Vietnam: Steel Industry

A raw gem for patient investors



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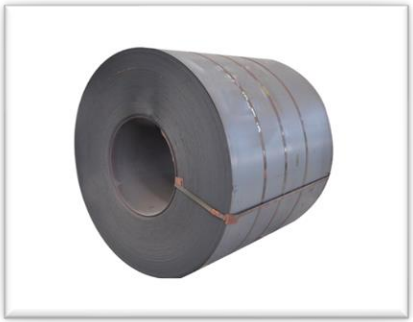
I. Value chain overview

I.1 Main steel products

Semi-final products



Billets/Blooms/Slabs



Hot rolled coil

End-used products



Rebar/Construction steel/Steel bar



Wire rod

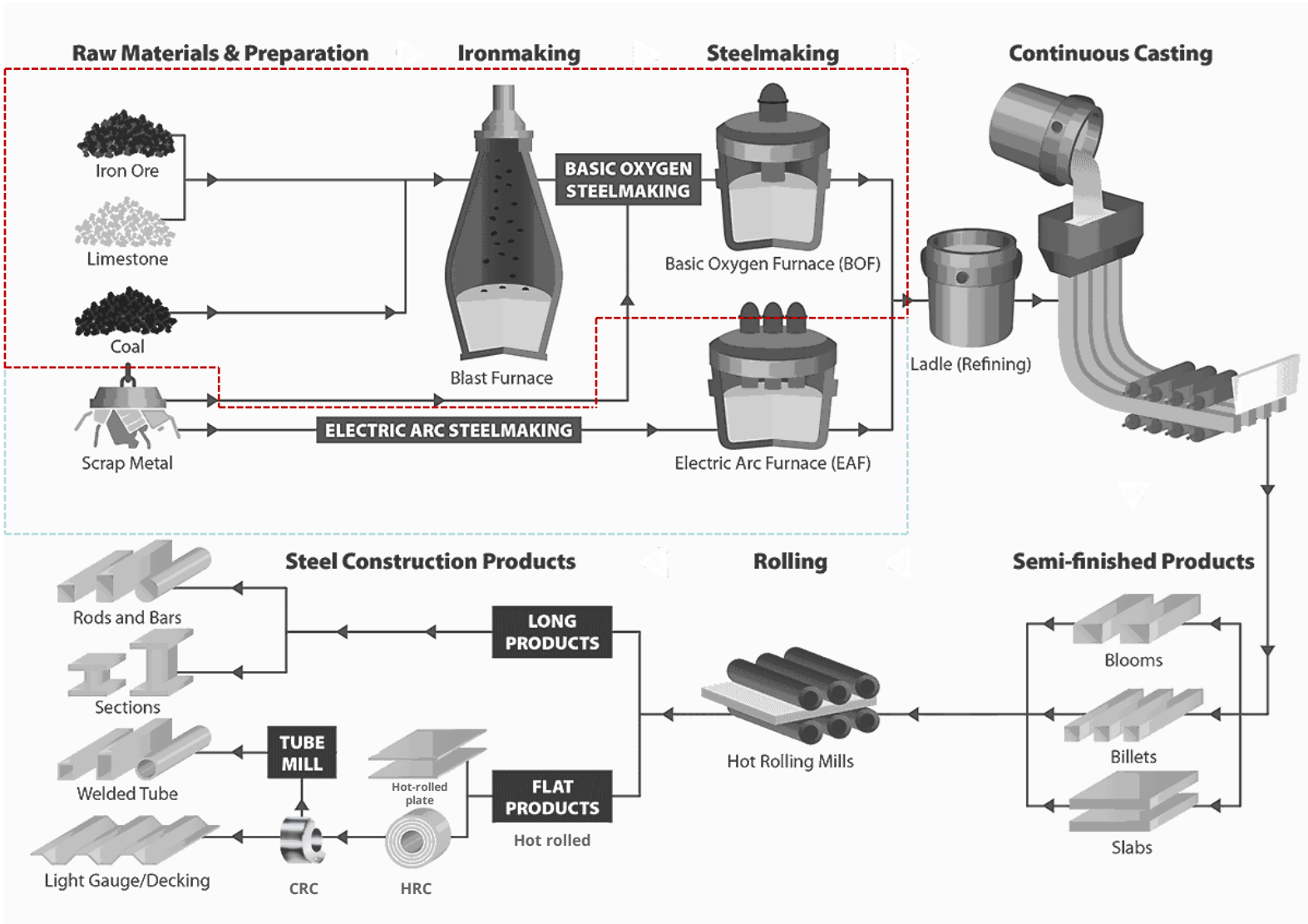


Steel pipe



Tole/Galanized corrugated sheet

I.2 Steel making process



Notes:

- Routes:
  + BF –BOF
  + EAF
- Blooms, Slabs, Billets = Ingots
- Crude steel is the steel ingot in general
- HRC = Hot-rolled coil
- CRC = Cold-rolled coil

Descriptive video

I.3 Value chain analysis

Raw materials



Met coal

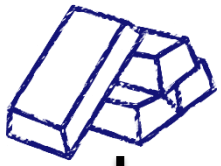


Iron ore

Total cost = Provider's selling price

Cost → Profits

Semi-final products



HRC



CRC

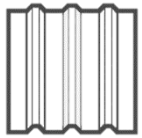
Final products



Construction steel



Steel pipe



Galvanized sheet

High value final products



Mechanical parts



Screws



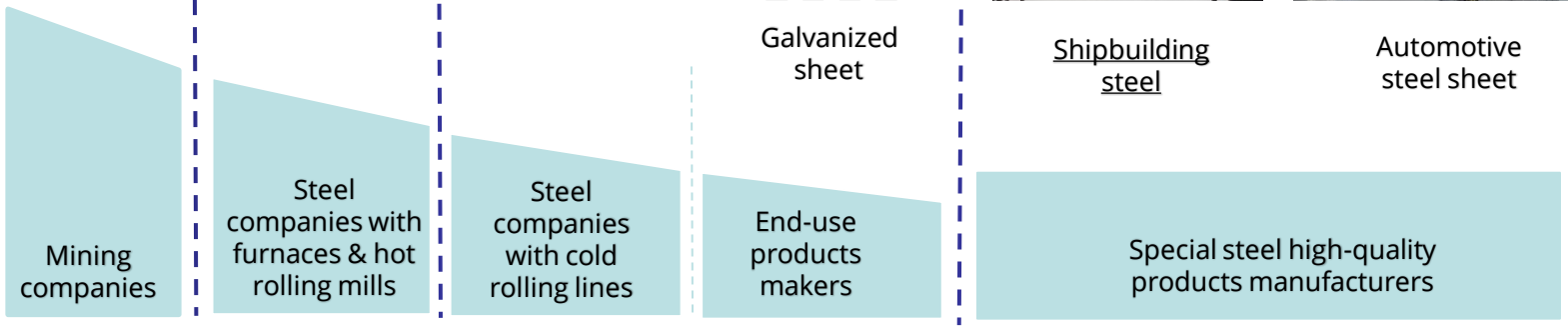
Shipbuilding steel



Automotive steel sheet

❖ Notes

- The graph on the right indicates profits of each value-added step.
- The trapezoids are profits as well as saved costs by each step.



I.3 Steel usage by sectors worldwide



Reinforcing bar
(Construction steel)



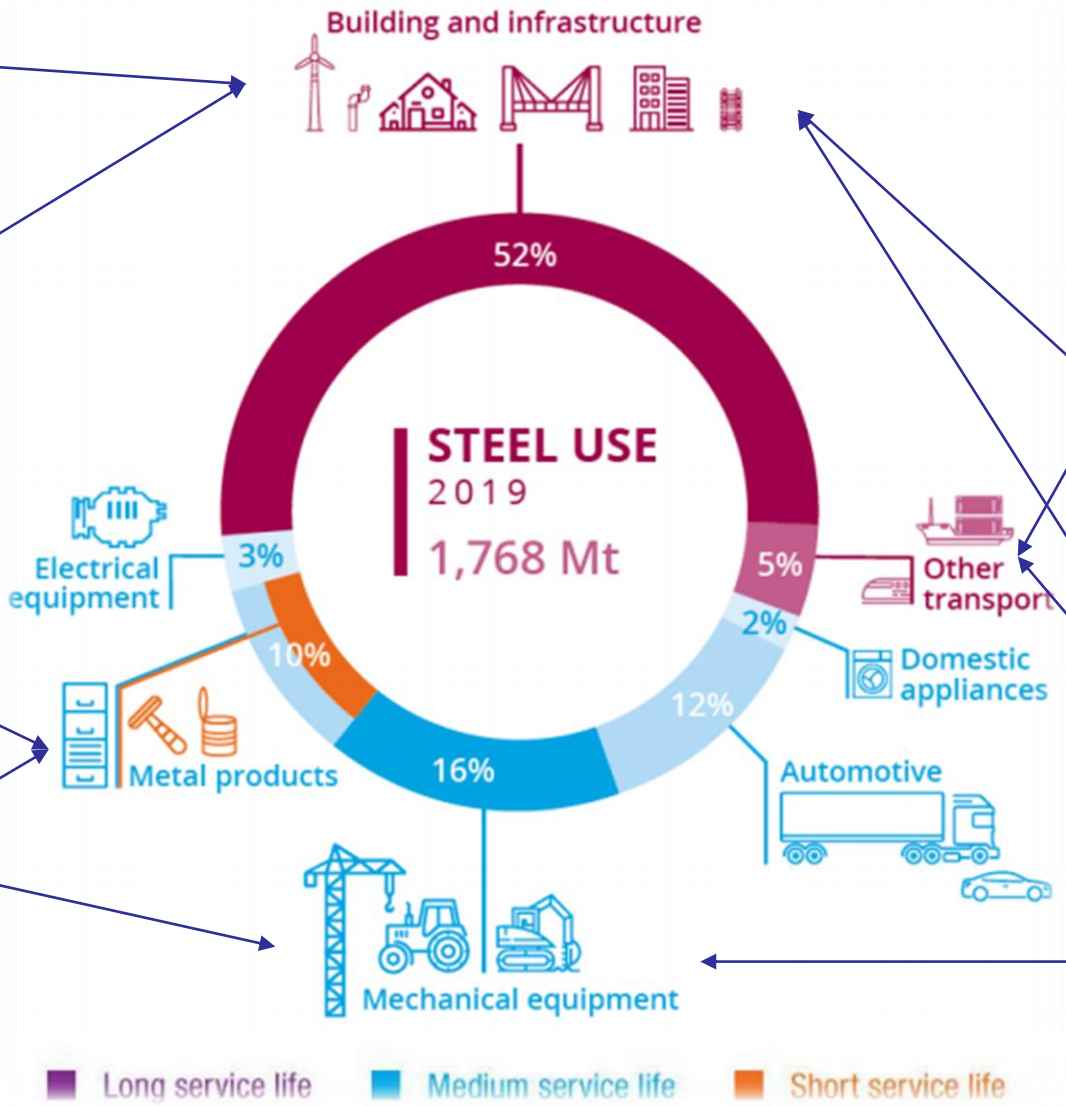
Wire rod
(Construction steel)

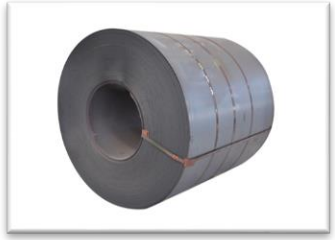


Steel pipes (flat steel)



Galvanized sheets
(flat steel)





HRC (flat steel)



Galvanized sheets
(flat steel)



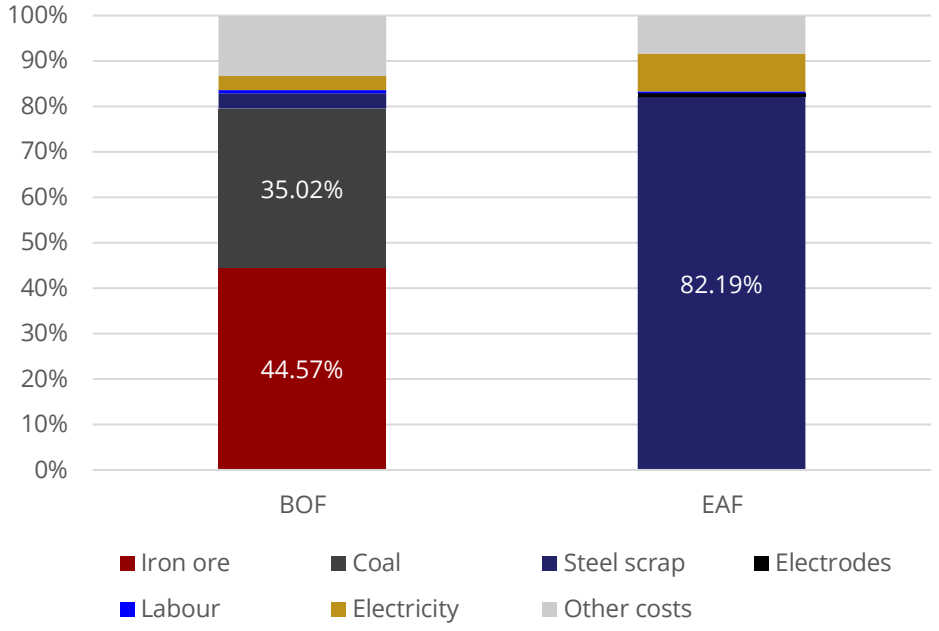
Angle steel
(Construction steel)

I.3 Comparison of different steel making routes

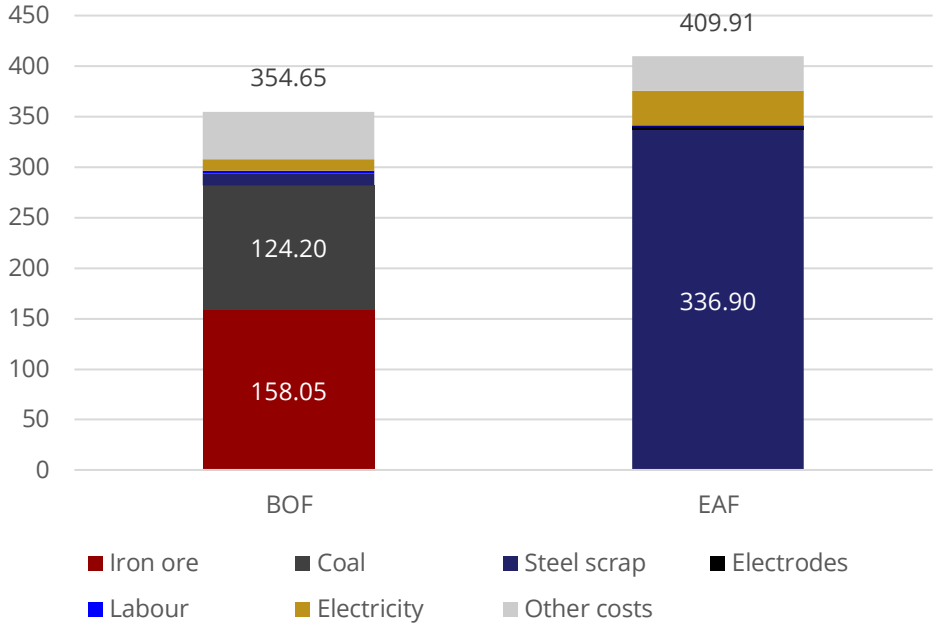
Technology	EAF	BF-BOF	Consteel
Description	Using an arc furnace with electrodes to melt steel scrap into pig iron	Using a blast furnace with met coal to melt iron ore into pig iron processed via BOF into steel billet	Pre-heat metal scrap by gases from EAF before behing forged into billet
Input	- Electrodes - Ferrous scrap	- Met coal - Iron ore	- Electrodes - Ferrous scrap
Costs	- High variable costs - Low fixed costs	- Low variable costs - High fixed costs	- High fixed costs - Medium variable costs
Emission	- Low emission but energy consumption	- High emission due to intensive usage of coal	- Low emission and energy due to
Companies	Vinakoyei, Thép Miền Nam, vv.	Hoa Phat Group, Formosa, TISCO, vv.	Pomina

I.3 Cost structure of BF – BOF and EAF

BOF & EAF cost contribution 2020 (per ton of crude steel)



BOF & EAF cost breakdown 2020 (per ton of crude steel)



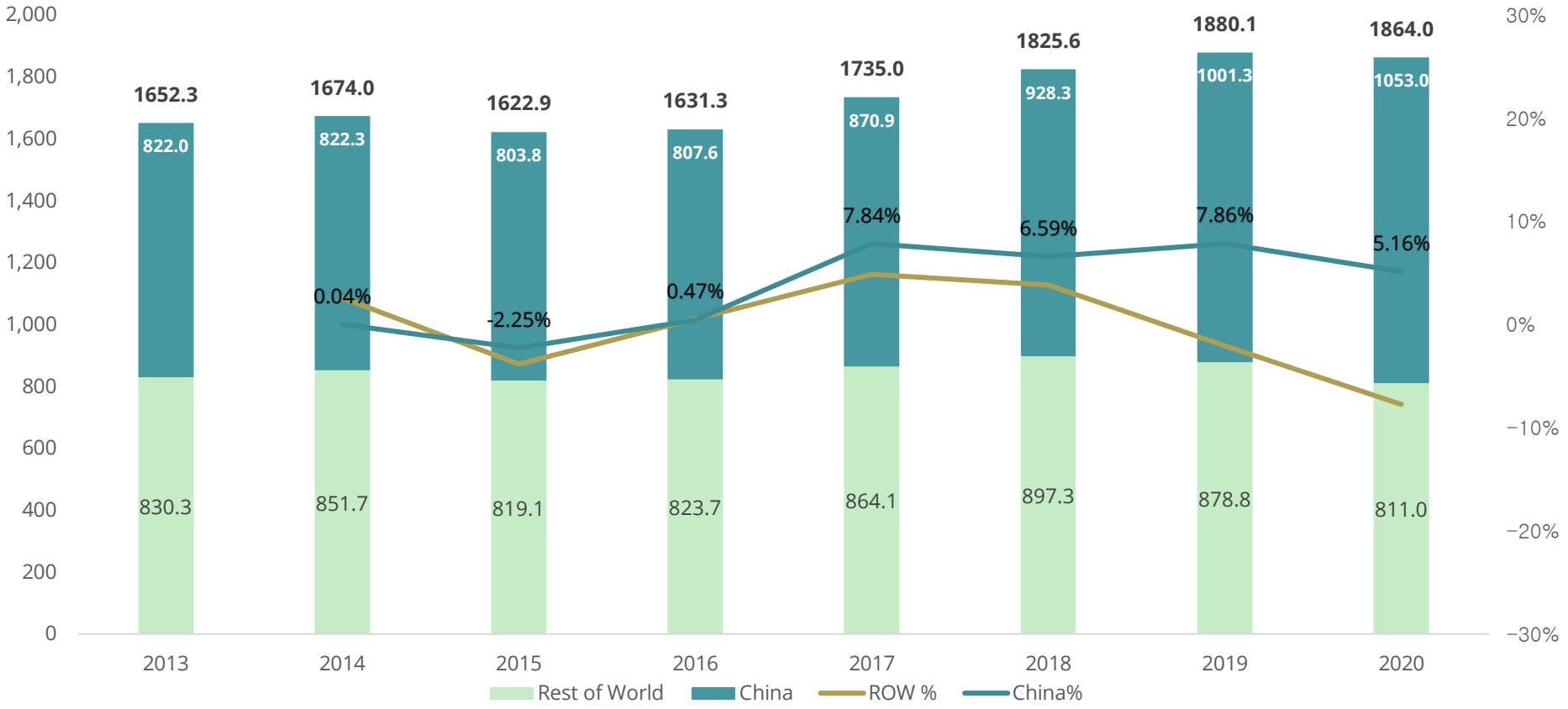
Notes:

- EAF requires a higher average cost of materials per ton of steel in 2020, which is about 13.5% higher than the BOF method.
- The cost structure and value are not stable and heavily affected by the volatility of material prices.

II. World steel sector

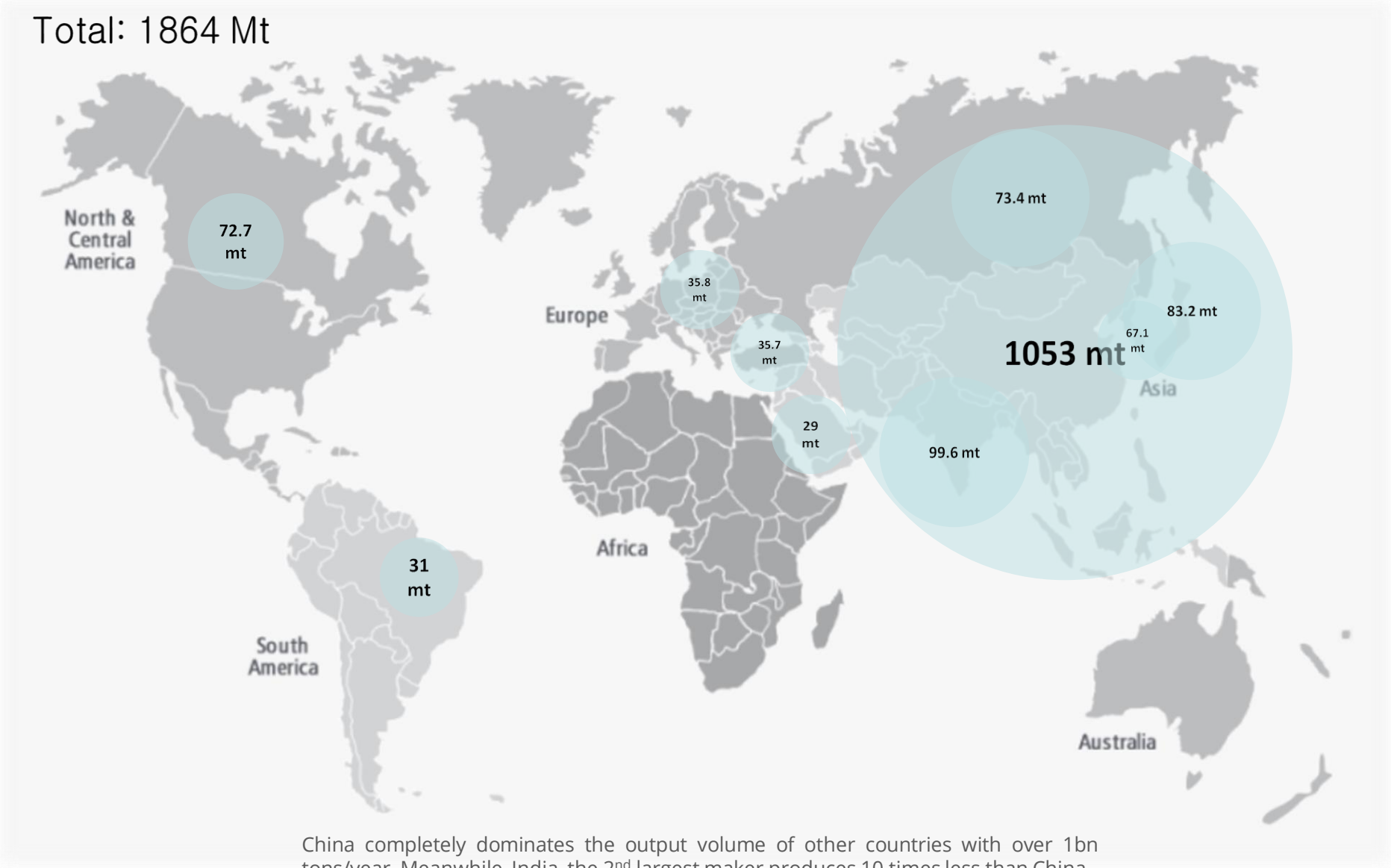
II.1 World steel supply – China is thriving

Global crude steel output from 2013



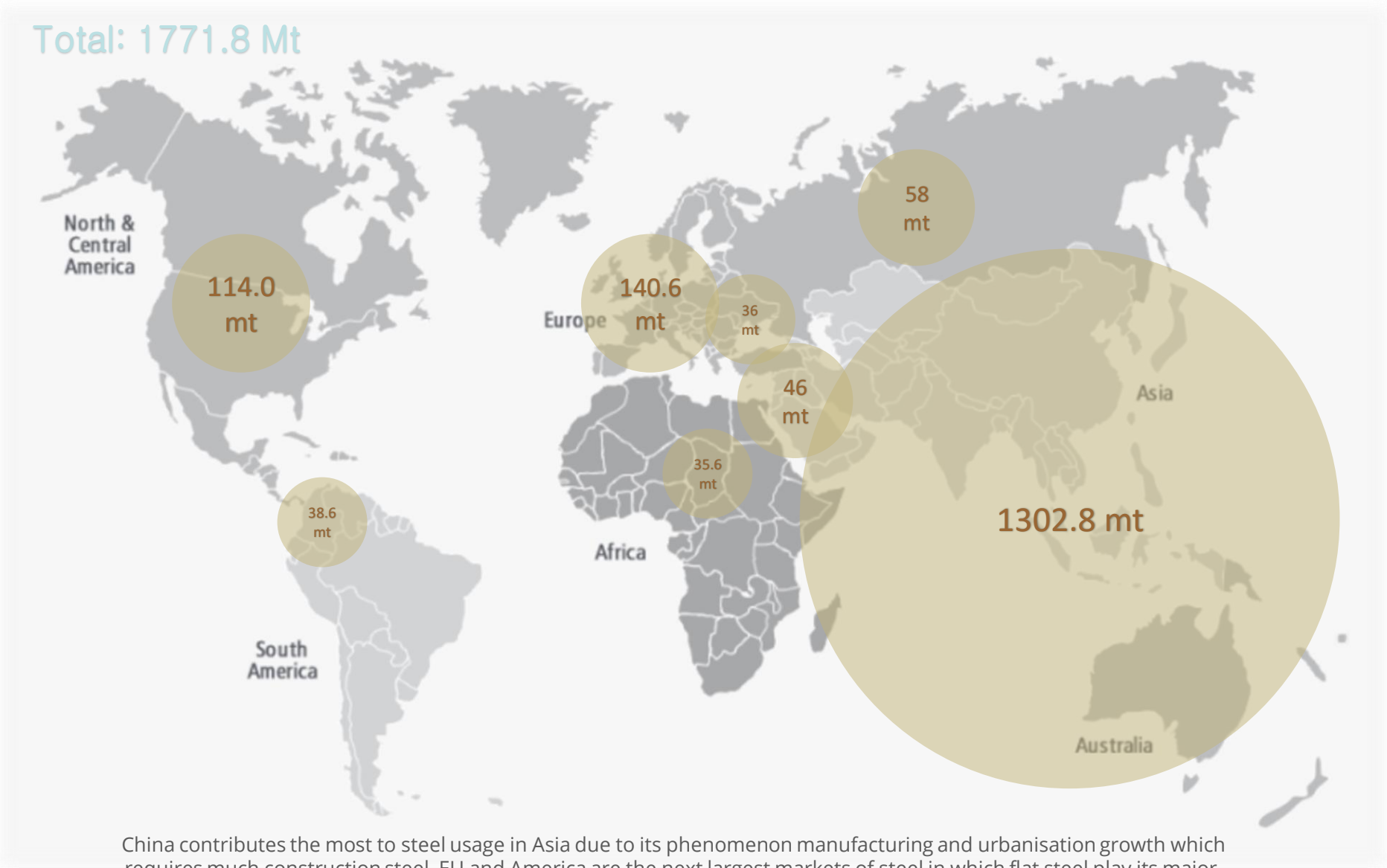
Over the last 5 years, China has increased its crude steel volume from around 810mn tons/year to nearly over 1050 tons/year to maintain its high urbanisation growth, while the rest of the world does not have such a rise at all.

II.2 Steel supply by top 10 countries 2020



China completely dominates the output volume of other countries with over 1bn tons/year. Meanwhile, India, the 2nd largest maker produces 10 times less than China

II.3 Steel demand by continents 2020



China contributes the most to steel usage in Asia due to its phenomenon manufacturing and urbanisation growth which requires much construction steel. EU and America are the next largest markets of steel in which flat steel play its major.

II.4 Iron ore export 2020

Exporting region / Destination	European Union (28)	Other Europe	CIS	NAFTA	Other America	Africa and Middle East	Asia	Oceania	Total Imports	"of which: extra-regional imports"
European Union (28)	33.7	2.3	25.5	23.7	33.0	18.1	0.5	0.3	137.2	103.5
Other Europe	1.3	0.1	3.4	1.0	6.3	0.6	3.2	-	16.0	15.9
CIS	0.0	0.0	15.0	-	-	0.0	-	-	15.0	0.0
NAFTA	0.7	0.0	0.5	9.9	4.5	1.6	0.0	0.1	17.2	7.3
Other America	0.0	-	0.3	0.9	6.0	0.7	1.3	-	9.2	3.2
Africa and Middle East	7.1	0.5	0.9	2.5	24.4	19.0	1.0	0.0	55.4	36.4
China	1.5	0.3	26.5	12.4	236.6	68.5	42.8	682.0	1 070.6	1 027.8
Japan	0.2	-	1.7	9.4	32.2	4.5	3.0	68.6	119.6	116.6
Other Asia	0.4	0.0	1.7	5.0	17.8	7.3	42.7	136.3	211.1	168.4
Oceania	0.0	-	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.4
Total Exports	44.9	3.3	75.6	64.8	360.9	120.7	94.5	887.3	1 651.8	1 479.7
"of which: extra-regional exports*"	11.1	3.2	60.6	54.9	354.9	101.7	6.1	887.3	1 479.7	
"Net Exports (exports-imports)"	-92.4	-12.7	60.6	47.5	351.7	65.2	-1 306.8	886.9		

* Excluding intra-regional trade marked



Largest import markets:

- Japan
- China
- Other Asia (India, Vietnam, etc.)

Largest exports markets:

- Australia
- Other Asia (India, Vietnam, etc.)

II.5 Ferrous scrap export 2020

Exporting region / Destination	European Union (28)	Other Europe	CIS	NAFTA	Other America	Africa and Middle East	China	Japan	Other Asia	Oceania	Total Imports	"of which: extra-regional imports"
European Union (28)	27.6	1.5	0.5	0.3	0.0	0.5	0.0	0.0	0.0	0.1	30.5	2.9
Other Europe	12.7	0.2	1.9	4.4	0.0	0.6	-	-	0.1	0.0	19.9	19.6
CIS	0.3	0.0	0.7	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.3
NAFTA	0.5	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.6
Other America	0.1	-	-	0.6	0.2	0.0	-	-	0.0	0.0	0.9	0.7
Africa	2.4	0.0	0.1	0.6	0.0	0.1	0.0	0.0	0.0	0.0	3.2	3.1
Middle East	0.1	0.0	0.0	0.7	0.0	0.1	-	0.0	0.0	0.1	1.1	1.0
China	0.0	0.0	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.2	0.2
Japan	0.0	0.0	0.0	0.1	0.0	-	0.0	-	0.0	0.0	0.1	0.1
Other Asia	5.5	0.2	0.8	9.2	1.8	2.5	0.0	7.7	3.3	2.5	33.4	30.1
Oceania	0.0	-	-	0.0	0.0	-	0.0	0.0	0.0	0.3	0.3	0.0
Total Exports	49.3	1.9	4.0	22.9	2.1	3.8	0.0	7.7	3.6	3.0	98.2	58.7
"of which: extra-regional exports*"	21.7	1.7	3.3	16.0	1.9	3.6	0.0	7.7	0.3	2.7	58.7	
"Net Exports (exports-imports)"	18.8	-17.9	3.0	15.4	1.2	-0.6	-0.2	7.5	-29.8	2.7		

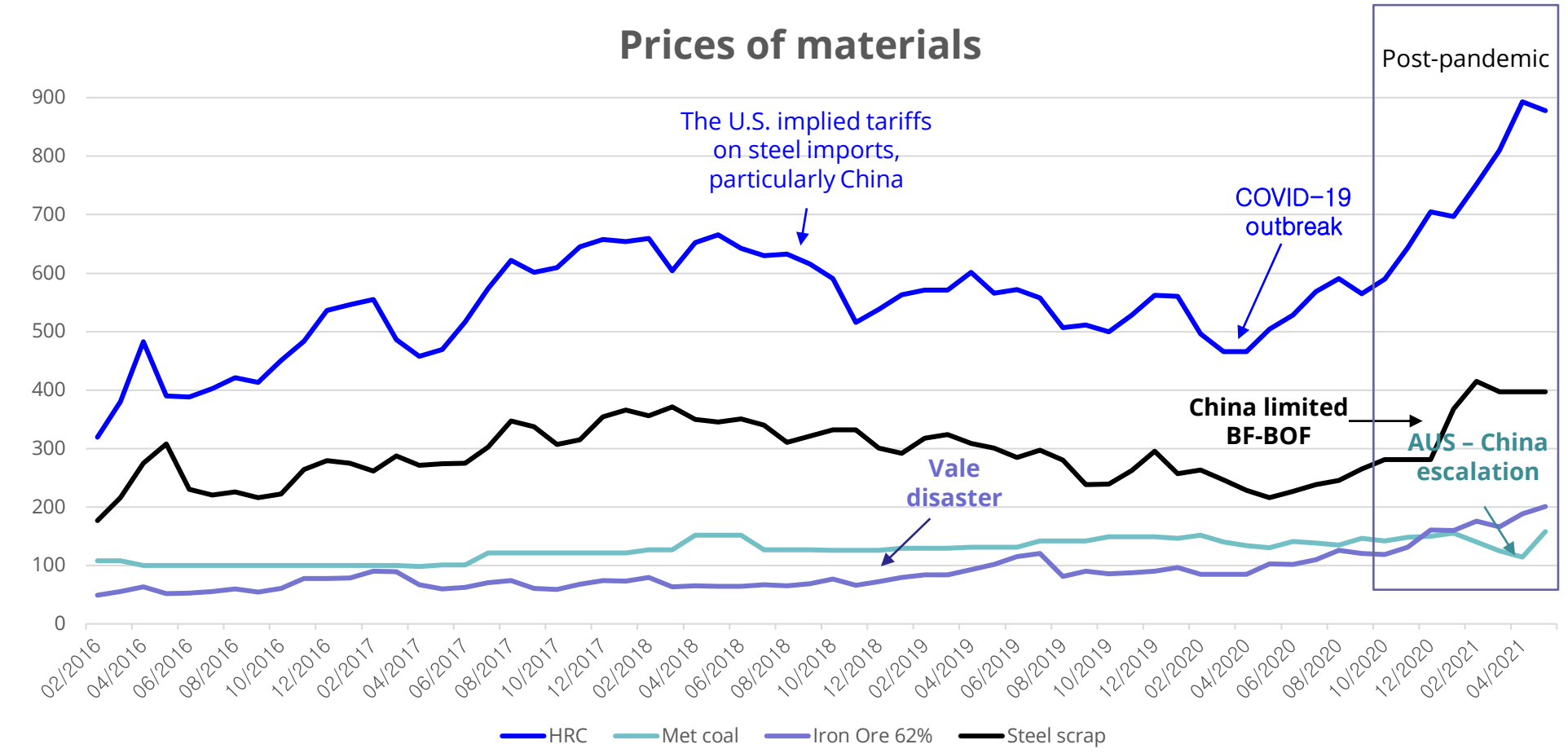
* Excluding intra-regional trade marked



Largest import markets:
Developing countries and Europe

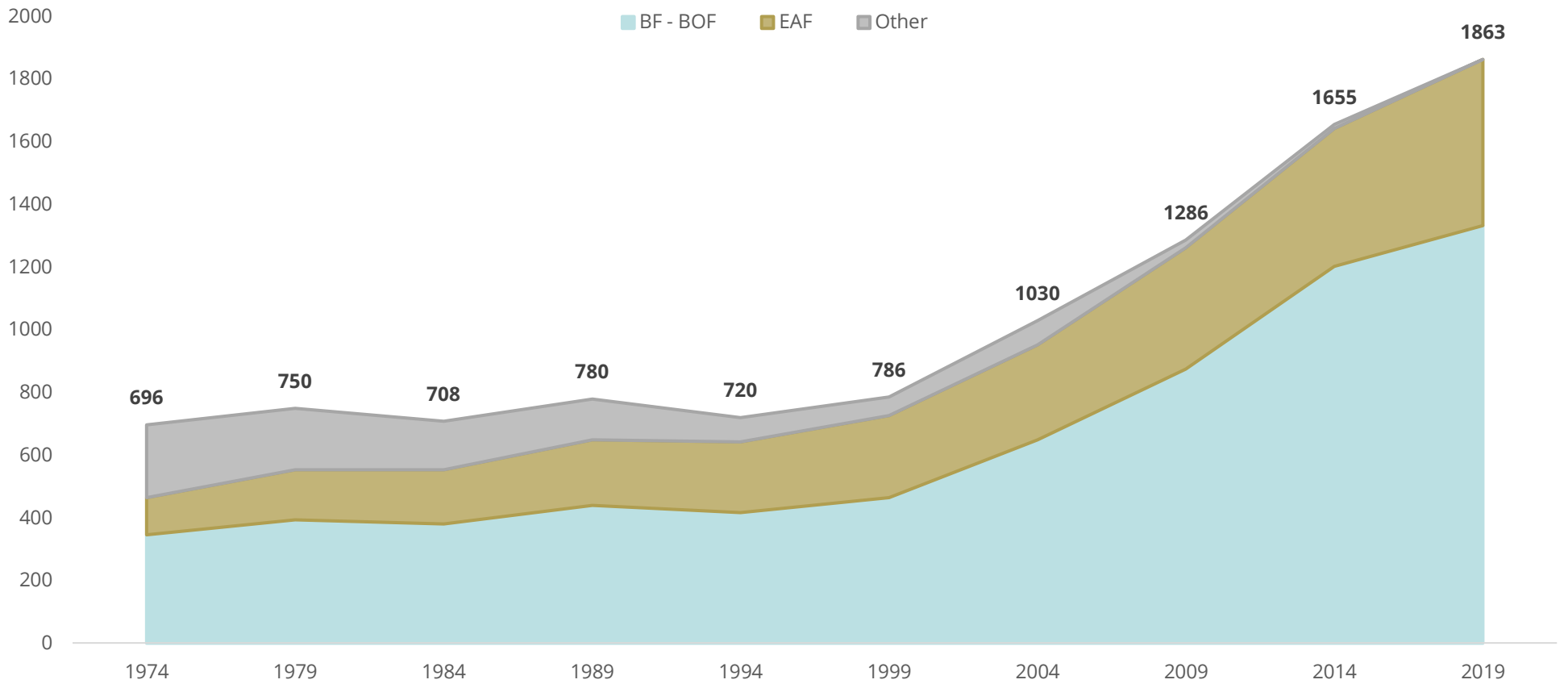
Largest export markets:
Developed countries including NAFTA and Europe

II.6 Steel price movements and events



- Steel prices changes every day
- Worldwide events can greatly affect the prices of the materials
- The world is facing such an unprecedently high rise in prices after the pandemic

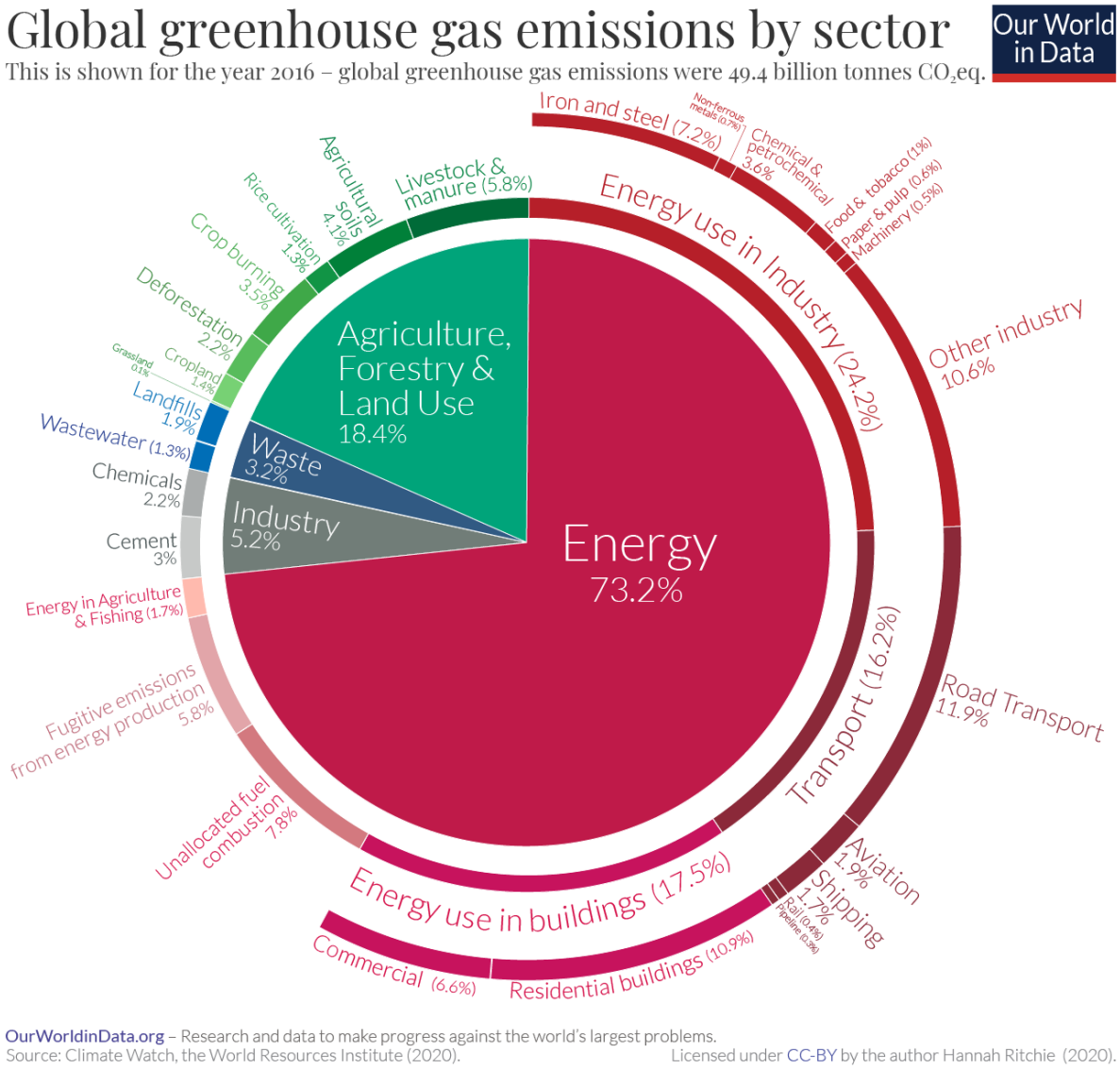
II.7 Steel output by routes



Current situtation:

- BF-BOF technology has been the main technology replacing Martin furnaces globally.
- BF-BOF technology has fully replaced old steel making techniques since 2019 and kept growing with an extremly fast pace due to the growth of Asian countries, particularly China.

II.8 Environmental issues

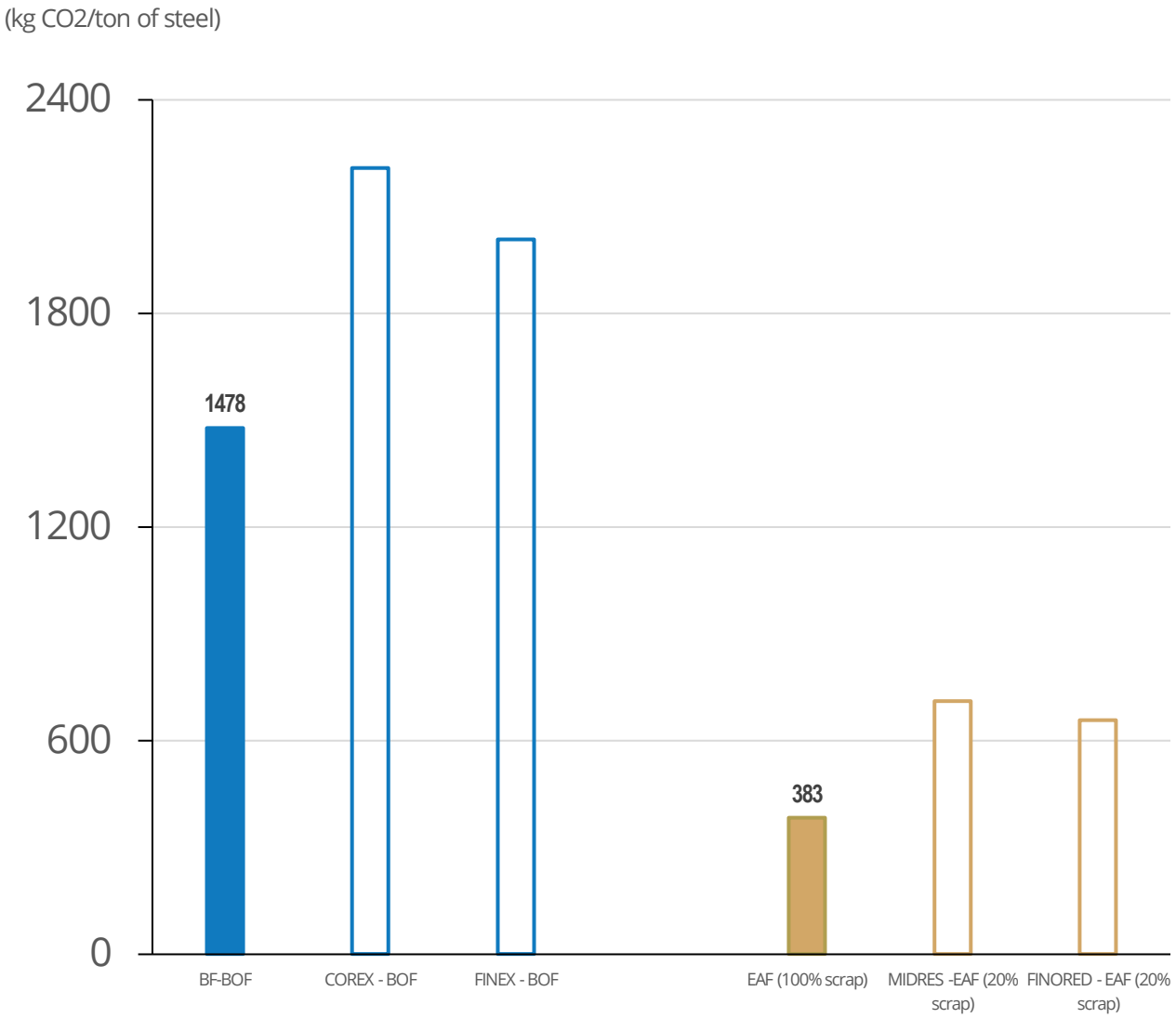


Emission status:

- Steel sector is the one of the largest greenhouse gases emitters in terms of energy usage including power and met coal.

- Besides, steel, due to its huge weight, requires transporation heavily and takes more effort to deliver, indirectly contributing to even more emission.

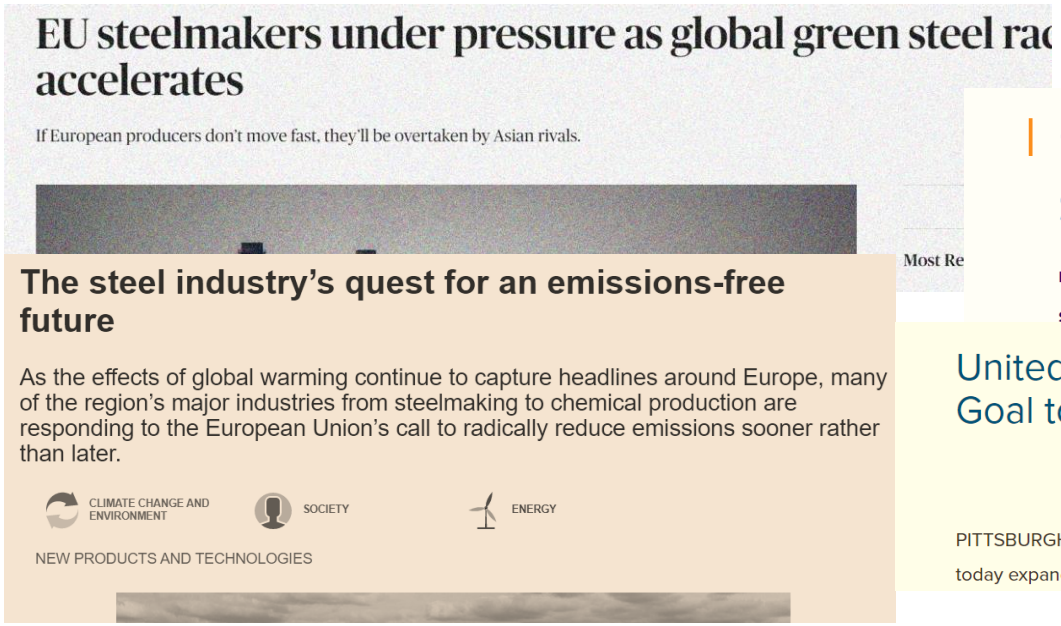
II.9 Emission of BOF vs. EAF



Emission status of BF & EAF

- Carbon dioxide emission from BF is at least 4 times larger than that from EAF.
- BF: 1.48 tons CO2/ton of steel
- EAF: 0.38 tons CO2/ton of steel

II.10 Outlook


EU steelmakers under pressure as global green steel rac accelerates

If European producers don't move fast, they'll be overtaken by Asian rivals.

The steel industry's quest for an emissions-free future

As the effects of global warming continue to capture headlines around Europe, many of the region's major industries from steelmaking to chemical production are responding to the European Union's call to radically reduce emissions sooner rather than later.

CLIMATE CHANGE AND ENVIRONMENT SOCIETY ENERGY

NEW PRODUCTS AND TECHNOLOGIES


China's next five-year plan to boost steel scrap use

Published date: 28 October 2020

Share:

China's next five-year plan is expected to maintain rapid urbanisation that will keep steel demand high but prompt a shift in the steel sector

United States Steel Corporation Announces Goal to Achieve Carbon Neutrality by 2050

PITTSBURGH--(BUSINESS WIRE)-- United States Steel Corporation (NYSE: X) ("U. S. Steel") today expanded its transformational commitment to sustainability by setting an ambitious

The world steel sector is aiming for green steel in the future by moving toward a carbon-neutral target. Recycling steel (EAF route) is become more and more popular, which is likely to lift the price of ferrous scrap.

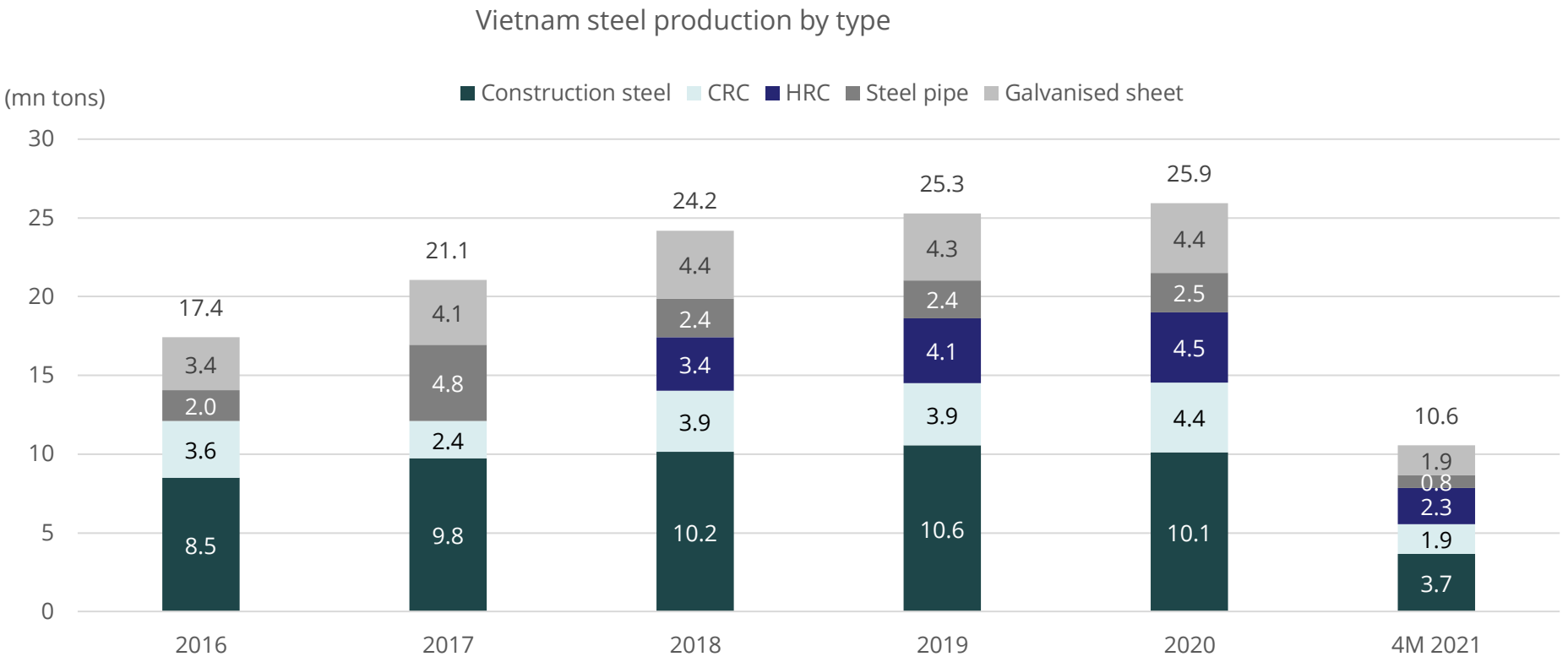
Current solution: ETS – Emission trading scheme, applied in developed countries and China, requires manufacturers to pay for extra units of carbon emission if they exceed their quotas.

II.11 China's actions

NOTICE ON TANGSHAN STEEL ENTERPRISES PRODUCTION RESTRICTION AND EMISSION REDUCTION		
I. STEEL ENTERPRISES OF APPLICATION		
All BF-based steel enterprises in Tangshan, excluding Shougang Qian'an Steel Company, Shougang Jingtang United Iron & Steel Co., Ltd.		
II. DETAILS OF THE APPLICATION		
Steel Enterprises	**Period**	**Production Restriction**
Tangshan Songting Steel Co., Ltd Tangshan Medium and Heavy Plate Co., Ltd Hebei Xinda Iron & Steel Group Co., Ltd Tangshan Stainless Steel Co., Ltd Tangshan Chunxing Special Steel Co., Ltd Jinma Steel Group Tangshan Donghua Iron and Steel Enterprise Group Co., Ltd (including Kaiheng)	March 20 - June 30, 2021	Reduce the output by 50%
	July 1 - December 31, 2021	Reduce the output by 30%
Other 16 steel enterprises	March 20 - December 31, 2021	Reduce the output by 30%

III. Vietnam steel sector

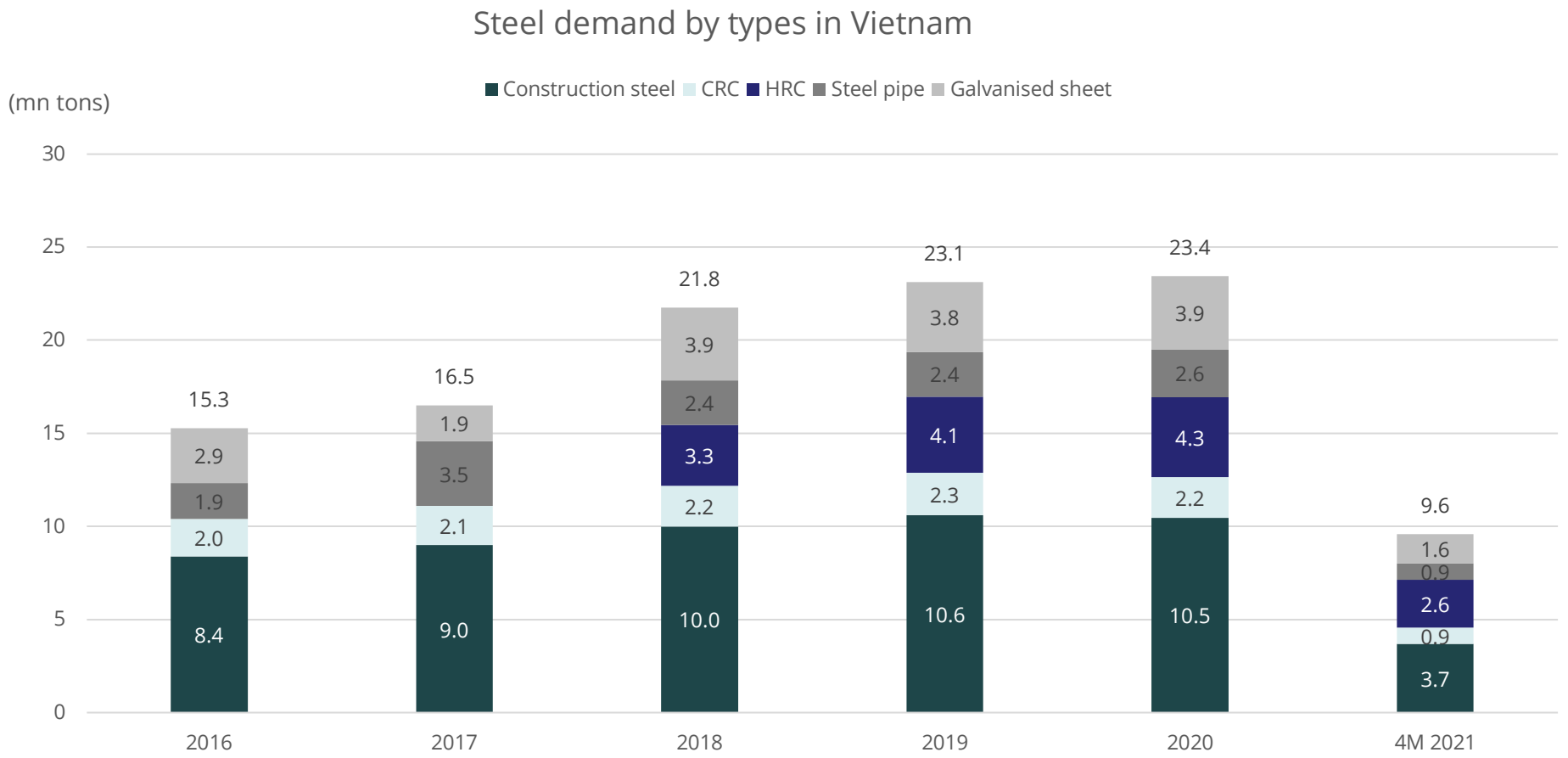
III.1 Steel supply by types



Total production in 2020: **25,994 tons (including CRC)**

- Construction steel: 39%
- Hot-rolled coil: 18%
- Steel pipe: 10%
- Galvanized corrugated sheet: 17%

III.2 Steel demand by types

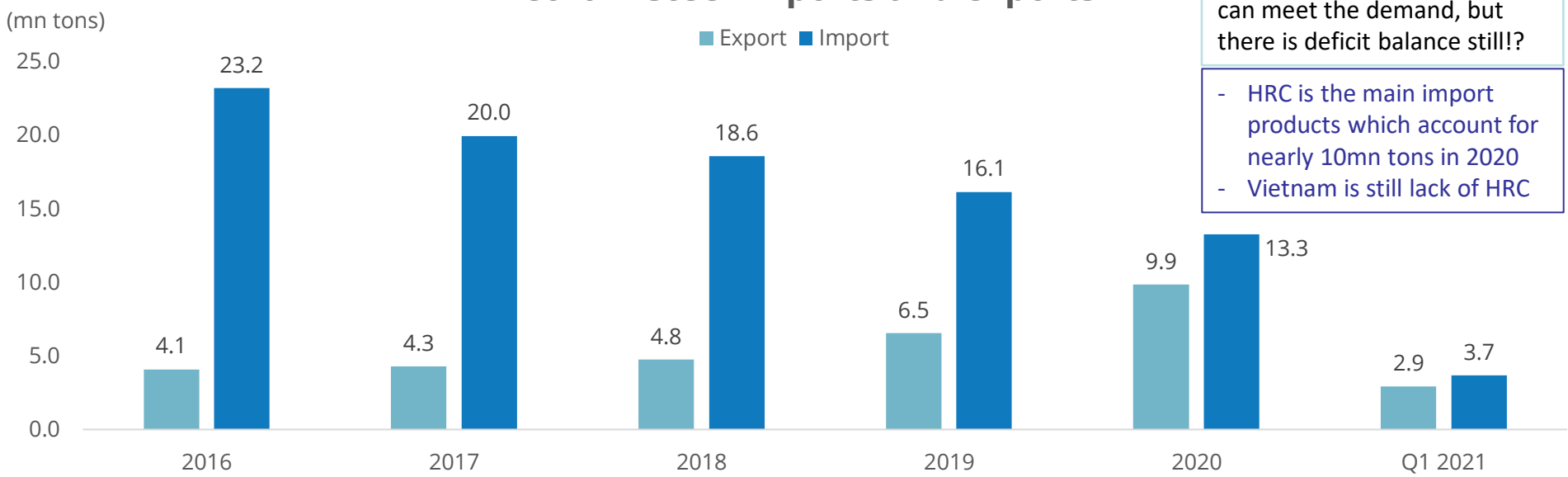


Total consumption in 2020:	**23.4 tons (including CRC)**
• Construction steel:	39%
• Hot-rolled coil:	17%
• Steel pipe:	10%
• Galvanized corrugated sheet:	17%

Currently, the Vietnam steel sector is still lack of self-provided Hot-rolled coil (HRC) which is expected to reach 12mn tons/year, while the currently supply can only satisfy nearly 7mn tons in 2021.

III.3 Import and Export

Vietnam steel imports and exports



Paradox: Vietnam steel supply can meet the demand, but there is deficit balance still!?

- HRC is the main import products which account for nearly 10mn tons in 2020
- Vietnam is still lack of HRC

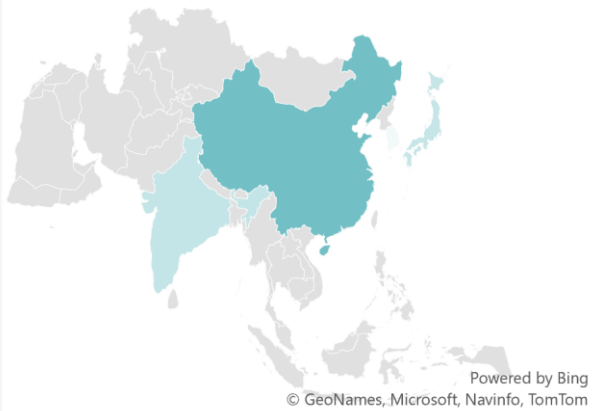
Export market



Countries	Export mn tons	%
ASEAN	4.2	42.3%
China	3.5	35.9%
EU	0.3	3.1%
Other	1.8	18.6%

Main products: billets and galvanized sheets

Import market

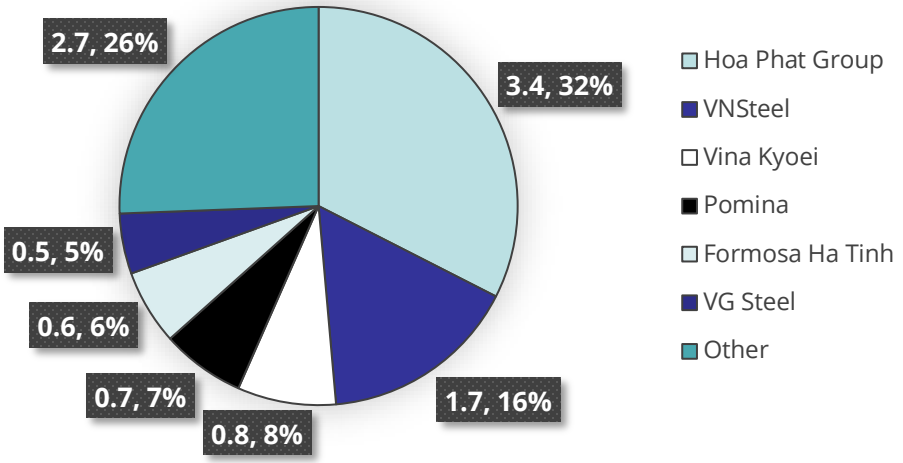


Countries	Import mn tons	%
China	3.8	28.3%
Japan	2.4	18.5%
Korea	1.8	13.4%
India	2.5	18.6%
Other	2.8	21.2%

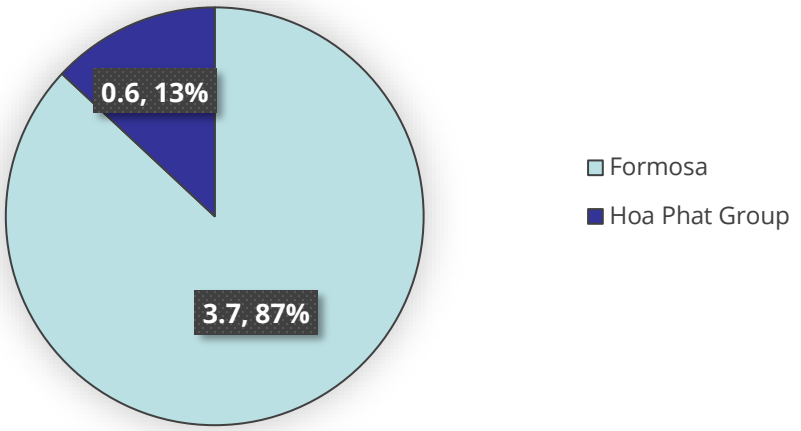
Main products: HRC and other end-use steel products

III.4 Market shares

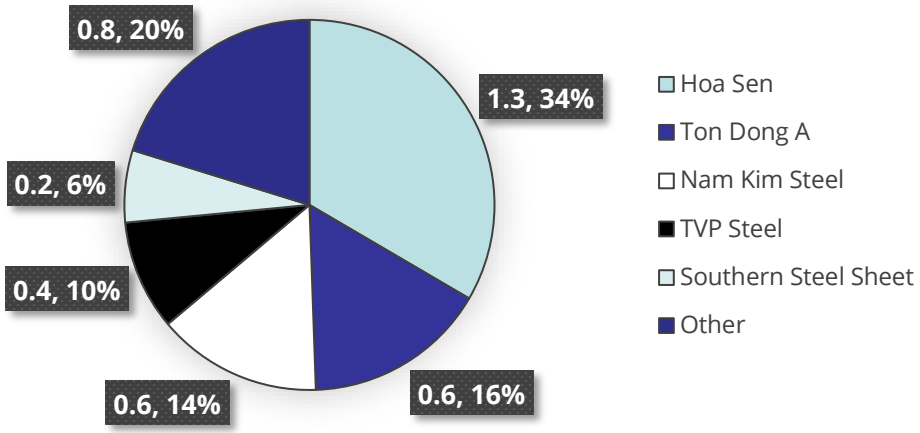
CONSTRUCTION STEEL (mn tons,%)



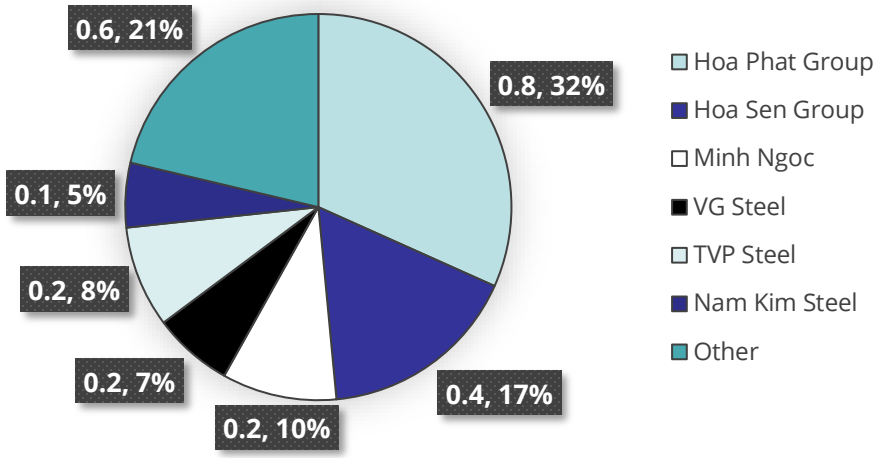
HRC (mn tons,%)



GALVANISED STEEL SHEET (mn tons,%)



STEEL PIPE (mn tons,%)



III.5 Factors of growth

Current



Infrastructure



Real estate

- Currently, steel makers in Vietnam is producing low to medium value-added products like rebars, steel pipes and galvanized sheets.
- The urbanization growth leading to demand for infrastructure and real estate. From 2016 to 2019, the amount of PPI projects lifted from VND 6,719 bn to VND102,460 bn

Future



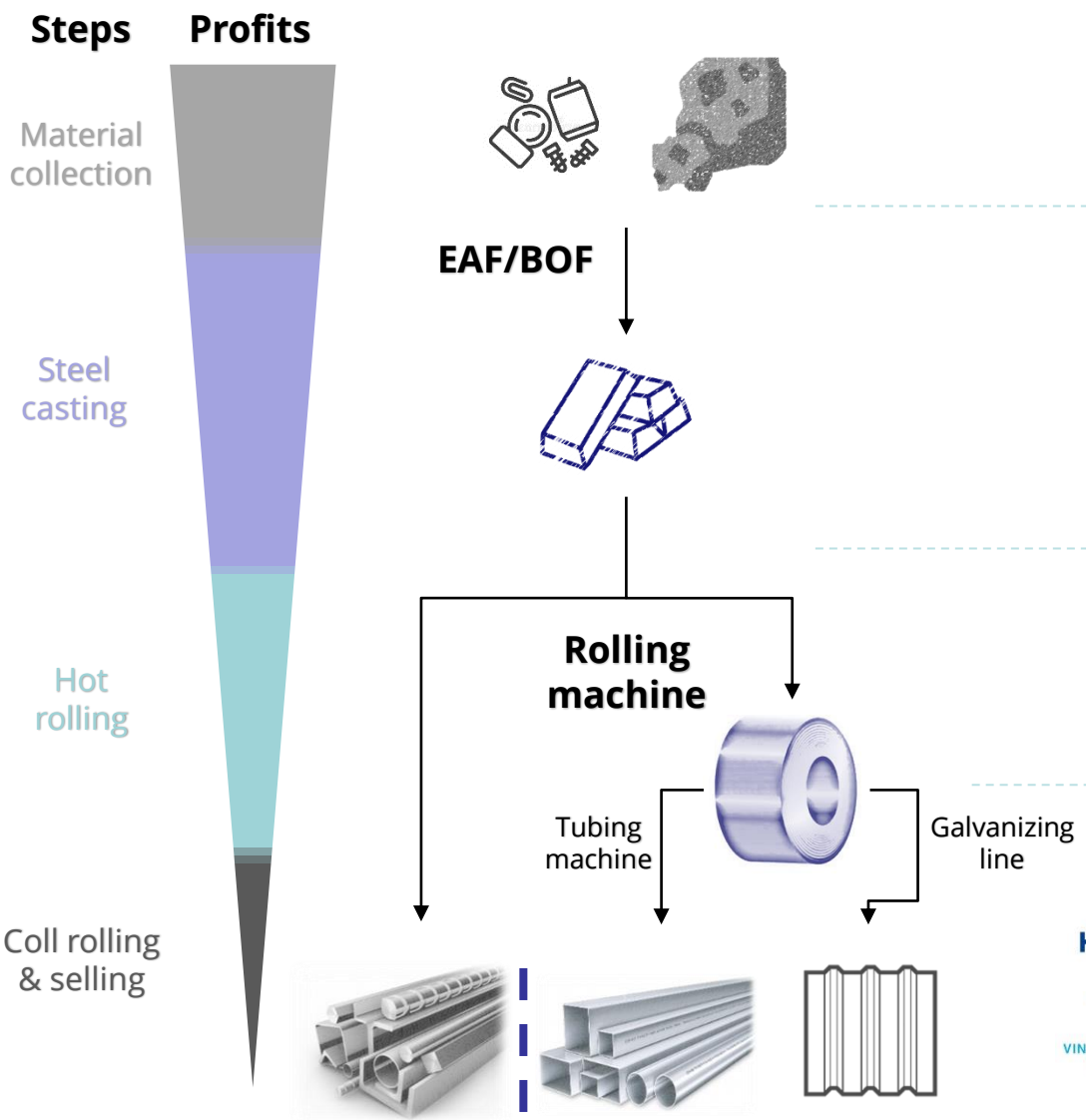
Auto parts



Mechanical parts

- In the future, the growth of steel sector needs to change its direction to high value-added products such as mechanical parts, shipbuilding steel plates, etc.
- Currently, Hoa Phat Group is the only steel company in Vietnam that targets to make higher value-added products

III.6 Vietnam steel makers in the value chain



Featured steel companies

III.7 Protective tariffs

CURRENT MAIN ANTI-DUMPING TAXES IN VIETNAM				
PRODUCTS	**REGULATION**	**ORIGIN**	**TAX RATES**	**PERIOD**
Galvanized steel sheet	No. 3023/QĐ-BCT	China	3.7% - 38.34%	Oct 2020 – Apr 2022
		Korea	7.02% - 19%	
Long steel (Steel bar)	No. 918/QĐ-BCT	Worldwide	9.4% (2021)	Mar 2020 - Mar 2023
			6.4% (2023)	
Cold rolled coil	No. 3390/QĐ-BCT	China	4.43% - 25.22%	Until 21 Dec 2025

CURRENT TAXES AND PROTECTIONS IMPLIED ON VIETNAM STEEL				
PRODUCT	**COUNTRIES**	**YEAR OF INITIATION**	**TARGET TAXES**	**STATUS**
Rolled coil	Thailand	2014	6.97% - 51.61%	Implied
Steel pipe	Thailand	Aug-2018		Implied
CRC & Galvanised steel	The U.S.	Jul-2019	456%	Implied
CRC & Galvanised steel	The U.S.		10.34% - 29.4%	
CRC & non-alloy steel	Malaysia	Aug-2019	7.7% - 20.13%	Implied
Galvanised steel	Indonesia	Aug-2019		Investigated
Corrosion-resistance steel	Canada	Nov-2019	36.3% - 91.8%	Implied
Steel pipe and angle steel	Australia	Jan-2020		Investigated
Galvalume	Malaysia	Mar-2020	39.27%	Investigated
Corrosion-resistance steel sheet	The U.S.	May-2020	139% - 267%	Investigated
Galvanised steel sheet	Philippines	Jun-2020		Investigated
Corrosion-resistance steel pipe	Turkey	Jun-2020	39.27%	Investigated
Corrosion-resistance CRC	Malaysia	Jul-2020	3.06 - 37.14%	Implied
CRC	Malaysia	Jul-2020		Investigated
Reinforcing bar	Canada	Jun-2019	3.7% - 15.4%	Implied

III. Big players in Vietnam

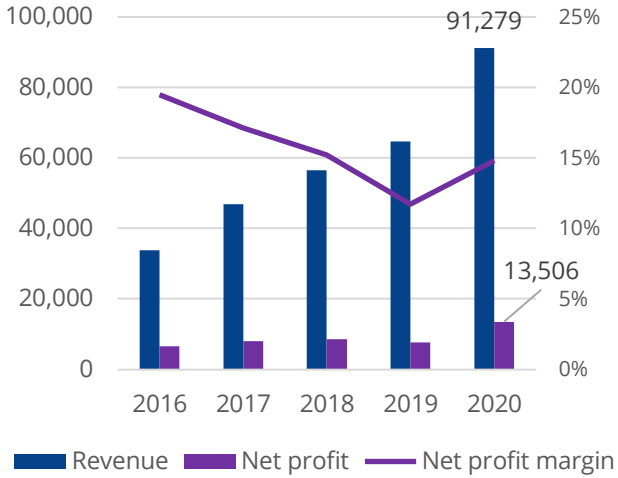
IV.1 HPG – (Volatility: Low)

HÒA PHÁT
HÒA HỢP CÙNG PHÁT TRIỂN

Company overview

Listing status	HSX (2007)
Ticker	HPG
Established year	1992
No. shares	4.473 mn
Market cap	USD 10.25 bn
Key business	Producing steel and steel products
Location	243 - Giai Phong St. - Dong Da Dist. - Ha Noi

Business Performance



Sale volume by products in 2020

- Construction steel: 3.4mn tons
- HRC: 0.7mn tons
- Steel pipe: 806mn tons
- Tole: 0.1mn tons

Technology: Blast Furnaces



Investment consideration

- Hoa Phat Group is the largest steel makers in Vietnam with an annual capacity of 8mn tons.
- Hoa Phat Group is the second steel firm to produce HRC beside Formosa.
- The company has a quite complete value chain from iron ore mining to end-use steel products

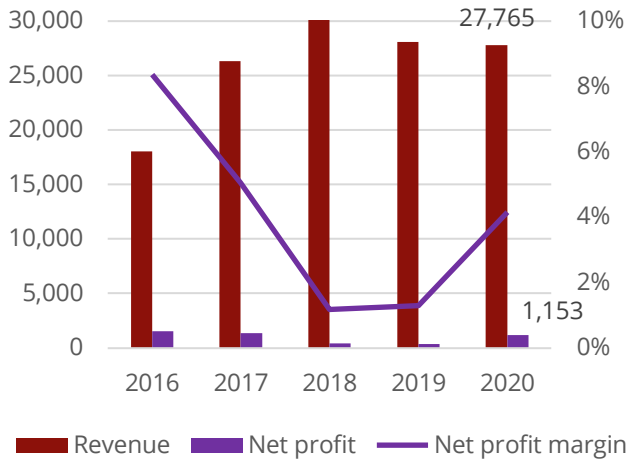
IV.2 HSG (Volatility: High)

HOA SEN GROUP

Company overview

Listing status	HSX (2008)
Ticker	HSG
Established year	2001
No. shares	444 mn
Market cap	USD 816 mn
Key business	Producing flat steel products and pipes
Location	Song Than II IP - Di An - Binh Duong

Business Performance



Sale volume by products in 2020



Toles: 1.31mn tons



Stee pipe: 0.44mn tons

Technology: Cold rolling steel



Investment consideration

- Hoa Sen Group is known as the most popular tole manufacture with a dominant tole market share with the annual capacity of nearly 2.5mn tons
- Hoa Sen Group is planning to initiate Hoa Sen Home stores, implying the decision to move to retailing.
- Making toles and pipes depends heavily on hedging materials (HRC)

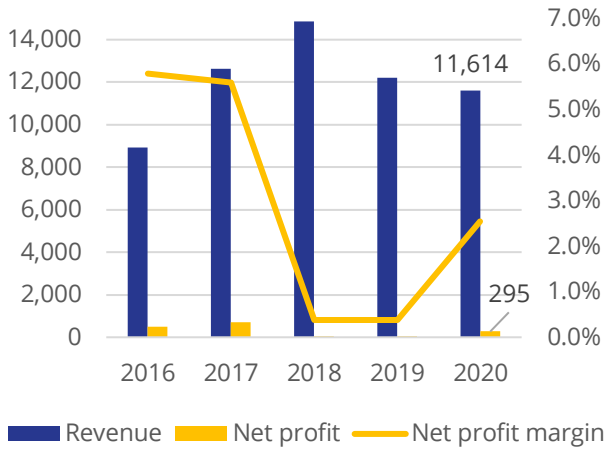
IV.2 NKG (Volatility: High)

NAM KIM STEEL

Company overview

Listing status	HSX (2011)
Ticker	NKG
Established year	2002
No. shares	182 mn
Market cap	USD 252 mn
Key business	Producing flat steel products and pipes
Location	An Thanh- Thuan An– Binh Duong

Business Performance



Sale volume by products in 2020



Toles: 0.6mn tons



Stee pipe: 0.142mn tons

Technology: Cold rolling steel



Investment consideration

- Nam Kim Steel is a well-known tole manufacturer with the annual capacity of nearly 1 mn tons.
- Nam Kim Steel's business activities are pure manufacturing focusing on steel pipes and toles with minimal plan of expansion in recent years.
- Making toles and pipes depends heavily on hedging materials (HRC)

THE END