln	1.7 Bln
Housing starts	1.3 Mln	2.1 Mln
Oil price	\$60/bbl	\$140/bbl

- 2020 demand managed better than expected
 - 2020 declined ~ 12% from CV-19
 - 2019 declined ~ 5% primarily from inventory destocking throughout the supply chain
- Five-year outlook includes three scenarios to reflect uncertainty with CV-19 recovery
 - Low – gradual, returning to 2019 levels
 - Med – moderate, returning to 2018 levels
 - High – sharp V, followed by structural growth

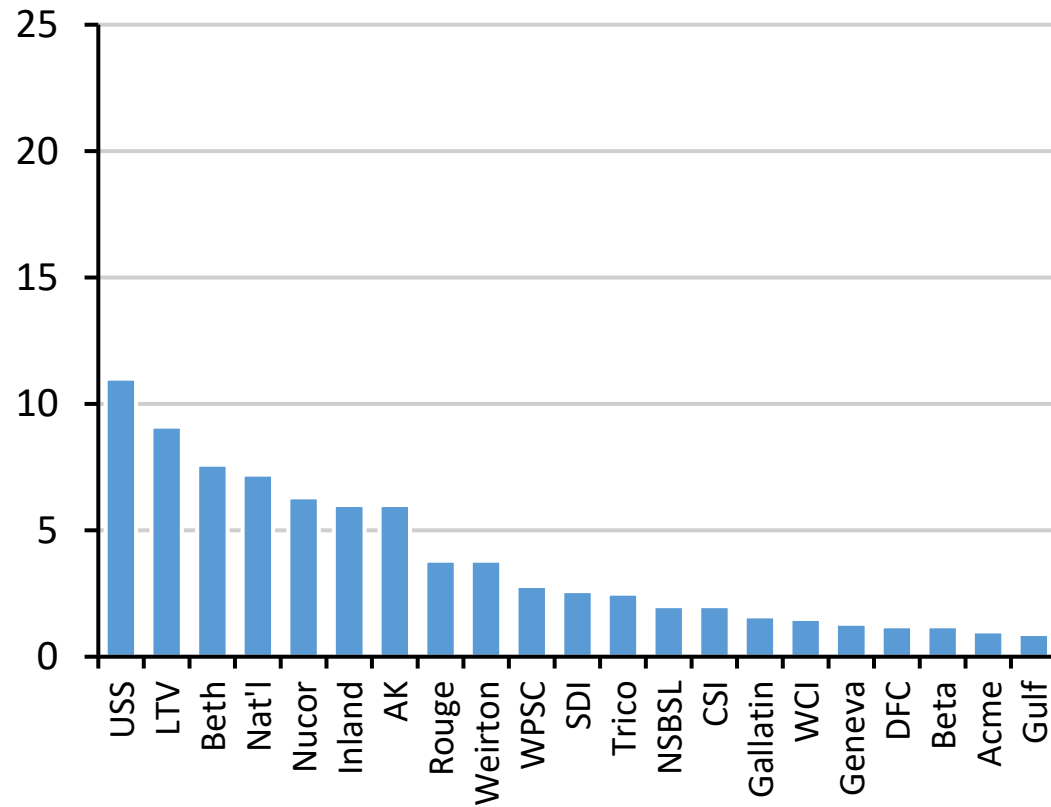


Source: AISI,, SRA forecast

Steel Supply & Demand

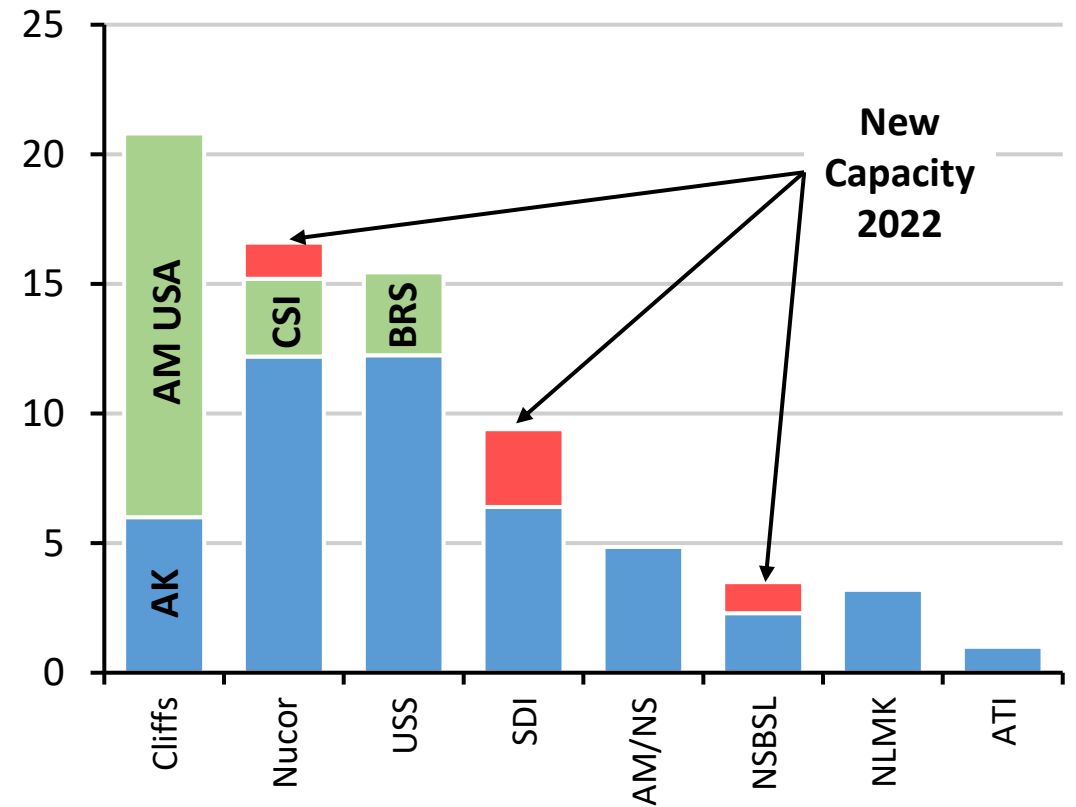
The industry has consolidated

2000 USA HSM Capacity – MT



Source: SRA capacity database

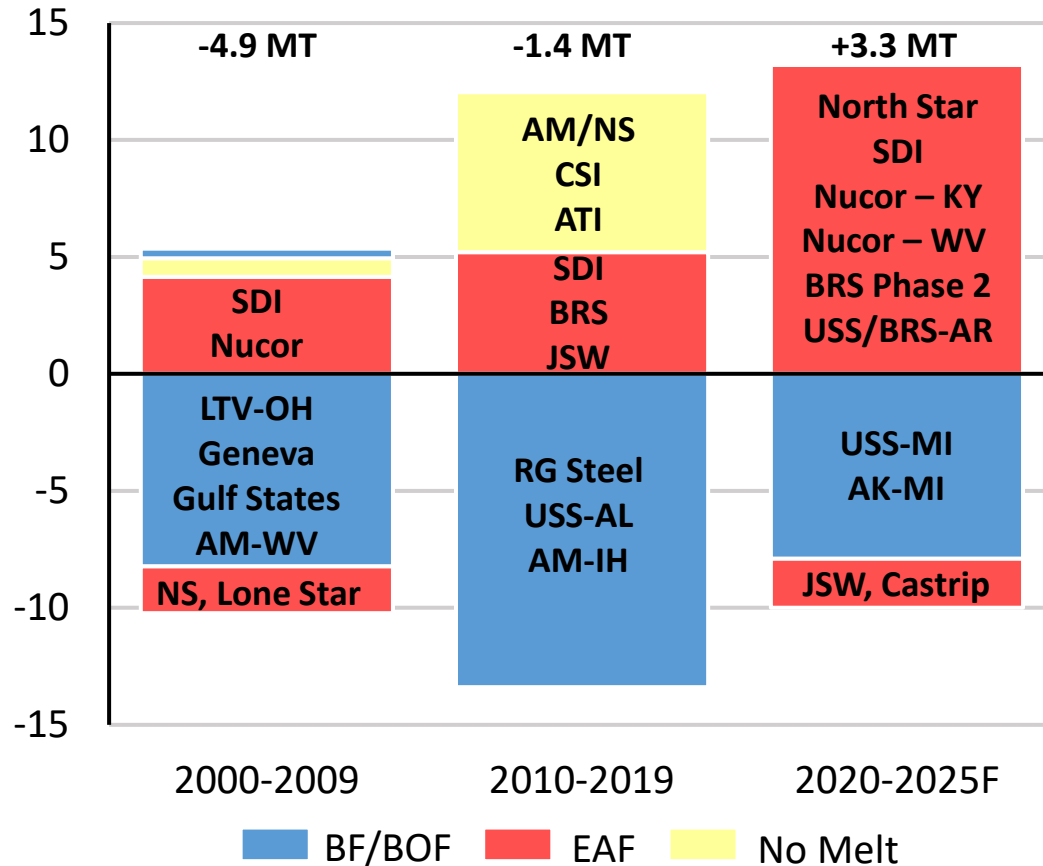
2022 USA HSM Capacity – MT



Steel Supply & Demand

Hot strip mill capacity is not changing ... the technology is

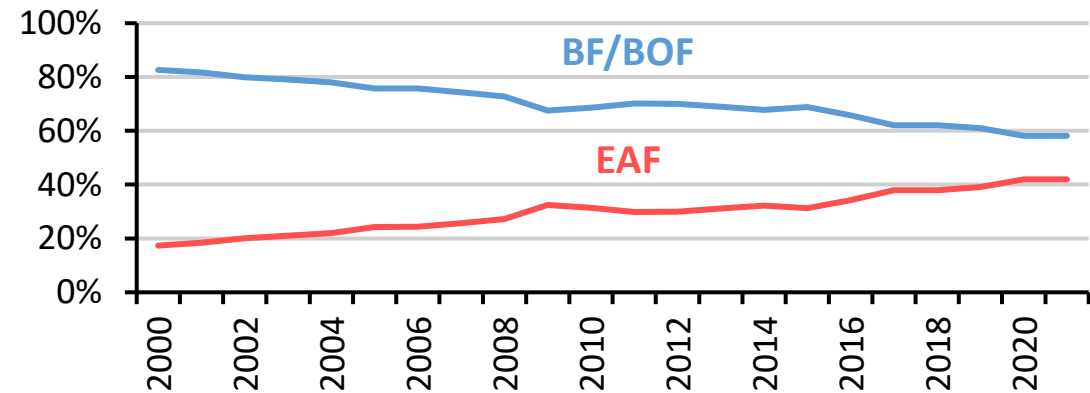
Changes in USA HSM Capacity 2000 – 2025F



USA HSM Capacity – MT



USA Raw Steel Production – Flat Rolled



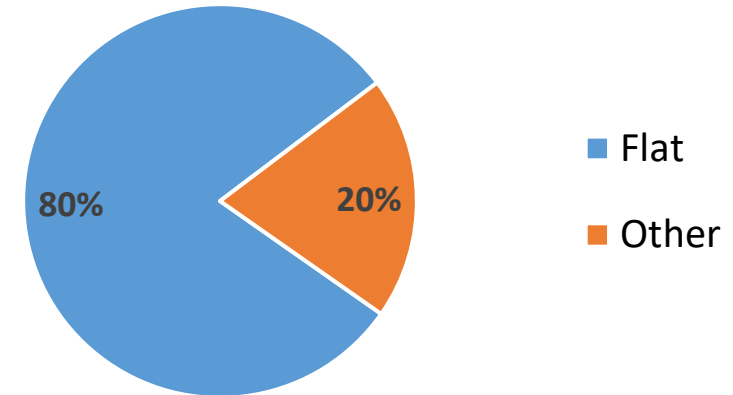
Source: SRA capacity database

Scrap Supply & Demand

16.0 MT of new EAF capacity is on the way – mostly flat roll

Company	Capacity MT	Product Type	Start Up
Nucor – KY	1.40	Flat Roll	Q1 2022
SDI – TX	3.00	Flat Roll	Q1 2022
NSBSL – OH	0.90	Flat Roll	Q1 2022
Nucor – KY	1.20	Plate	Late 2022
CMC – AZ	0.50	Long	Early 2023
AM/NS – AL	1.50	Flat Roll	1H-2023
Nucor – East	0.40	Long	2024
Nucor – West	0.60	Long	2004
Nucor – WV	3.00	Flat Roll	202
USS/BRS – AR	3.00	Flat Roll	2024
CMC - East	0.50	Long	2024
Total New	16.0		

Source: Company announcements



	Pig Iron DRI/HBI	Prompt Scrap	Obsolete Scrap	Home Scrap
Flat Rolled	10%-30%	30%-50%	20%-40%	< 10%
Specialty Bar	5%-15%	20%-30%	55%-65%	< 10%
Long Products	--	--	> 90%	< 10%

Higher Cost → Lower Cost

Scrap Supply & Demand

There are four major sources of scrap

Home Scrap



Mill Operations

Prompt Scrap



Mfg. By-Product

Obsolete Scrap

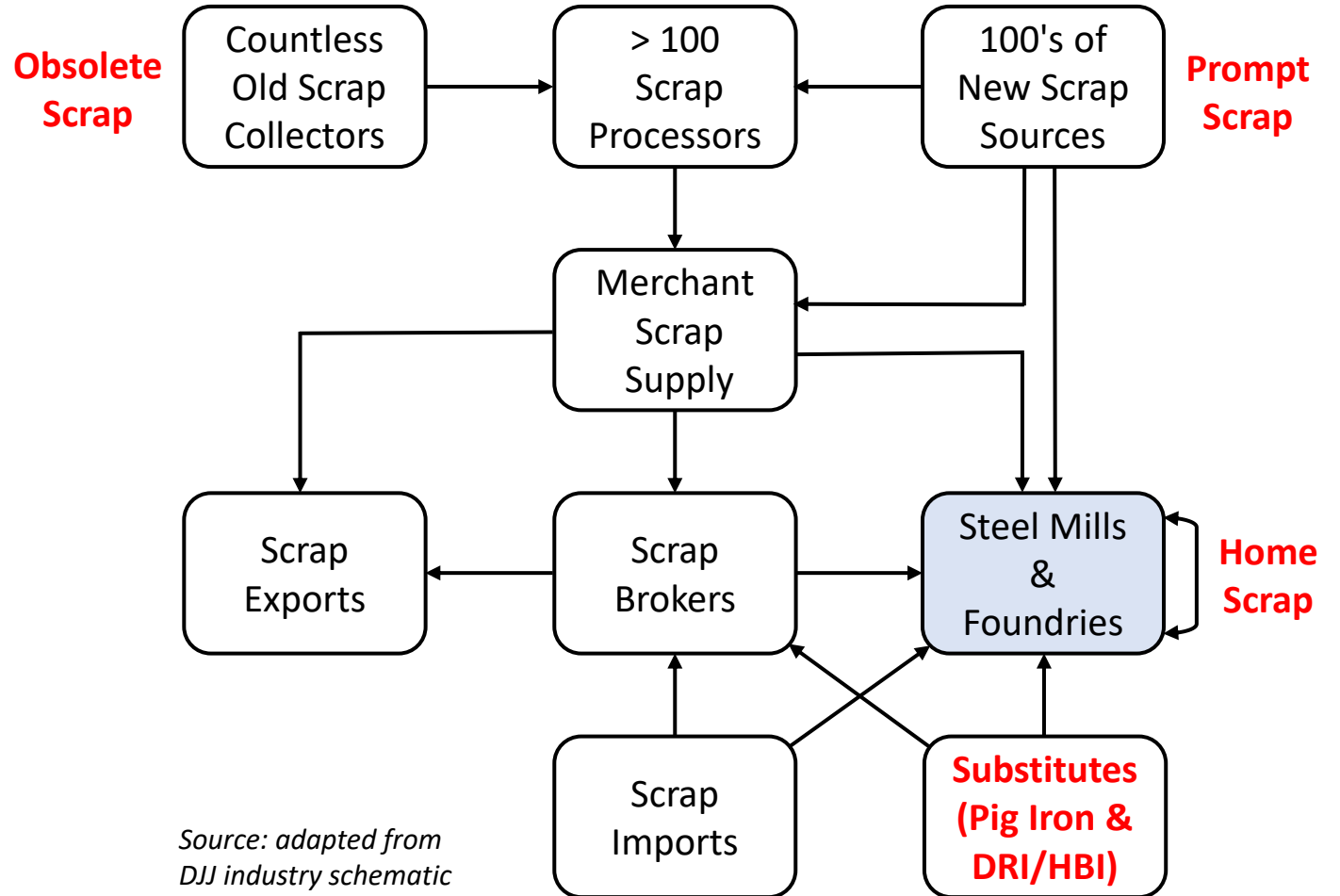


Retired Products

Substitutes



Pig Iron & DRI/HBI

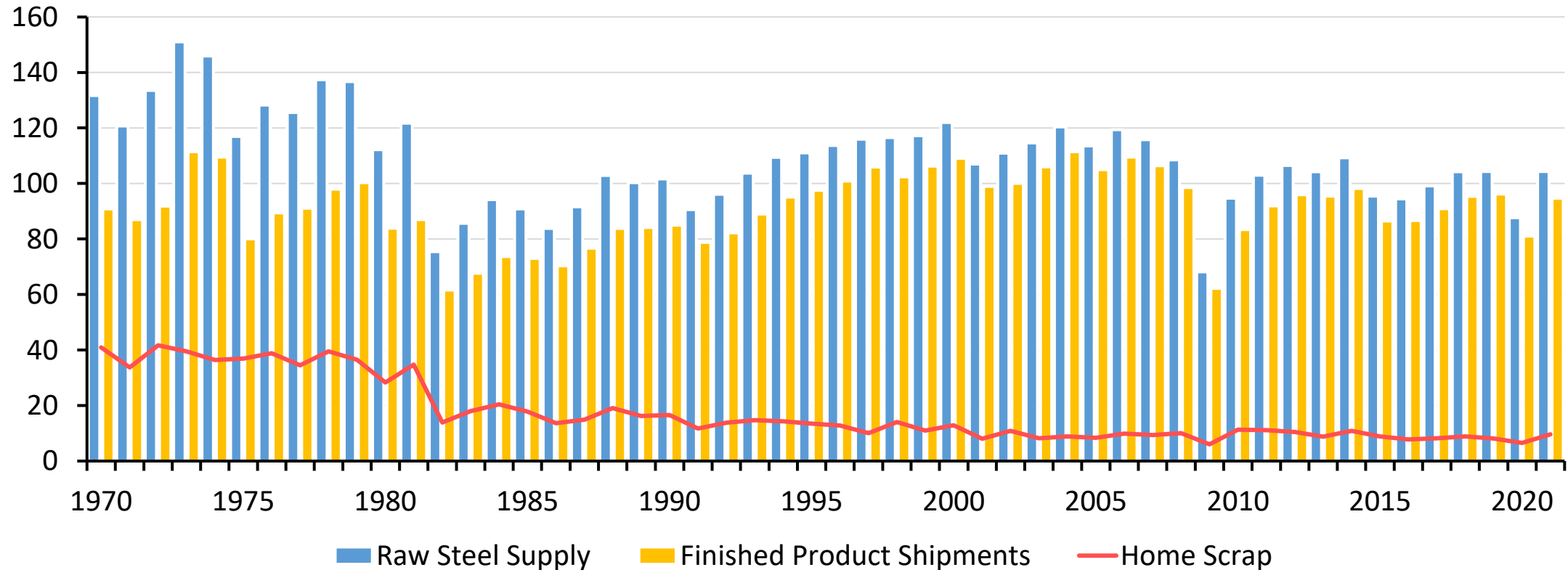


Source: adapted from DJJ industry schematic

Scrap Supply & Demand

Home scrap generated has dropped 75% in the last 50 years

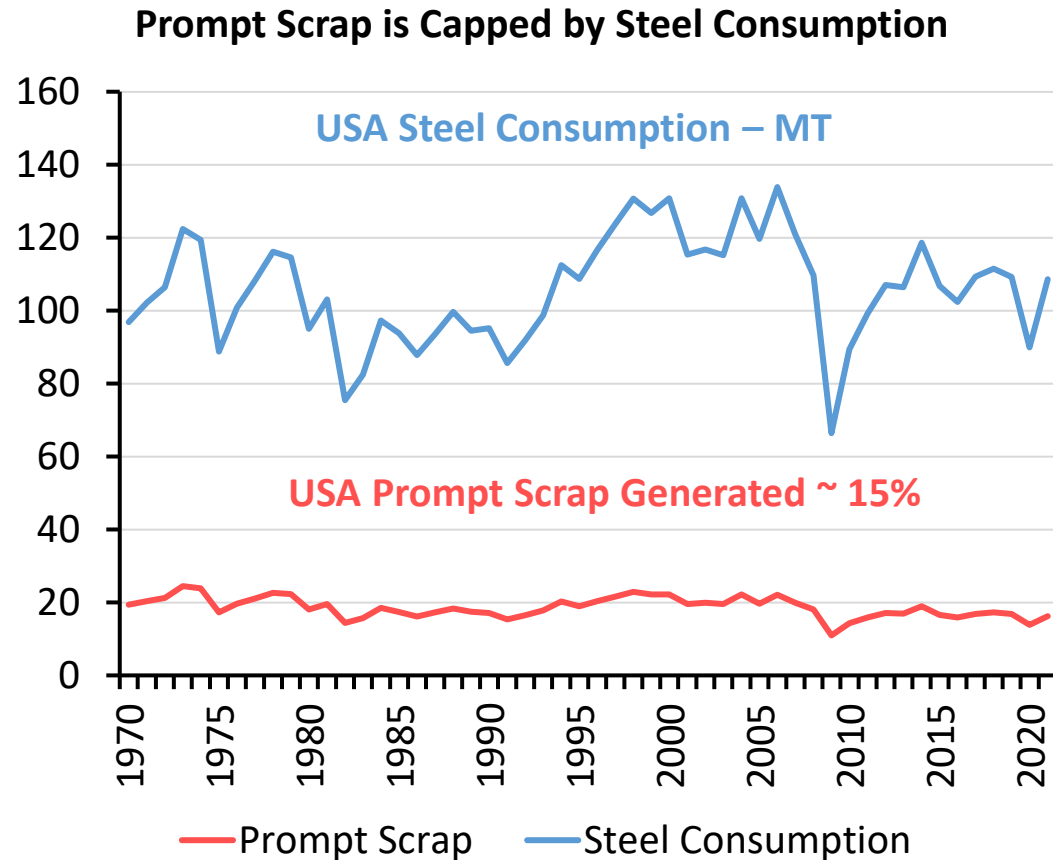
USA Home Scrap From Steel Mills – MT



Sources: AISI, SRA analysis & estimates

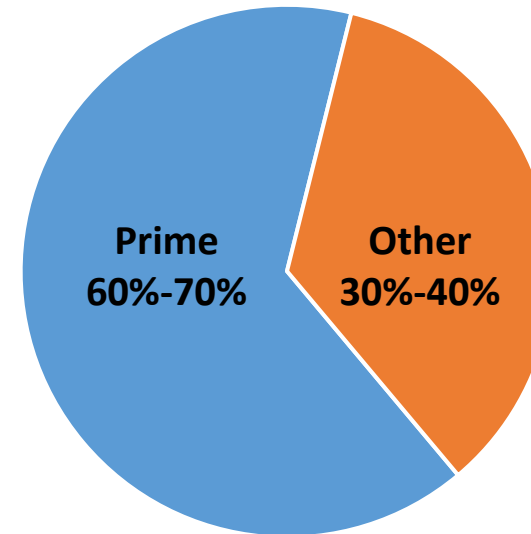
Scrap Supply & Demand

Prompt scrap is capped by steel consumption and not all of it is prime



Sources: AISI, SRA analysis & estimates

Est. Prompt Scrap Breakdown

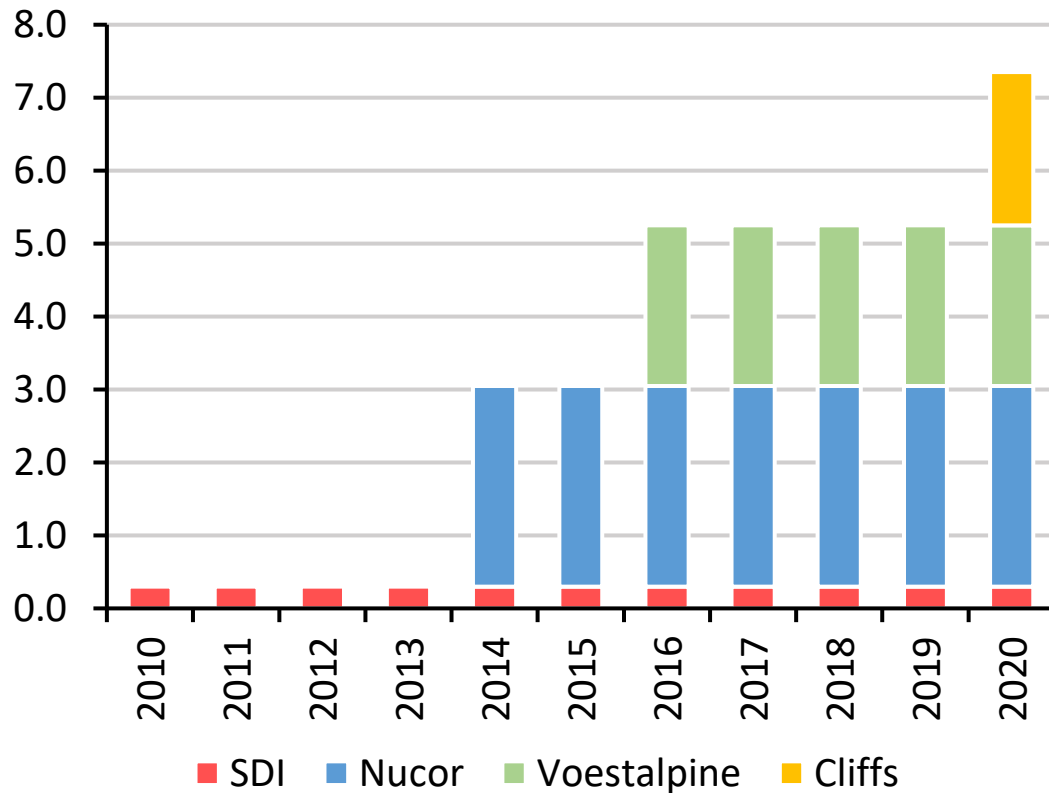


- Prime scrap estimate based on
 - Flat rolled 50% - 60%
 - Other 10% - 20% (some SBQ, Plate, and Rod)

Scrap Supply & Demand

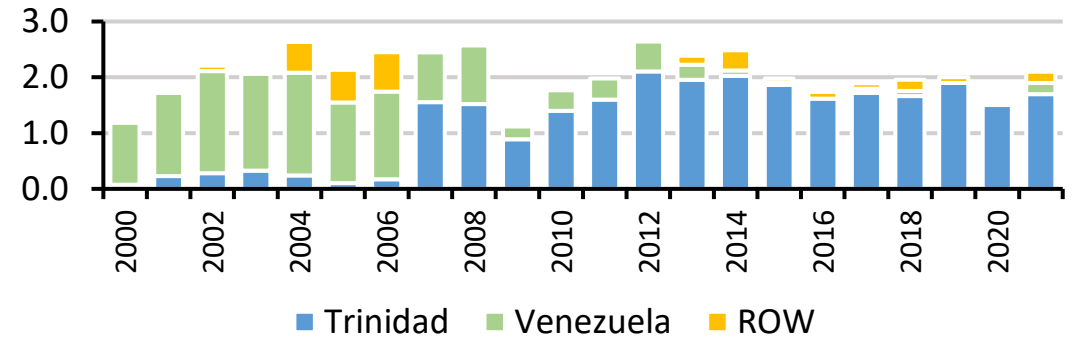
USA substitute production is growing, imports are not

Domestic DRI/HBI Capacity is Growing

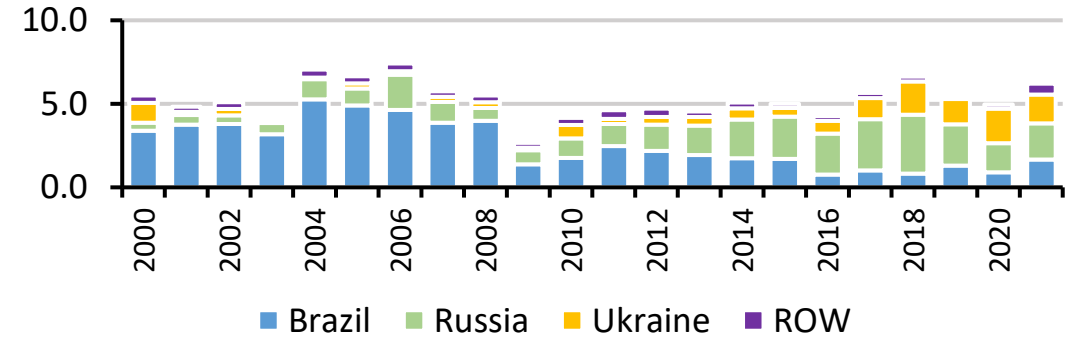


Sources: Company reports & Midrex

DRI/HBI Imports are Not Growing



Pig Iron Imports are Not Growing

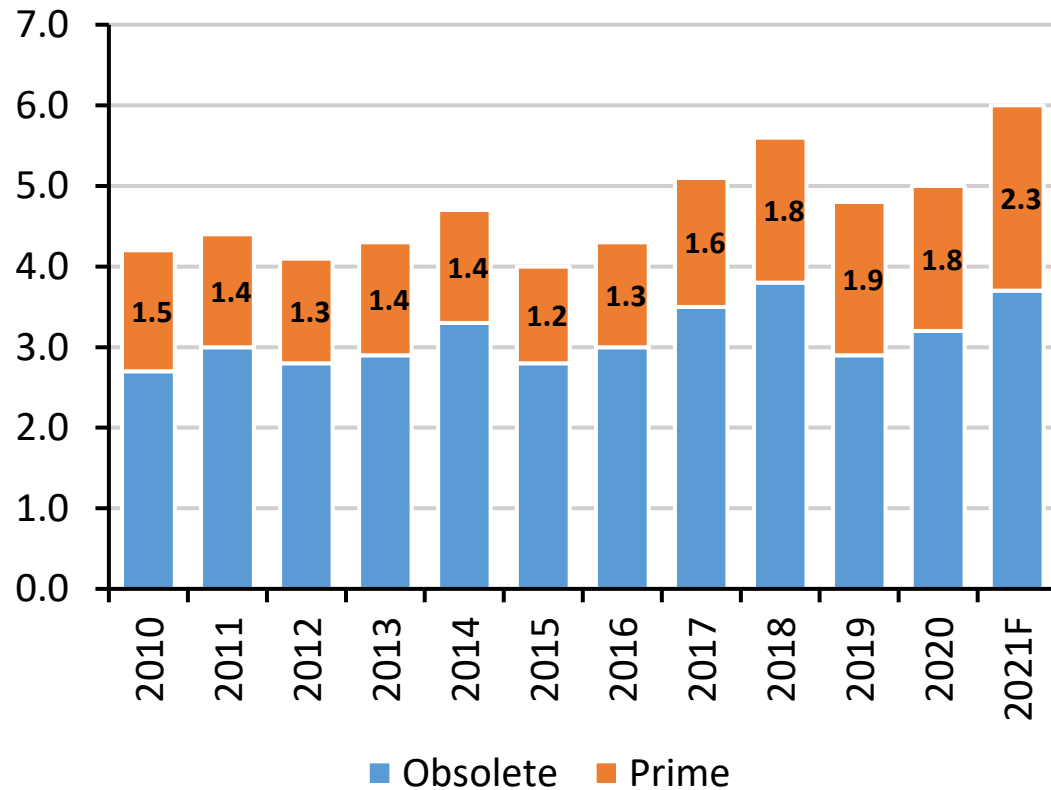


Source: AISI (2021F based on 10 months actual data)

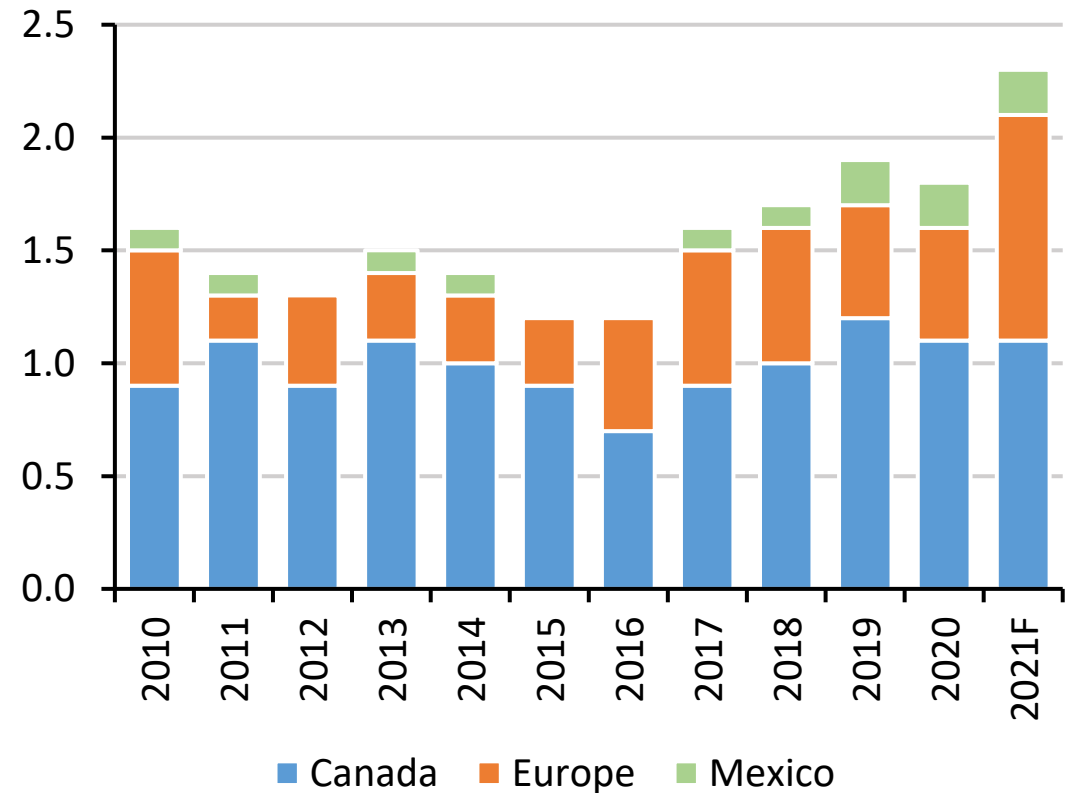
Scrap Supply & Demand

Prime scrap imports are growing

Scrap Imports by Type – MT



Prime Scrap Imports by Source – MT

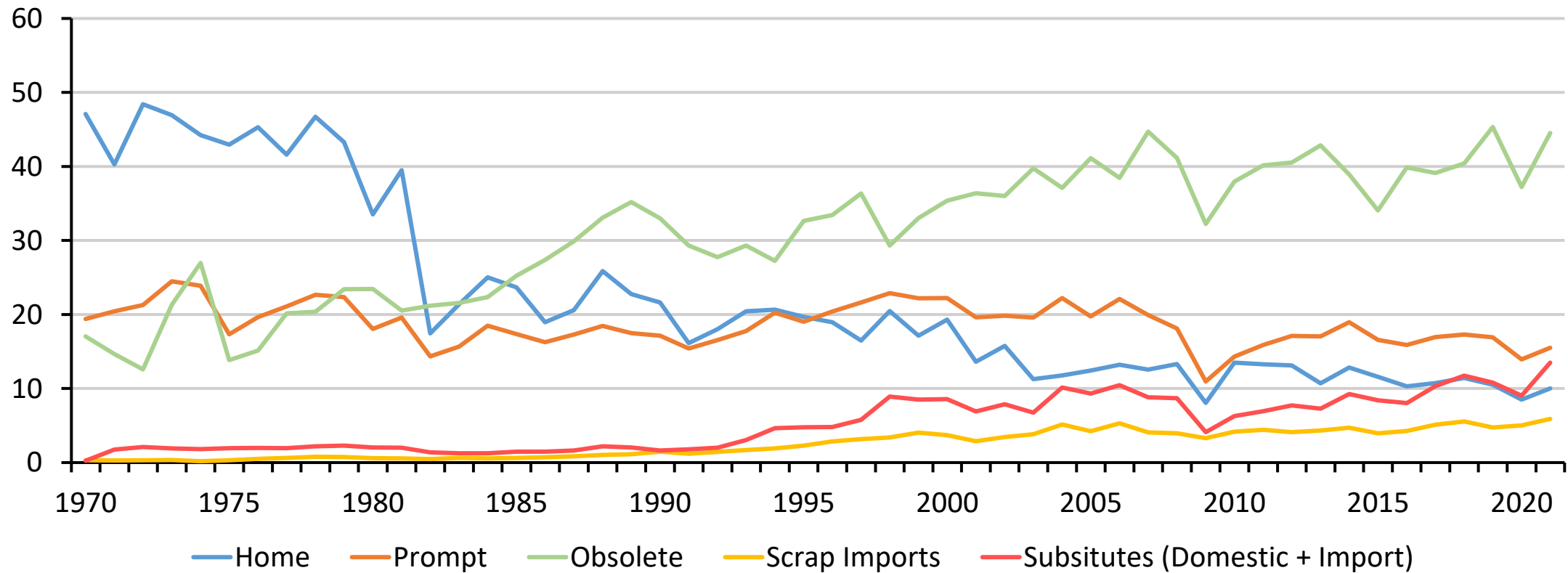


Sources: AISI, SRA analysis & estimates

Scrap Supply & Demand

Obsolete scrap is roughly 50% of scrap & substitutes consumed

USA Scrap & Substitutes Consumed – MT

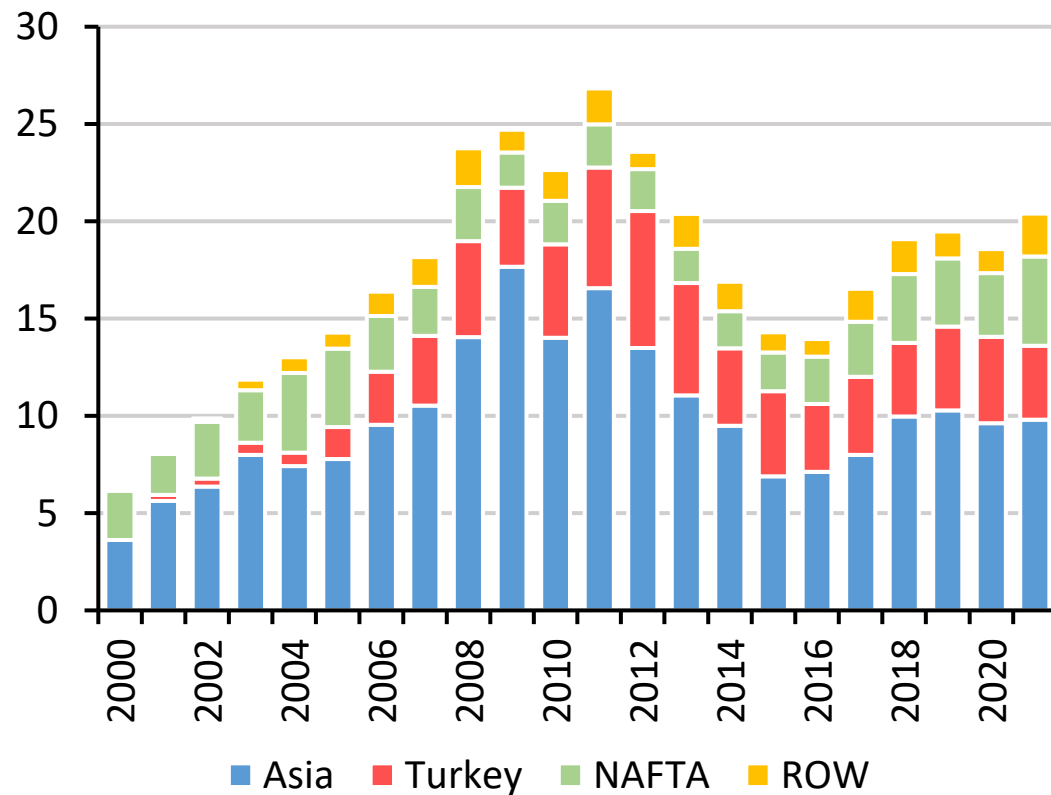


Source: SRA scrap model

Scrap Supply & Demand

Virtually all scrap exports are obsolete grades

Scrap Exports by Major Region – MT



Source: AISI

HTS Code	Description	5-Yr. Avg MT	% of Total
7204410020	#1 Bundles	133	0.8%
7204410060	Borings, Shovelings, Etc.	16	0.1%
7204410080	Shavings, Trimmings, Etc.	89	0.5%
Total Prime Grades		238	1.4%
7204490070	Shredded	5,684	32.4%
7204490020	#1 HMS	5,134	29.3%
7204490040	#2 HMS	748	4.3%
7204490060	Cut Plate & Structural	613	3.5%
7204100000	Cast Iron Waste & Scrap	1,065	6.1%
7204210000	Stainless Waste & Scrap	598	3.5%
7204290000	Alloy Steel Waste & Scrap	963	5.5%
Various	All Other Grades	2,483	14.0%
Grand Total		17,526	100.0%

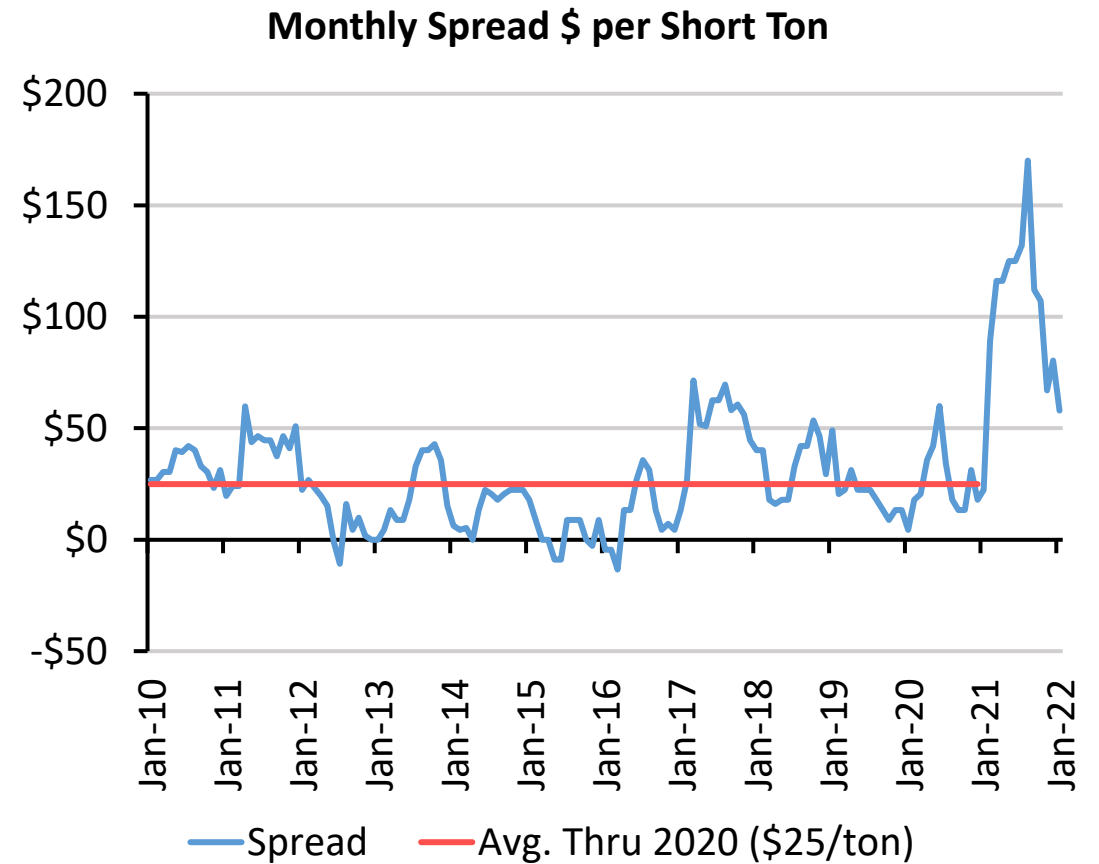
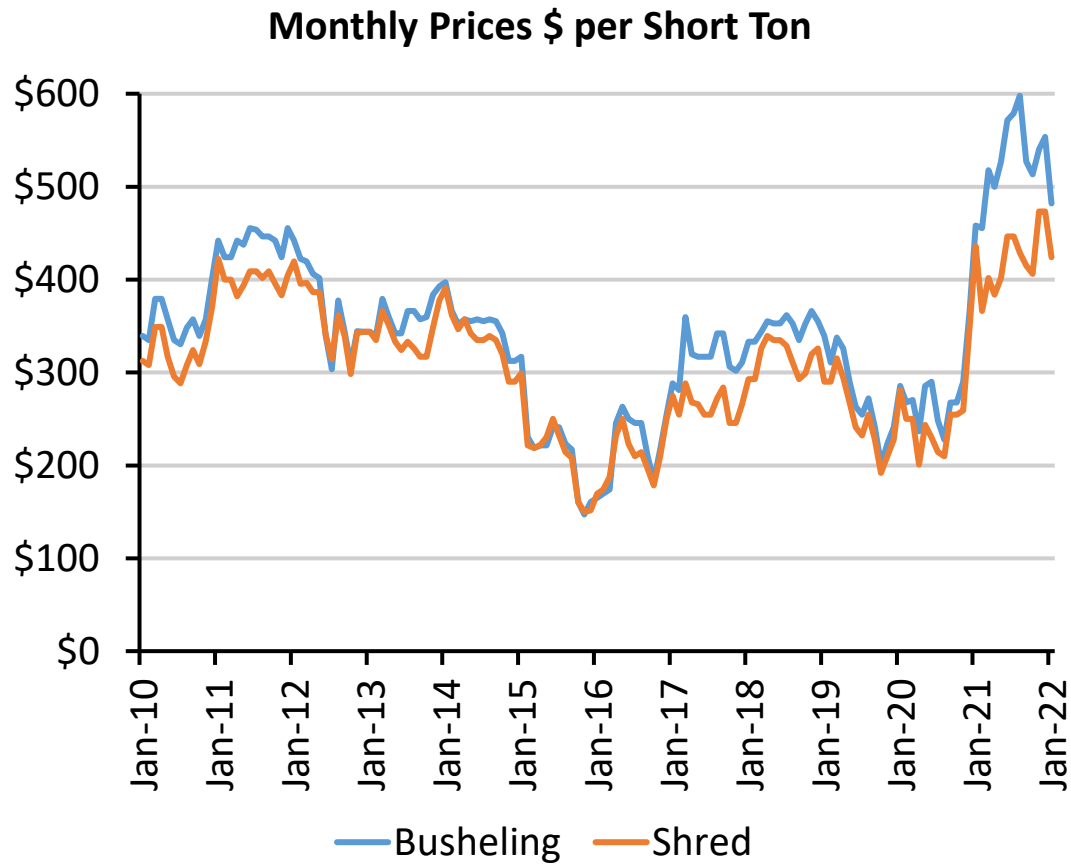
Scrap Supply & Demand

Is prime scrap the next precious metal?

- Prime scrap challenges
 - New flat rolled capacity requires high-quality metallics
 - No new domestic supply of prime without significant re-shoring of manufacturing
 - Prime imports could be curtailed as other countries pursue green steel initiatives
 - Limited merchant market for DRI/HBI
 - Limited merchant market for pig iron
- Prime scrap solutions
 - Better melting practices
 - Higher quality shredded – lowering the copper content
 - More local pig iron – Stelco, USS, others?
 - More local DRI/HBI
 - More imports of pig iron & DRI/HBI

Scrap Supply & Demand

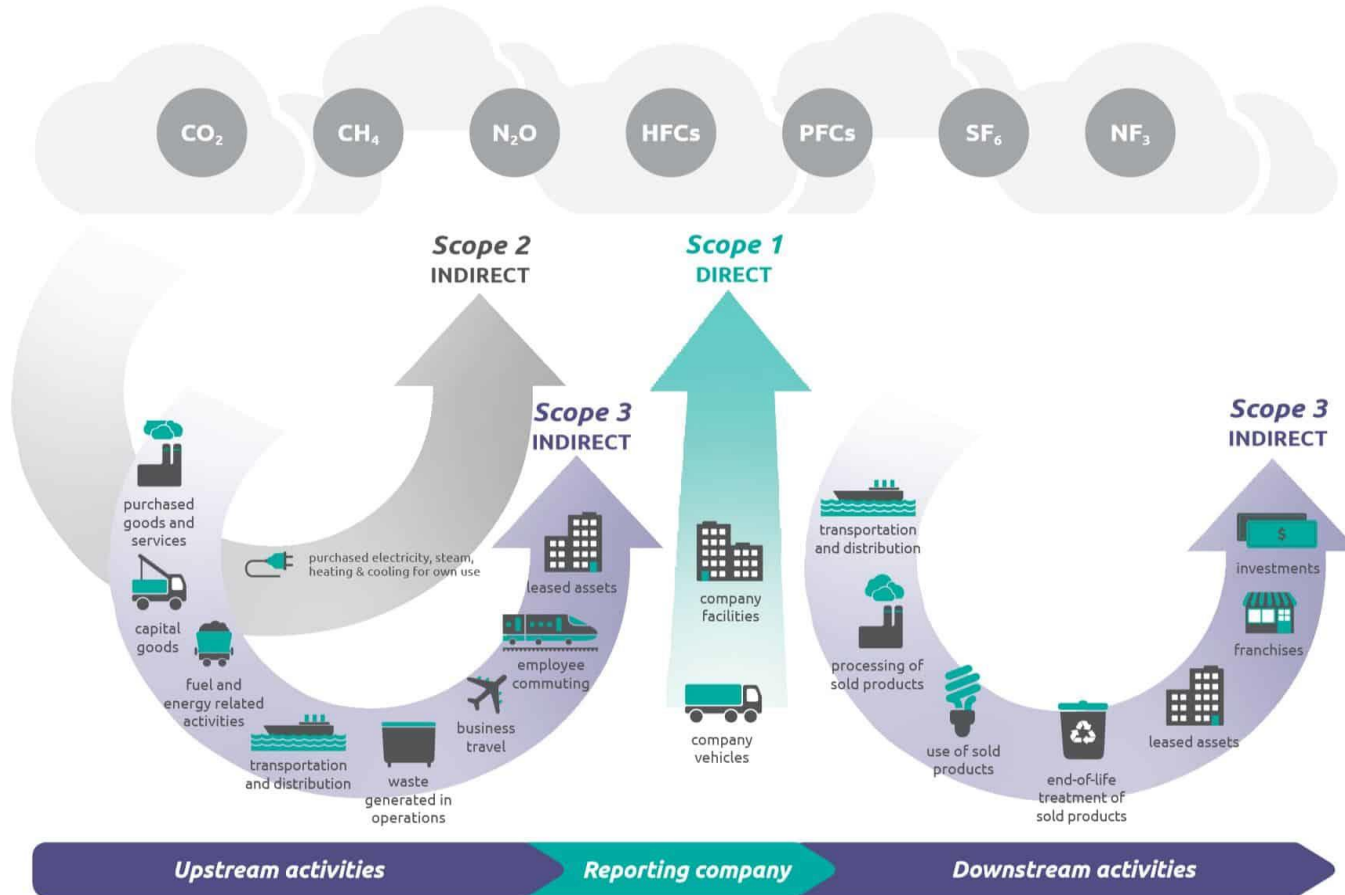
Prime to obsolete spread has decoupled – temporary or structural?



Source: SMU

Decarbonization of Steel

Current focus is on Scope 1 & 2 emissions



Greenhouse Gas Protocol

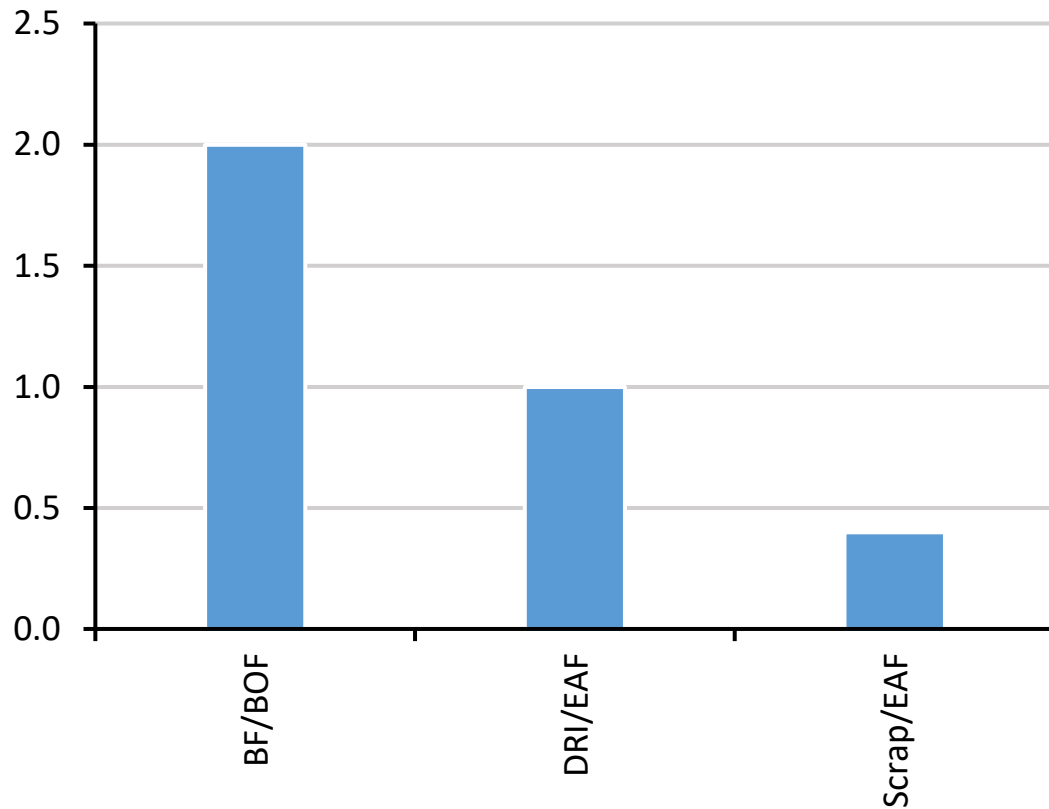
- Scope 1 – Direct Emissions
 - Company plants
 - Company vehicles
- Scope 2 – Indirect Emissions
 - Purchased electricity, steam, heating, and cooling
- Scope 3 – Other Indirect Emissions
 - Sources not owned or controlled by the company
 - Upstream sources
 - Downstream sources

Source: Greenhouse Gas Protocol

Decarbonization of Steel

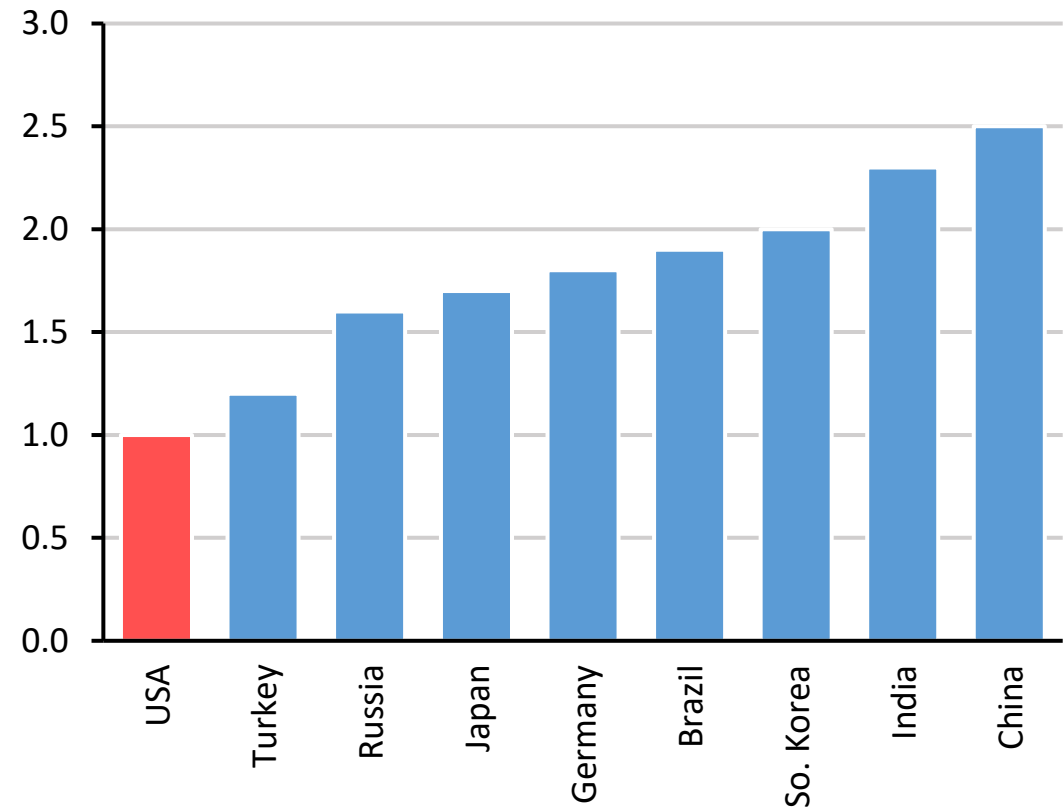
USA is a leader on the world stage (major steel producing countries)

Tons of CO₂ Emissions per Ton of Steel



Source: Midrex

Tons of CO₂ Emissions per Ton of Steel



Source: Global Efficiency Intelligence

Concluding Remarks

It's a great time to be in the steel industry

- The great rationalization
 - New technology replacing old
 - Investments in new technology are required to keep the industry competitive
- Higher prices are here to stay – get used to it
 - Prime scrap challenges
 - Industry consolidation
 - ESG compliance costs
 - New industry leadership & new ideas
- ESG issues are emerging – what's next?
 - What happens if Scope 3 emissions are included?
 - Current focus on producers – will it filter down to distributors & end-users?
 - Possibility of a carbon border adjustment mechanism (CBAM)?
- The industry is changing – think differently!
 - Don't look backward – the old industry structure and historical relationships no longer apply
 - Look forward – it's a new industry with new challenges & opportunities