

New Flat Rolled Capacity It's Complicated!

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New Flat Rolled Capacity – It's Complicated!

Introduction

- Much has been written & discussed about the new flat rolled capacity being added
- Substantive analysis has been noticeably absent
- It's complicated and it takes a lot of tools to analyze the new capacity
- Let's explore three major topics
 - Supply & demand fundamentals
 - Capacity analysis
 - Implications for raw materials supply

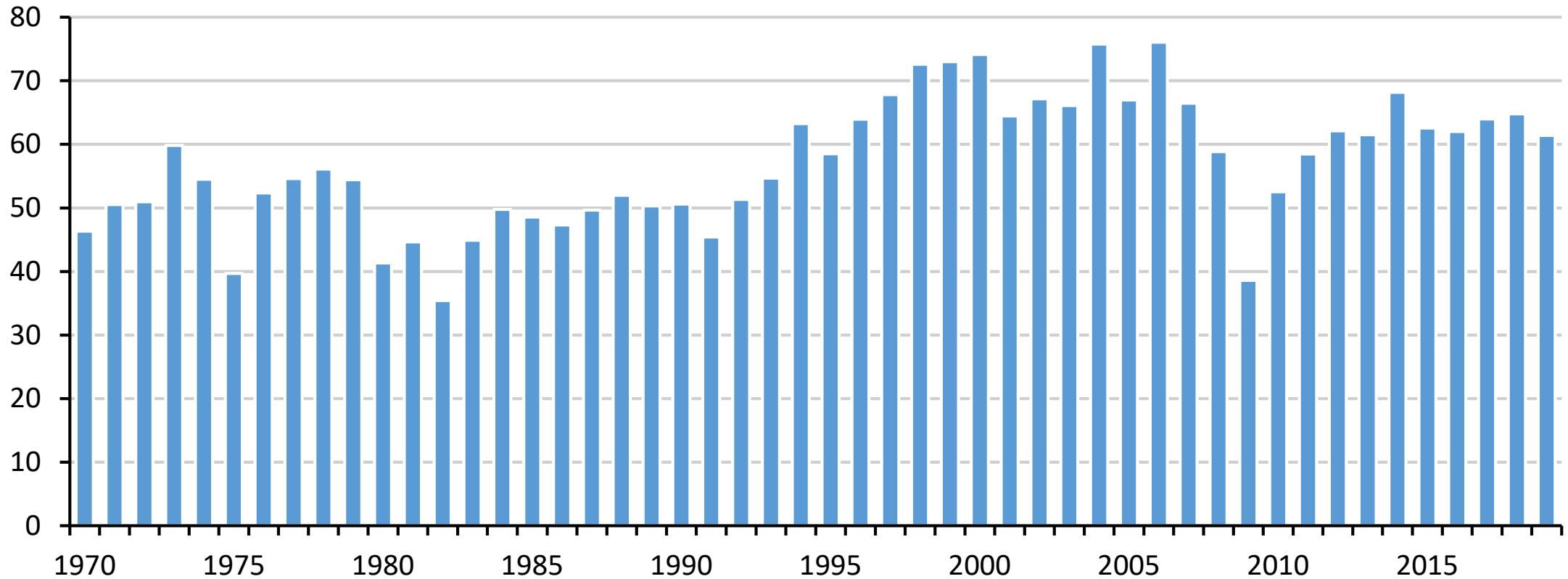
Note: All data is in short tons. MT = million short tons and KT = thousand short tons.

Flat Rolled Supply & Demand

The flat rolled market volume has not recovered to pre-crisis levels

CAGR	
1970-80	-1.1%
1980-90	2.0%
1990-00	3.9%
2000-10	-3.4%
2010-19	1.7%
1970-07	1.0%
1970-19	0.7%

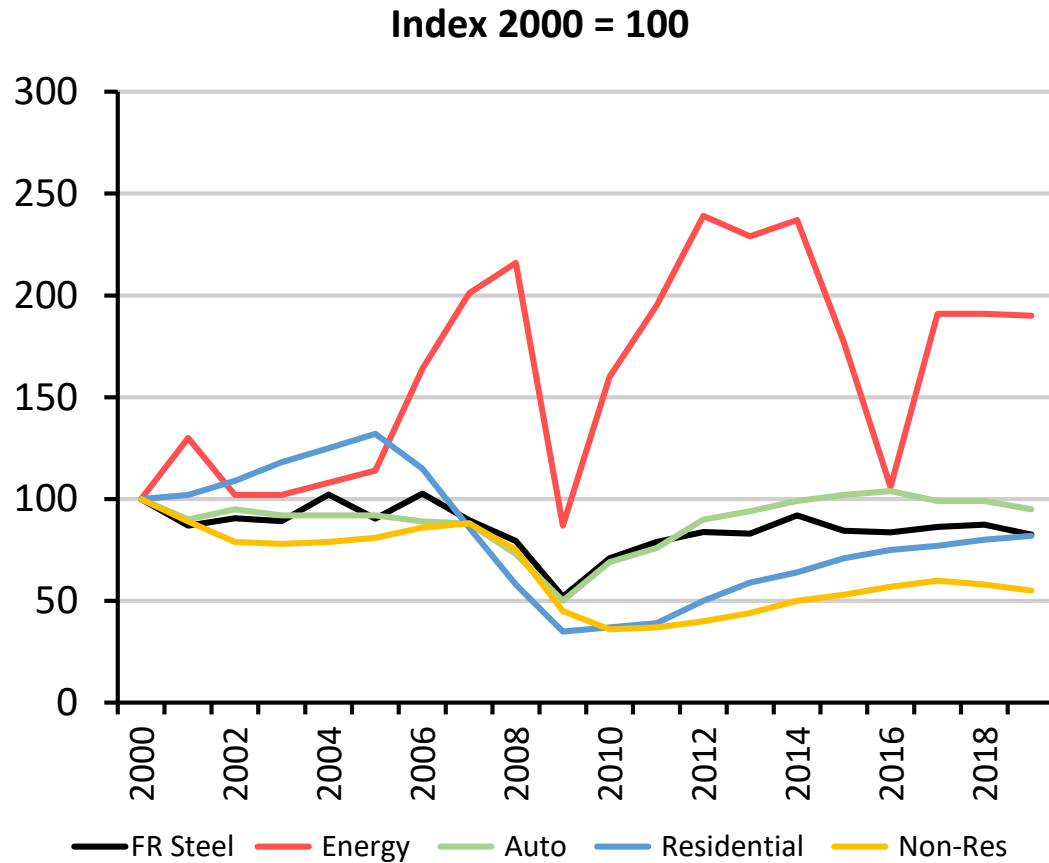
Flat Rolled Market – MT



Source: AISI, SRA estimates

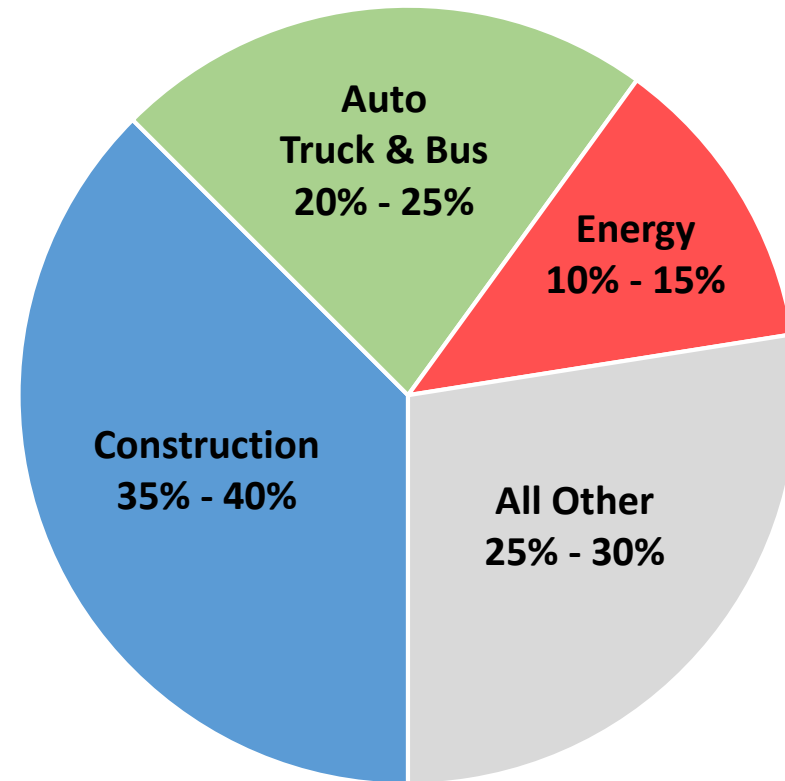
Flat Rolled Supply & Demand

Major demand drivers are not on the same business cycles



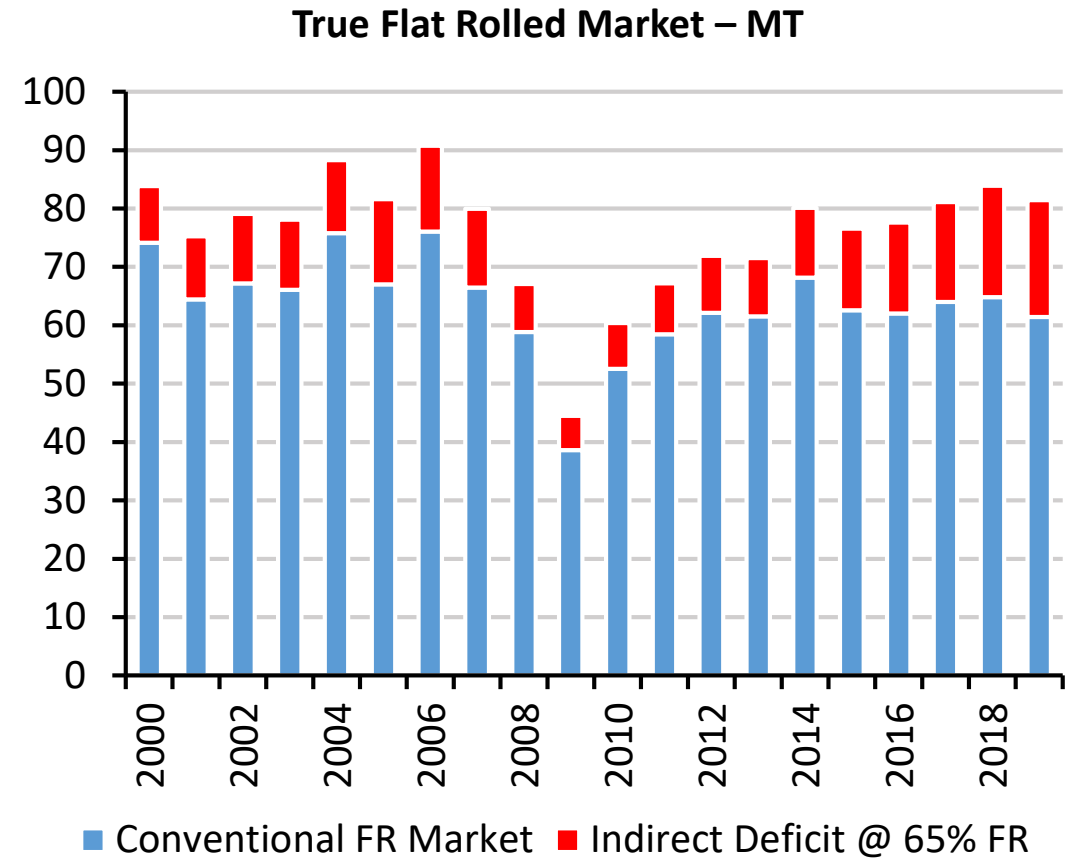
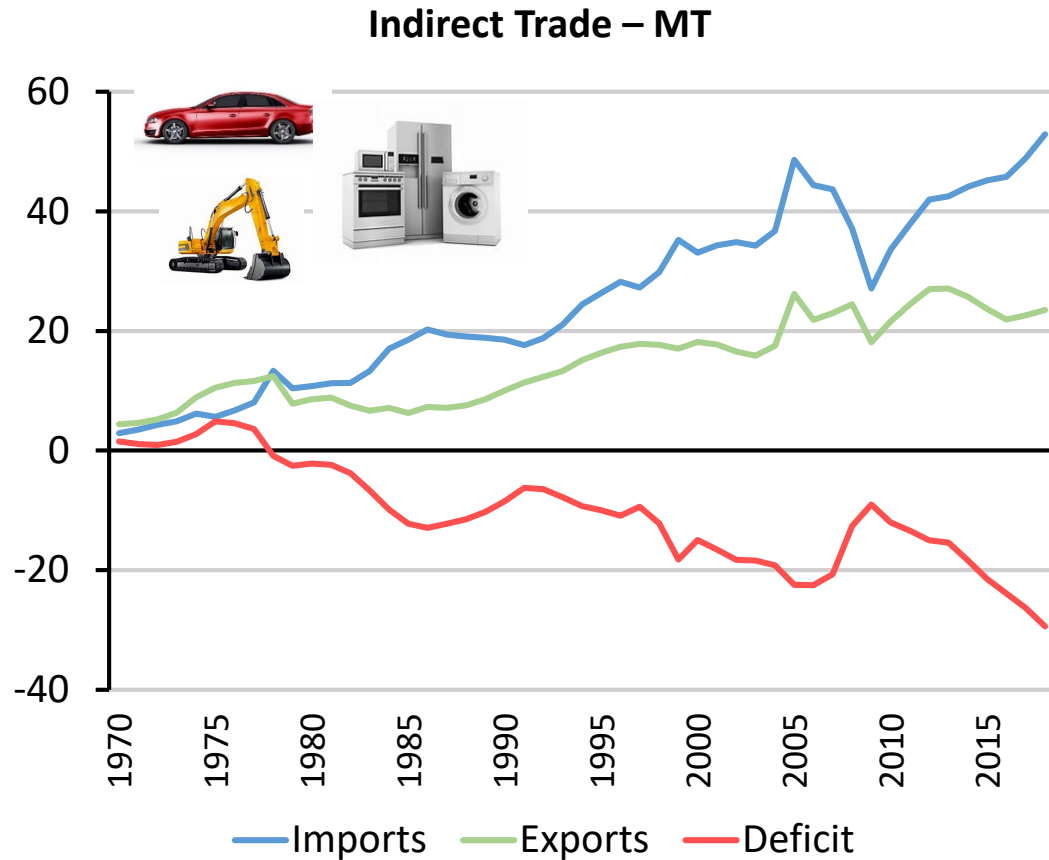
Source: various trade resources, SRA analysis & estimates

Approximate Share of FR Market



Flat Rolled Supply & Demand

Indirect trade has suppressed demand growth

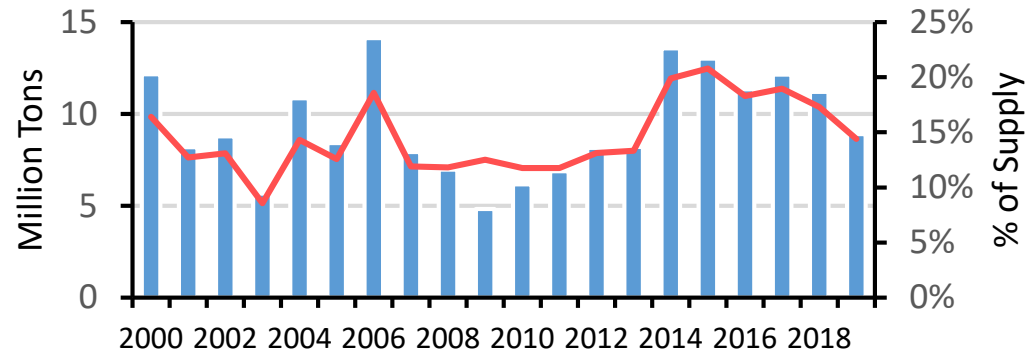


Source: AISI, WSA

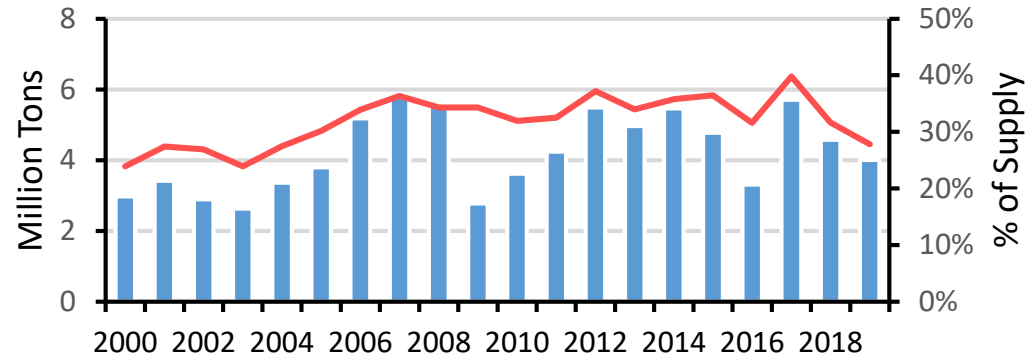
Flat Rolled Supply & Demand

Imports are still high by historical standards

Sheet Imports



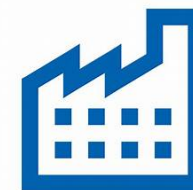
Welded Pipe & Tube Imports



Source: AISI, Preston, SRA estimates

Sheet Equivalent Imports - MT

Imports	2017	2018	2019
Direct Sheet	12.1	11.2	8.9
Welded P&T	5.7	4.6	4.0
Total Direct	17.8	15.8	12.9
Indirect @ 65% FR	17.1	19.1	20.0
Total Direct & Indirect	34.9	34.9	32.9

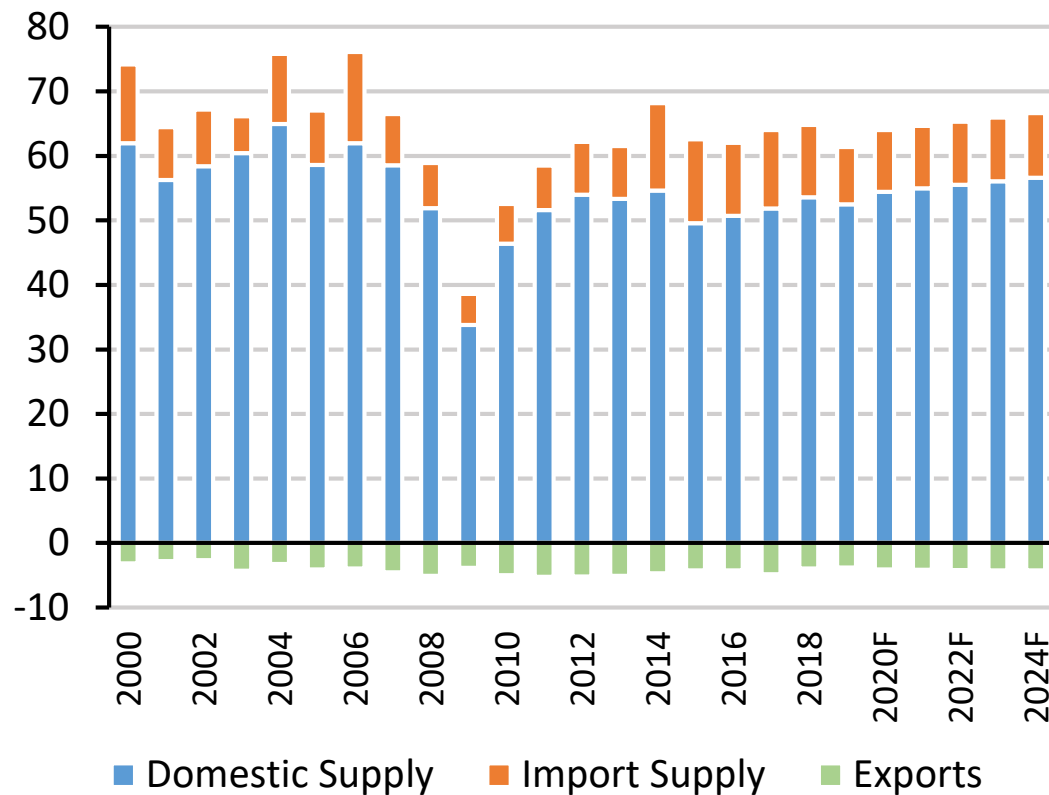


33.0 MT Equals
11 Sheet Mills
At 3.0 MT Each

Flat Rolled Supply & Demand

The outlook for demand is modest growth over the next couple of years

Flat Rolled Market Outlook – MT

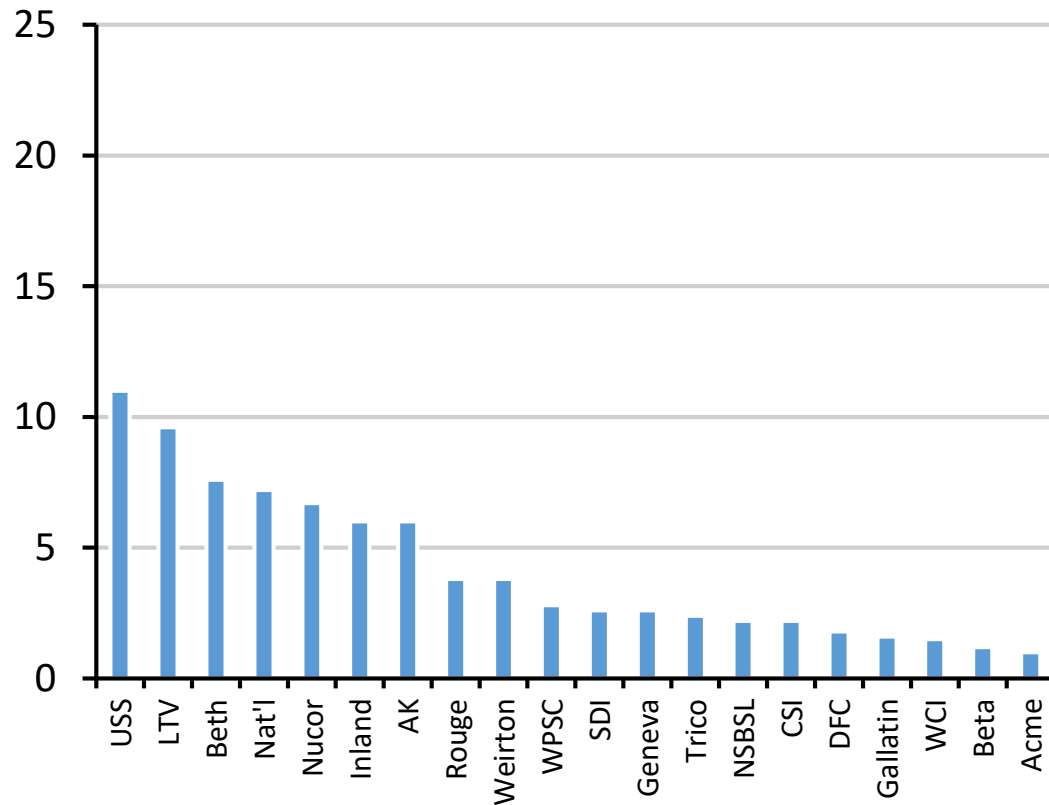


- 2019 down 5.25% from 2018
- 2019 inventory drawdown throughout the supply chain
- 2020F bounce back to 2018 levels
- 1% annual demand growth thereafter
 - Individual products have different growth rates
 - 1% is the weighted long-term average
- Import supply = 15% per year
 - Average 2000 – 2019P = 14.6%
 - Average 1970 – 2019P = 14.8%
- Export % of shipments = 7.0% per year
 - Average 2000 – 2019P = 7.3%
 - Average 1970 – 2019P = 4.8%

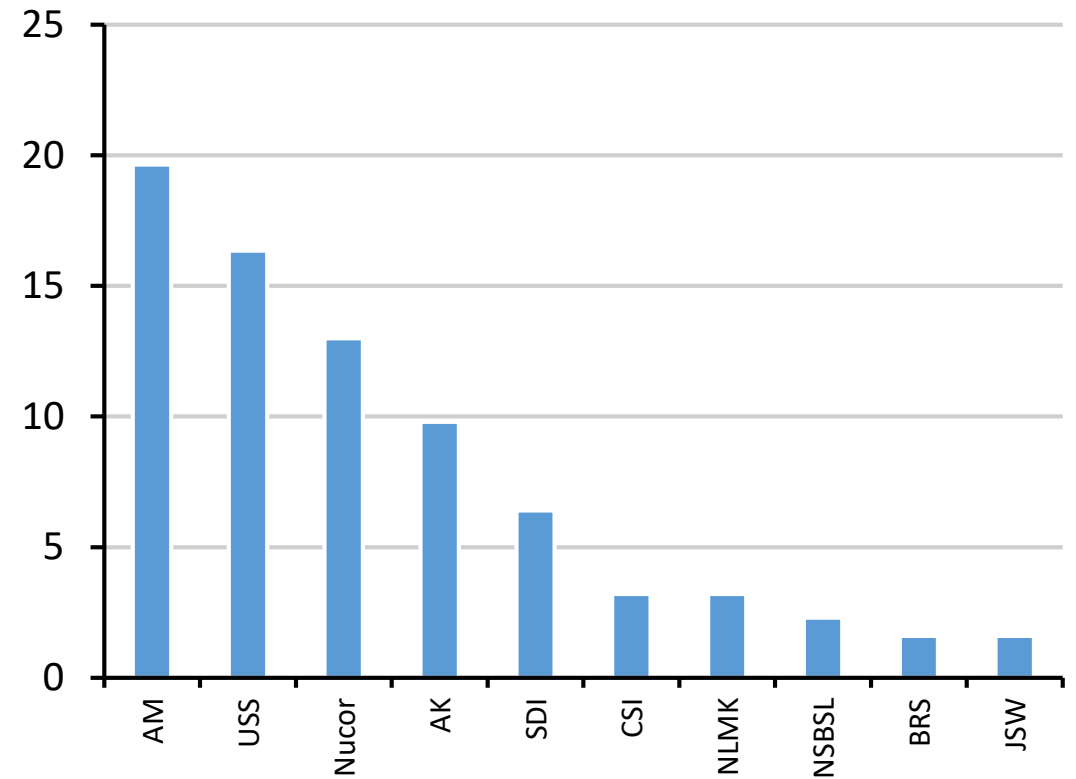
Flat Rolled Capacity

Domestic producers have consolidated

2000 HSM Capacity = 84.6 MT



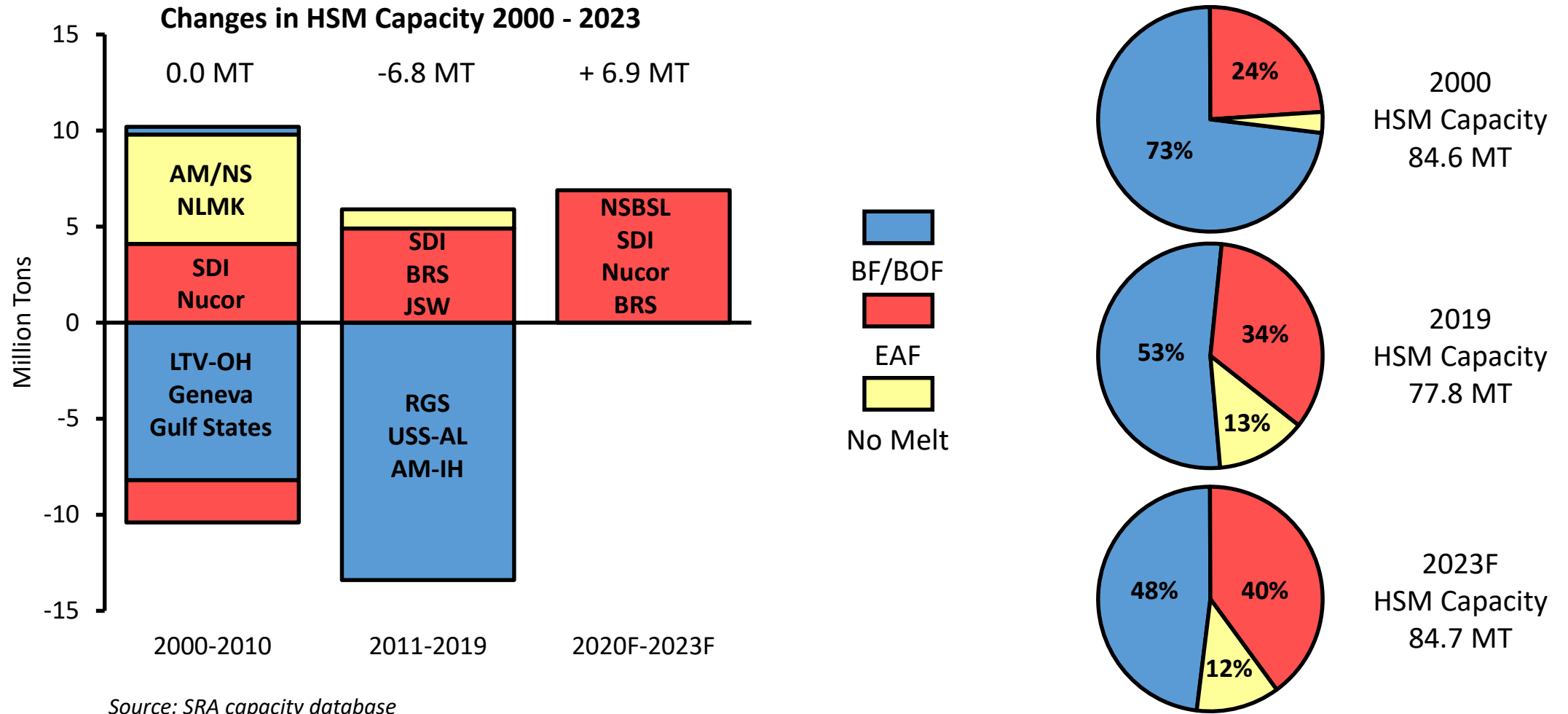
2020 HSM Capacity = 77.8 MT



Source: SRA capacity database

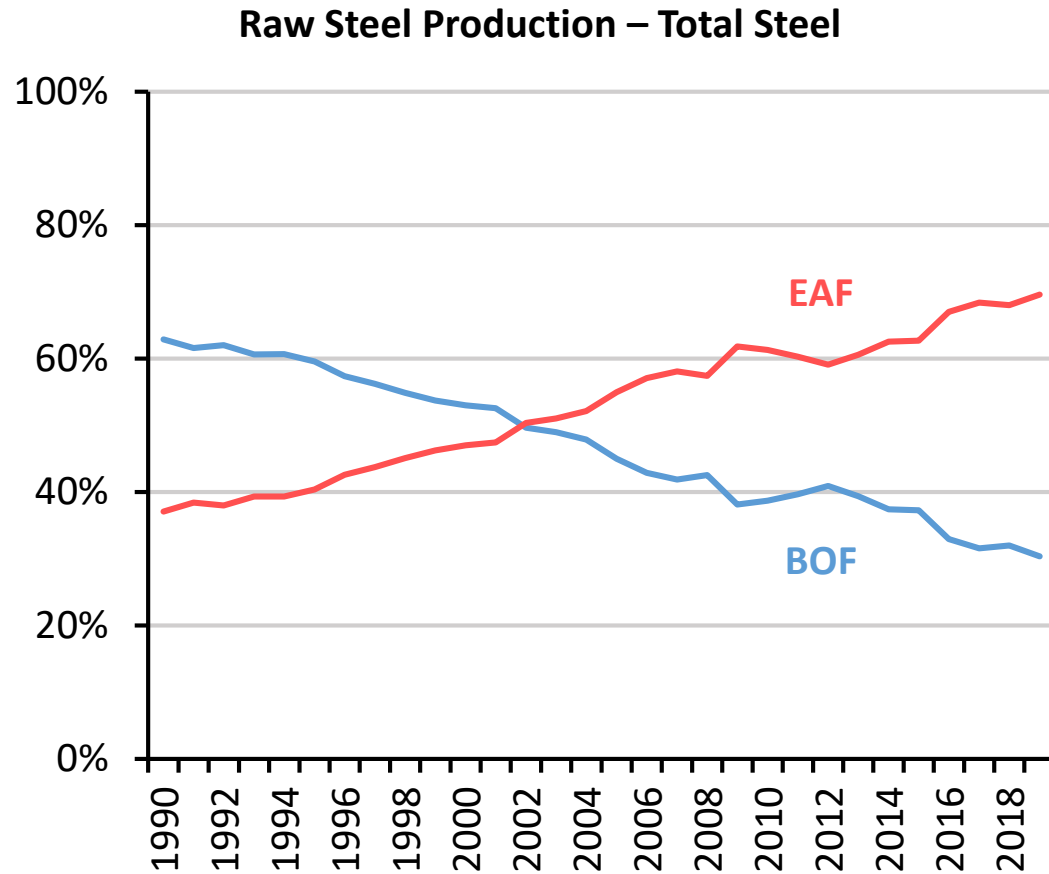
Flat Rolled Capacity

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

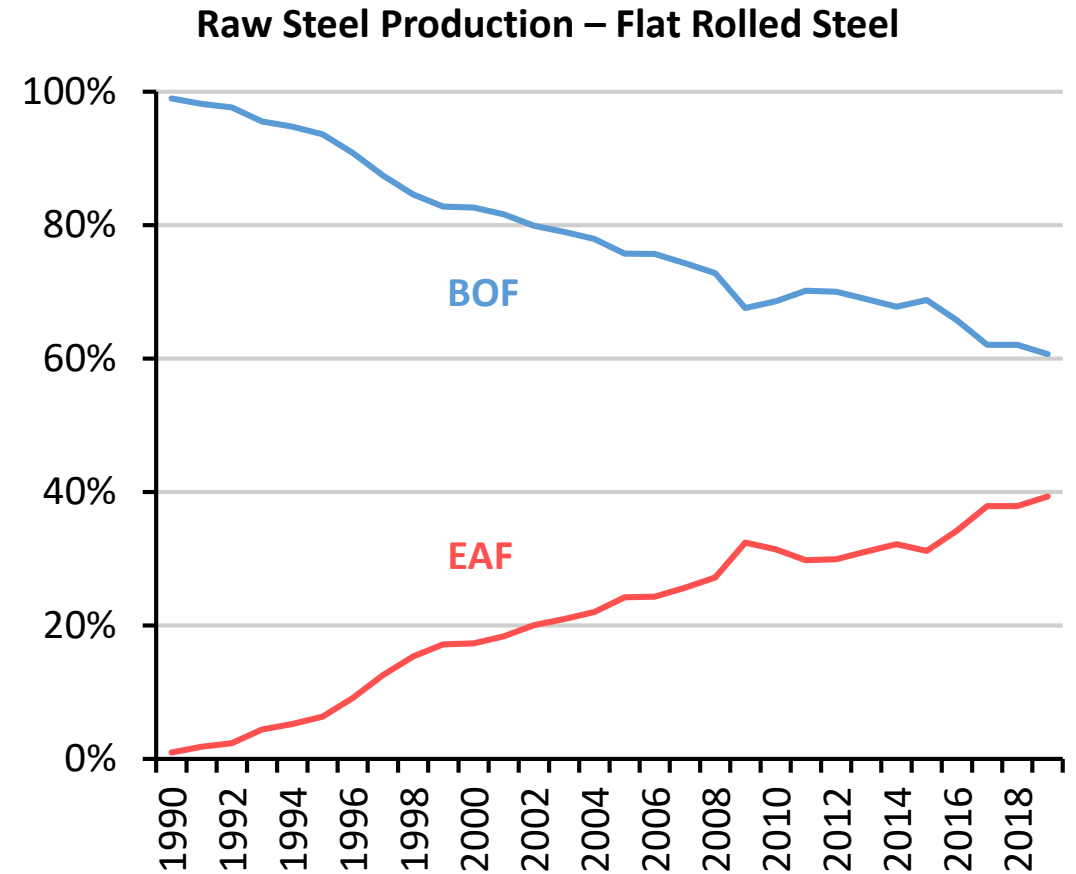


Flat Rolled Capacity

EAF share of flat rolled steel production is growing



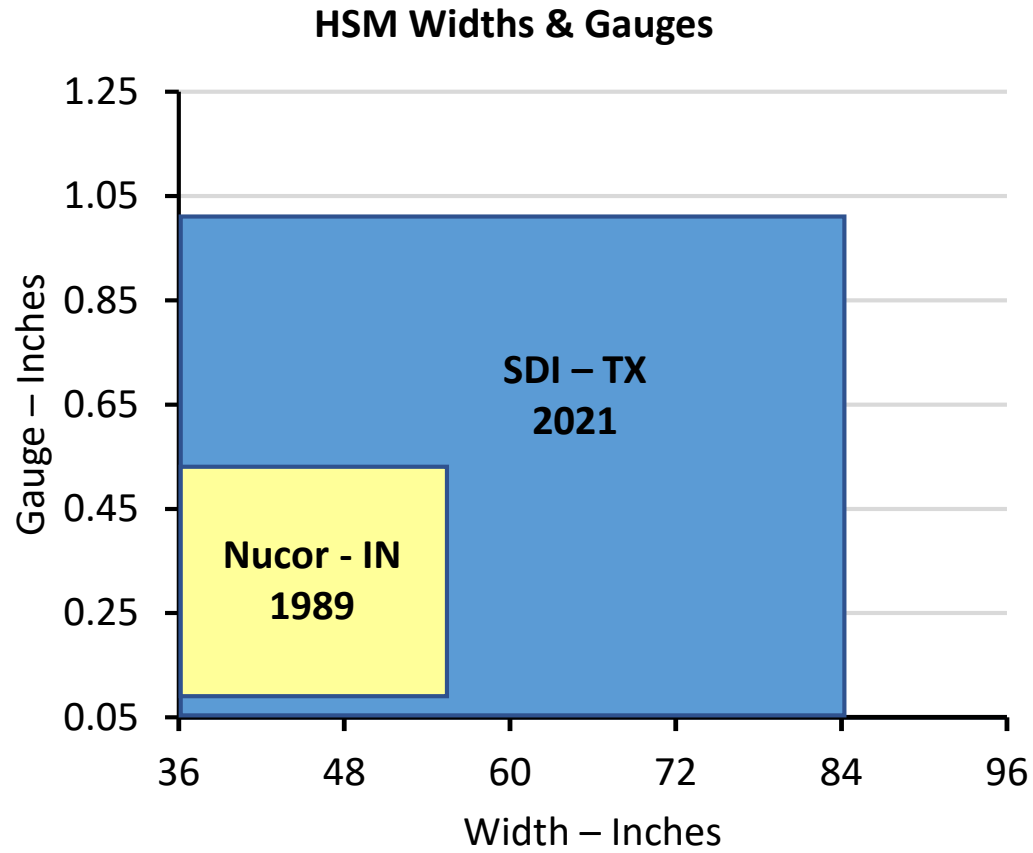
Source: AISI



Source: Company reports, SRA analysis & estimates

Flat Rolled Capacity

EAF flat rolled capabilities are expanding

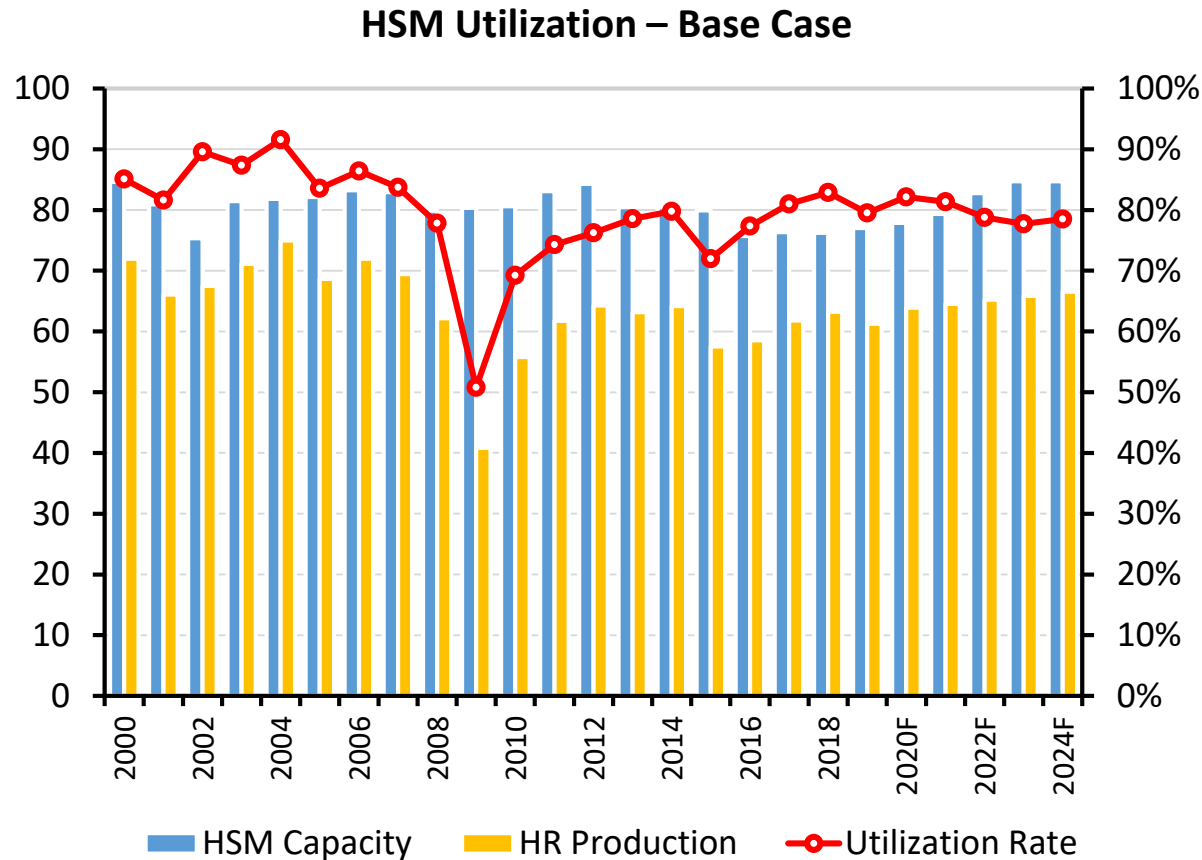


Other Capabilities Expanding Over Time

- Light-gauge HRC
- Higher strength steels for automotive & energy
- Vacuum degassing & post annealing
- Electrical steels
- In-house painting
- Single caster vs. double caster plants
- Etc.

Flat Rolled Capacity

HSM capacity utilization is looking to drop marginally



Source: SRA capacity database

- Base case 2020 -2024
 - Demand growth of 1.0% per year
 - Import supply of 15.0%
 - Exports 7.0% of shipments
 - No domestic HSM closures
- Realistic upshots
 - Displacing some welded P&T imports
 - Chipping away at indirect trade
 - Several downstream trade cases in progress
 - Re-shoring of manufacturing (low taxes, low energy costs, low interest rates, less regulation)
 - Displacing more direct imports
 - Increasing exports
 - Positive impacts of USMCA

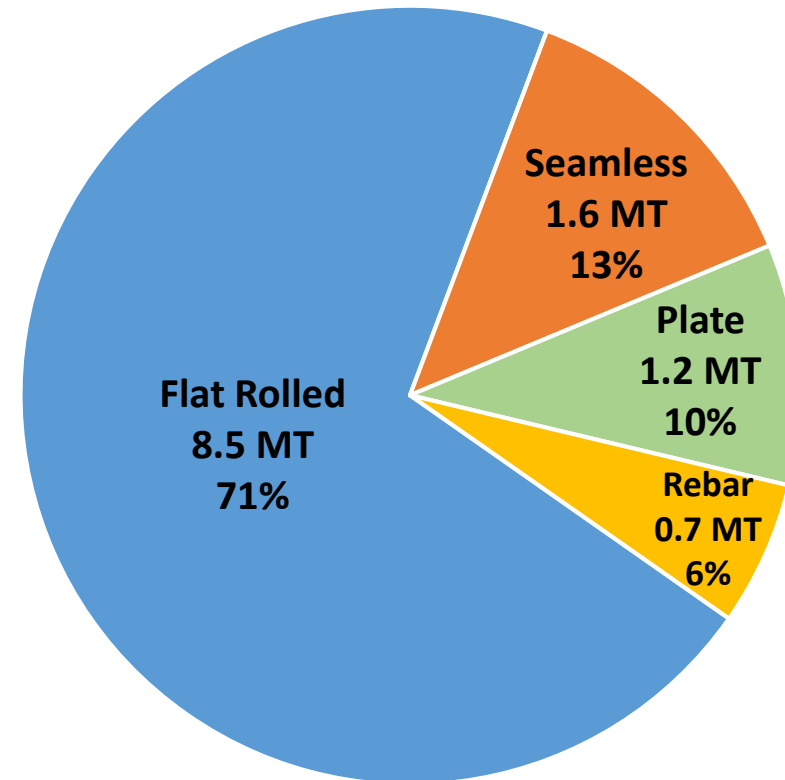
Raw Materials

Most of the new EAF capacity is flat rolled

Company	Expected Startup	EAF MT	Product Type
JSW – OH	Late 2018	1.60	Flat Rolled
Nucor – MO	Late 2019	0.35	Rebar
Nucor – FL	H1 2020	0.35	Rebar
USS – AL	H2 2020	1.60	Seamless
BRS – AR	Late 2020	1.60	Flat Rolled
Nucor – KY	Q2 2021	1.40	Flat Rolled
NSBSL – OH	Late 2021	0.90	Flat Rolled
SDI – TX	Late 2021	3.00	Flat Rolled
Nucor – KY	2022	1.20	Plate
Total		12.00	

Source: Company reports & press releases

Total New Capacity = 12.0 MT



Raw Materials

Flat rolled EAF's use a higher quality raw material mix

Indictive Mix – Varys by Mill

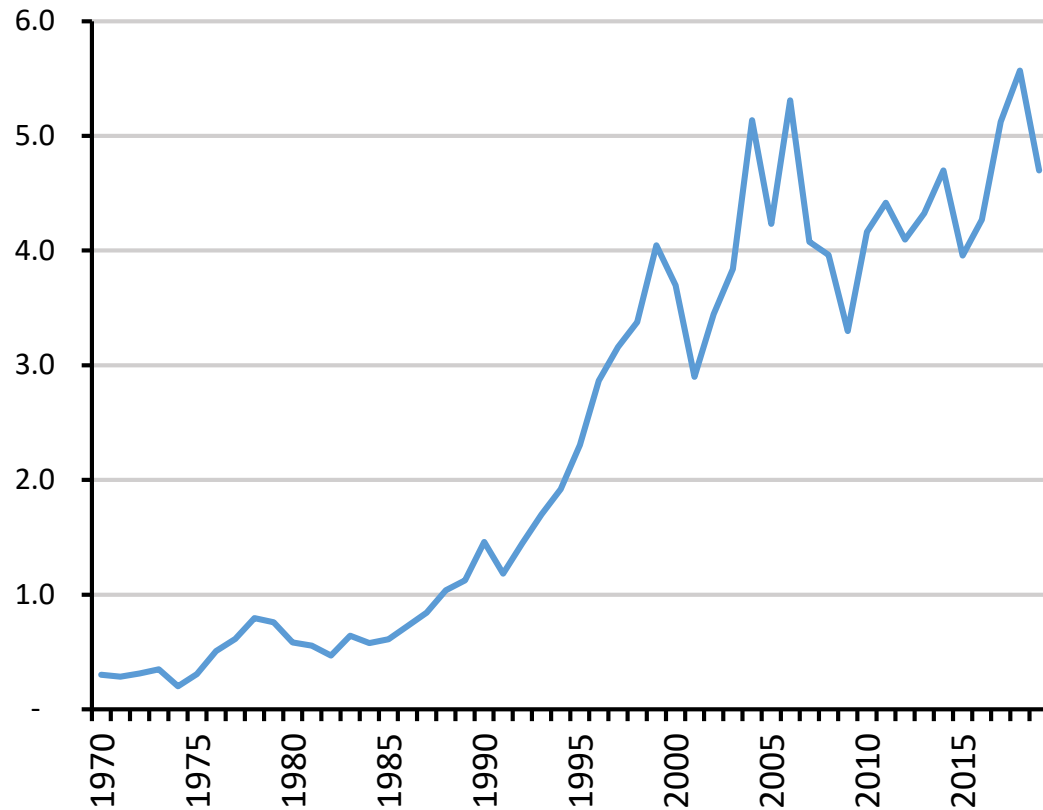
	Pig Iron DRI/HBI	Prime Scrap	Obsolete Scrap	Home Scrap
Flat Rolled	10% - 30%	35% - 55%	20% - 40%	< 10%
Specialty Bar	5% - 15%	20% - 30%	55% - 65%	< 10%
Commodity Long	--	--	> 90%	< 10%

Higher ← Cost per Ton → Lower

Raw Materials

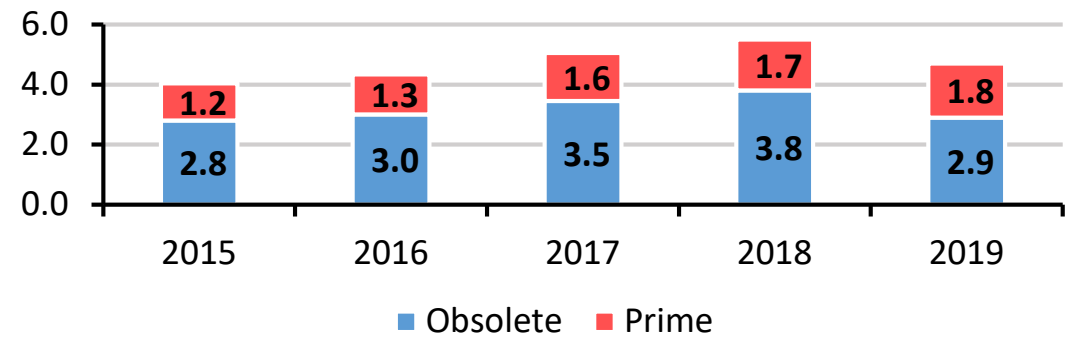
Imports of higher quality scrap are likely to increase

Total Scrap Imports – MT

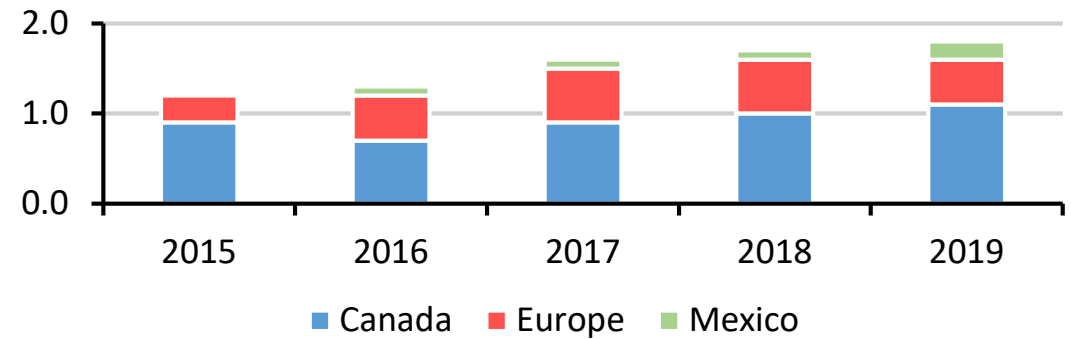


Source: AISI

Scrap Imports by Type – MT



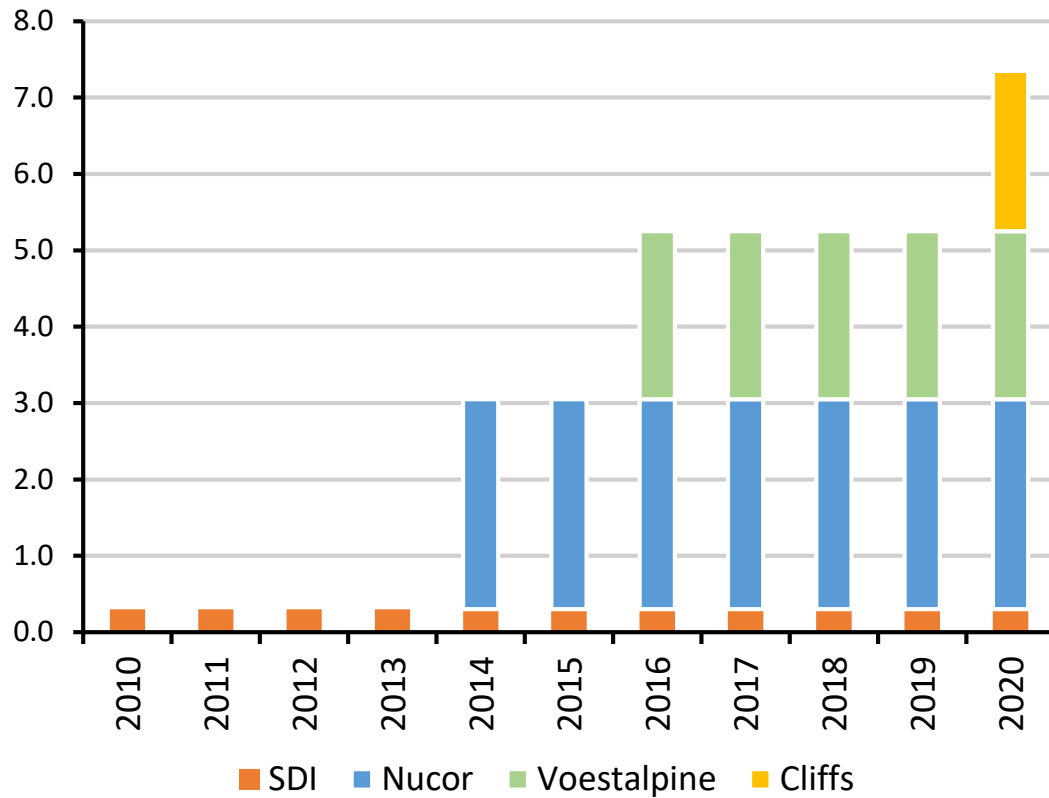
Prime Imports by Region – MT



Raw Materials

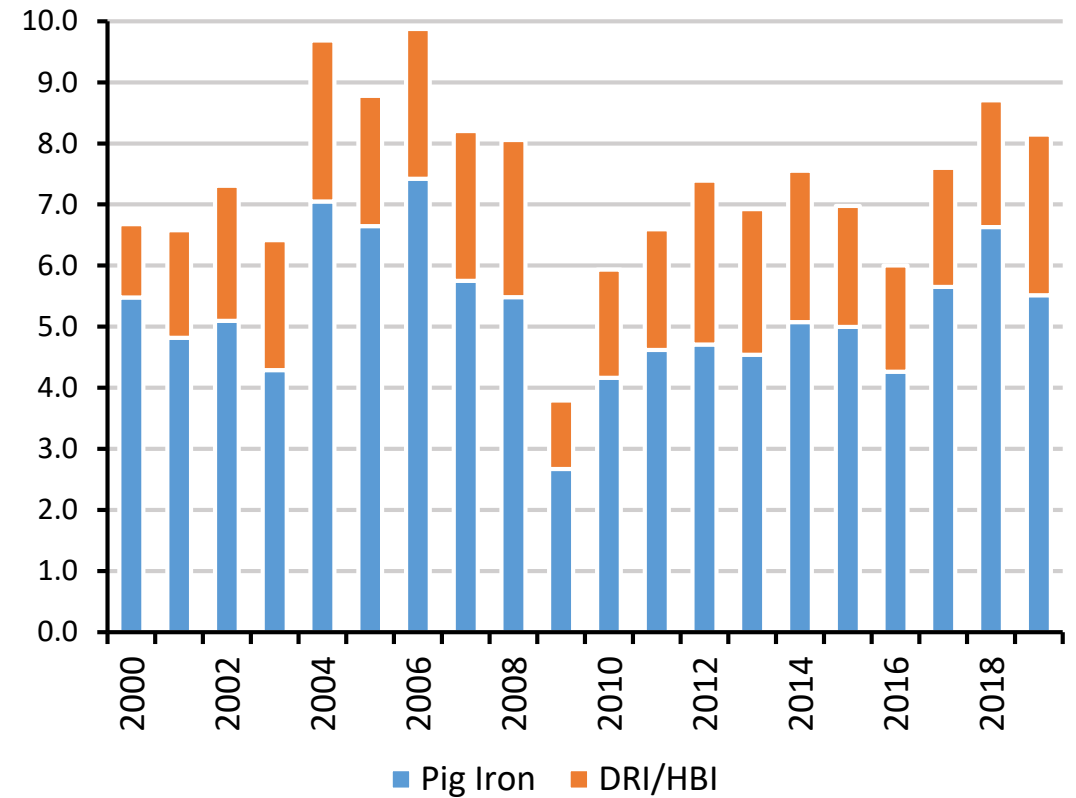
Scrap substitutes will also help fill the void

Domestic Scrap Substitutes – MT Capacity



Sources: AISI, company reports, Midrex

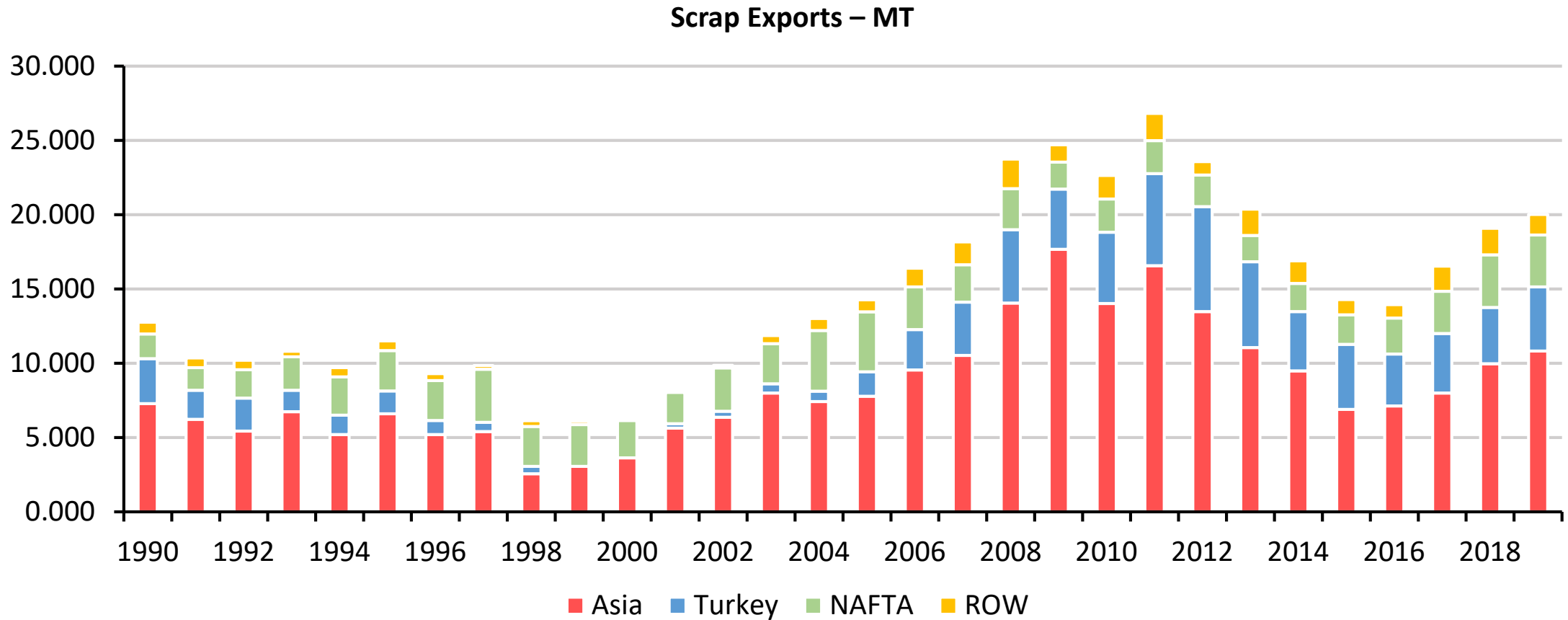
Scrap Substitute Imports – MT



Note: Stelco is adding a pig iron facility in 2020/21

Raw Materials

The U.S. exports a lot of scrap – virtually all obsolete grades



Source: AISI

New Flat Rolled Capacity

It's complicated!

- Investments in new technology are required to keep the industry competitive
- Substantive analysis shows moderate disruption in HSM capacity utilization
- Higher quality scrap supply looks to be more of an issue in terms of supply than finished product output
- Scrap (and substitutes) will find a way ... they always do
- We've always had change, but the pace of change is increasing