"Coke Market Report" Summary of 2023

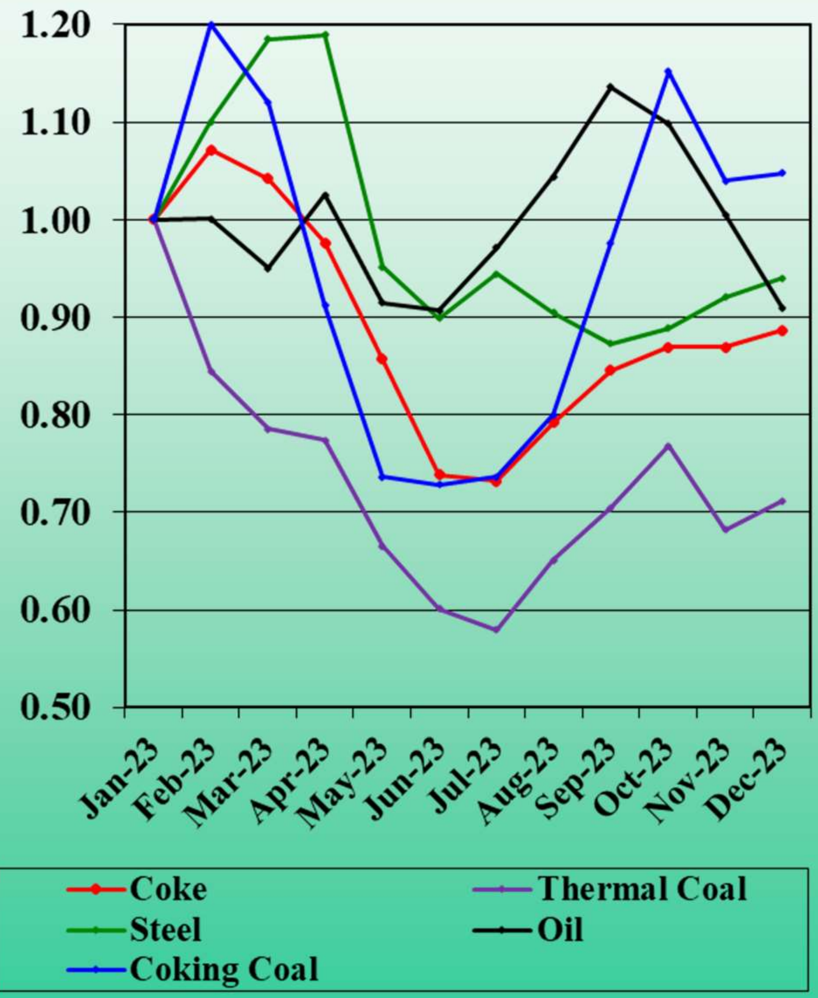
Resource-Net

January 2024

www.resource-net.com

Note: Some data for 2023 are estimated, based on data available in 01/2024.

Pricing for Coke Compared to Other Commodities



- The first half of the year saw a downward correction in the commodity markets, following the escalation of 2022 due to Russia's invasion of Ukraine. The latter half saw some recovery, despite the poor outlook for the world economy.
- Over the year, coking coal appeared to be the best performing commodity markets of those surveyed; it ended 2023 5% higher.

Iron Output by World Region

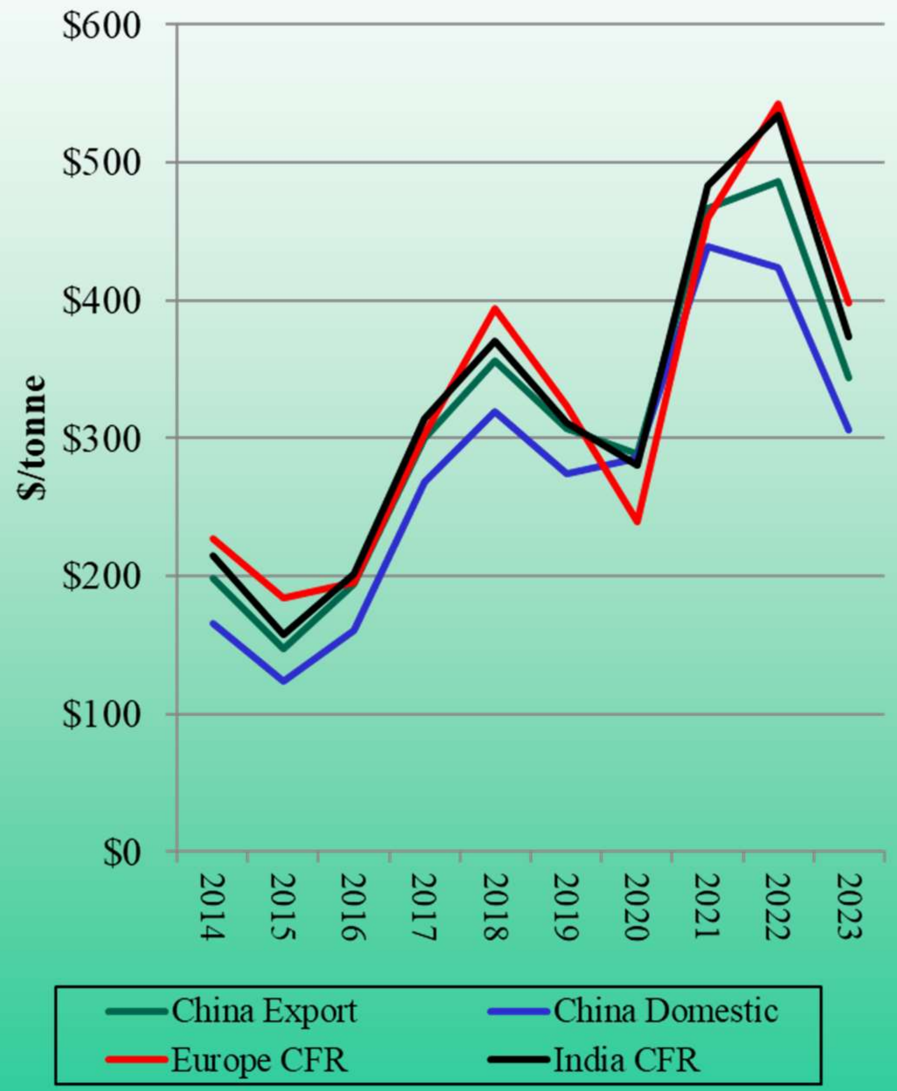
Million tonnes	2022	2023	% Change 2023/22
Europe	77.6	70.4	-9.4%
Eurasia	61.0	63.6	+4.4%
North America	28.2	28.2	0.0%
Latin America	29.7	28.6	-3.5%
China	861.5	885.0	+2.7%
Other Asia	220.1	227.9	+3.5%
Rest of World	18.5	19.2	+3.8%
Total excl China	***435.1***	***437.9***	***+0.6%***
Total	**1296.6**	**1322.9**	**+2.0%**

Source: WSA, Resource-Net estimates

- Shown is iron production by region for last year (estimated from data to 11/23) compared to 2022. We expect total for the year to exceed 1.3bn tonnes, a rise of 2.0% from 2022.
- Over the last ten years, there has been an average growth in iron output of 1.7% per year.
- Only in Europe was there a marked decline in world iron output (-9%), hence coke and coking coal demand. It was also lower in Latin America.

Coke Market Overview

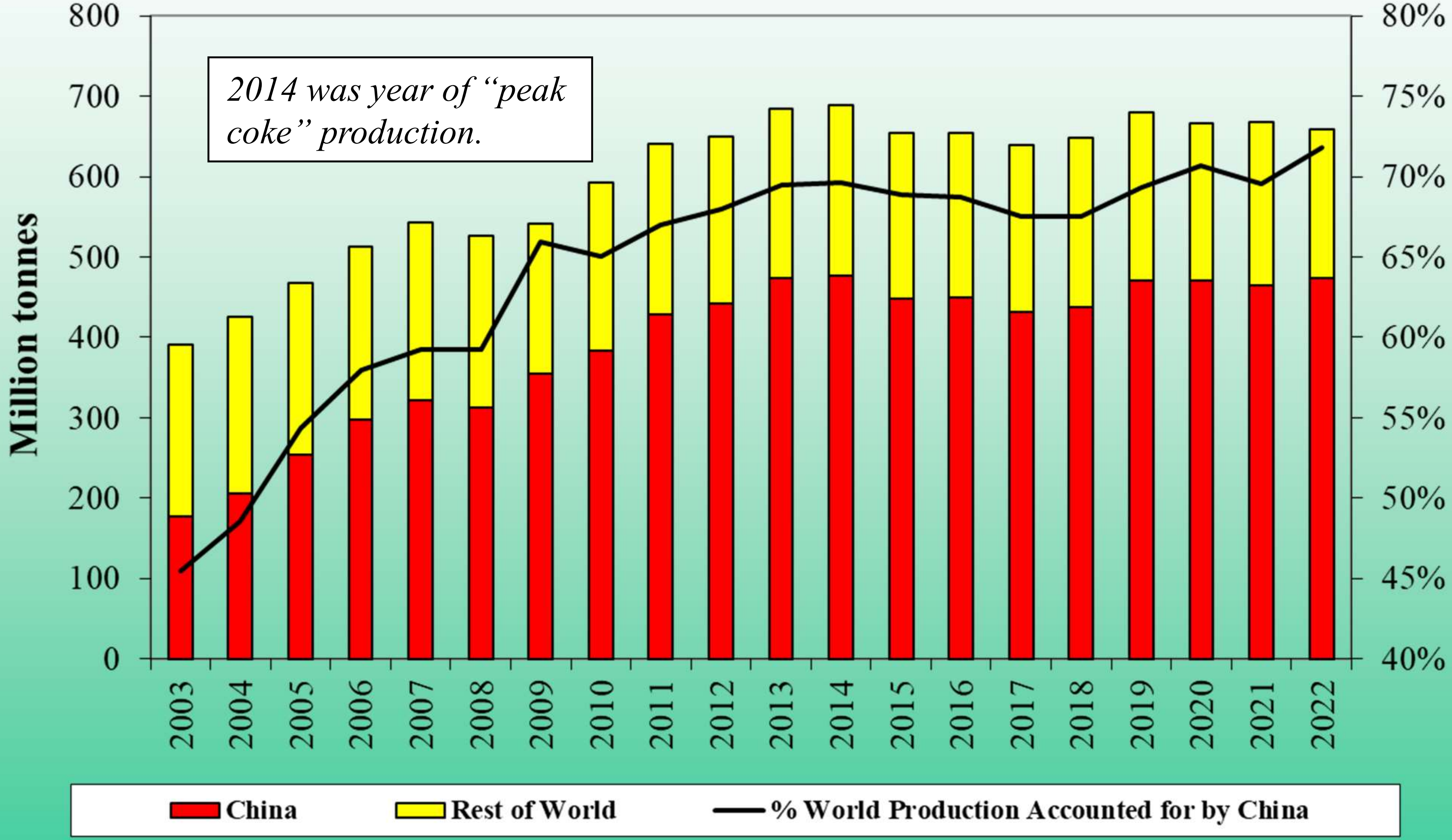
Blast Furnace Coke Pricing



- Shown are the annual averages of the blast furnace coke prices rproduced each month by “Resource-Net”.
- Last year saw a reduction in coke prices from the previous two years. They are still high from a historical perspective due to high coking coal prices and high demand due to coke capacity closures and constraints.
- There have been more exports from China in the last two years, as its pricing has regained competitiveness in the world market.

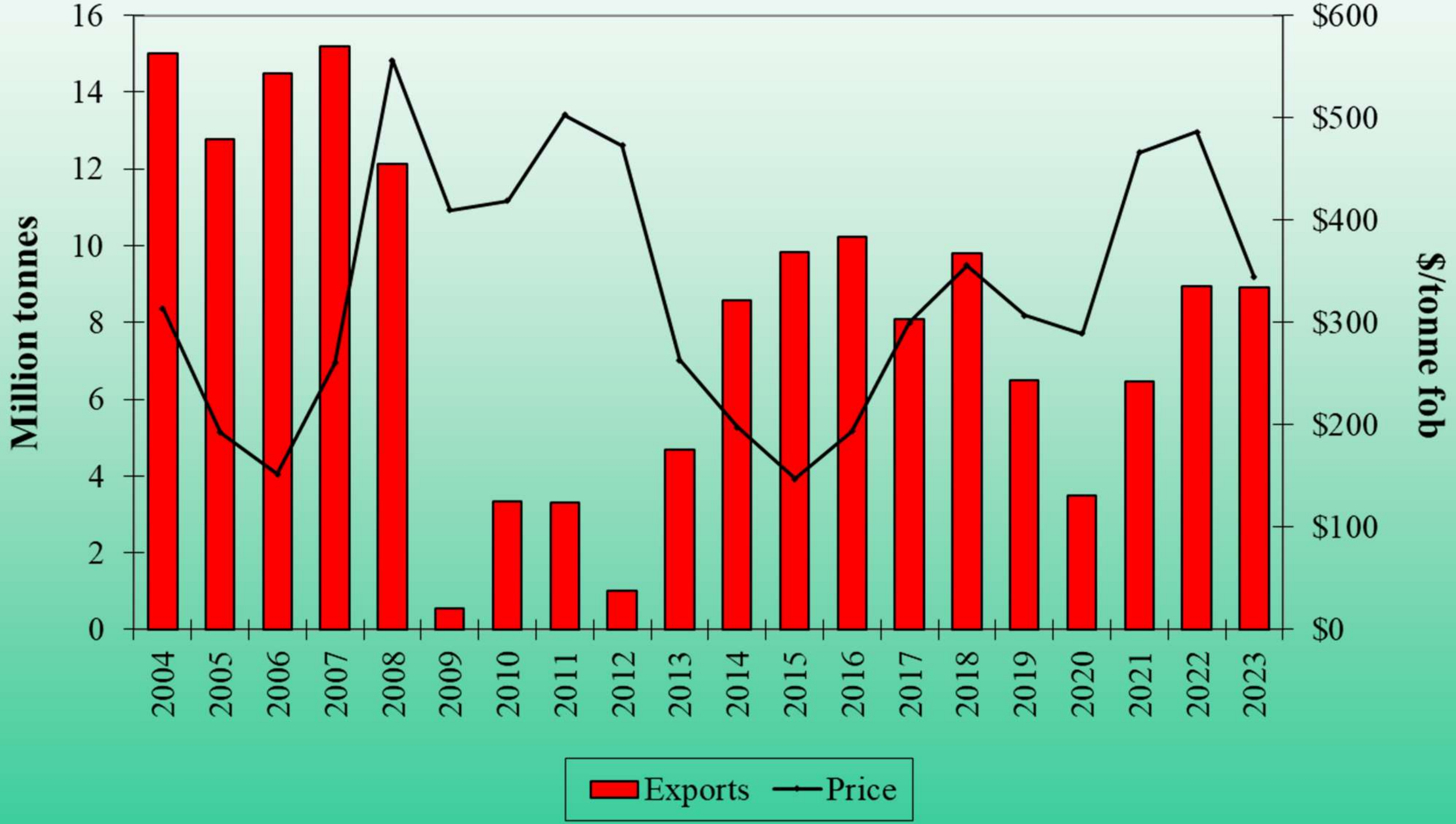
www.resource-net.com

World Coke Production



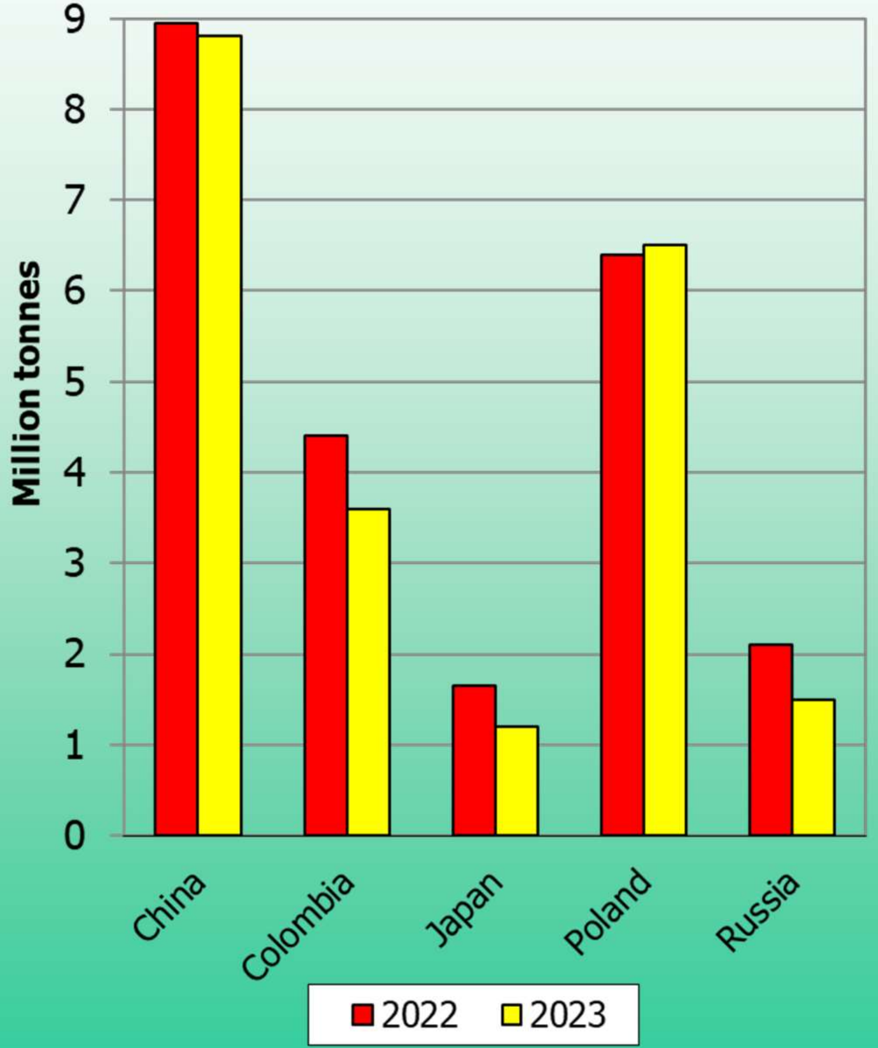
www.resource-net.com

Chinese Blast Furnace Coke Price & Exports



www.resource-net.com

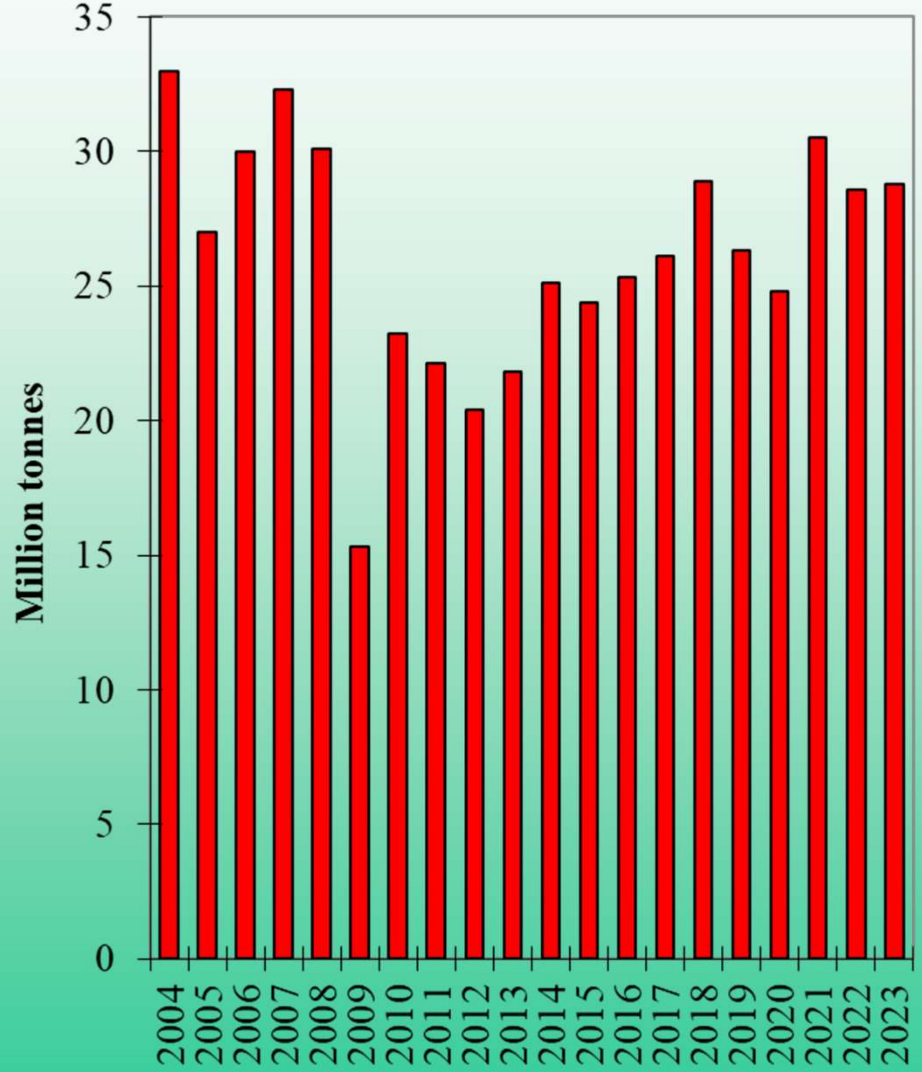
Leading Coke Exporters



- **China:** Exports in 2023 were on a similar level to the previous year.
- **Colombia:** Lower exports last year, following six years of consecutive rises.
- **Japan:** Lower exports in 2023; data estimated as official data currently inaccurate.
- **Poland:** Exports similar to those in 2022.
- **Russia:** Sanctions from EU and other areas reduced exports in last few years. Data partly estimated as official data not available.

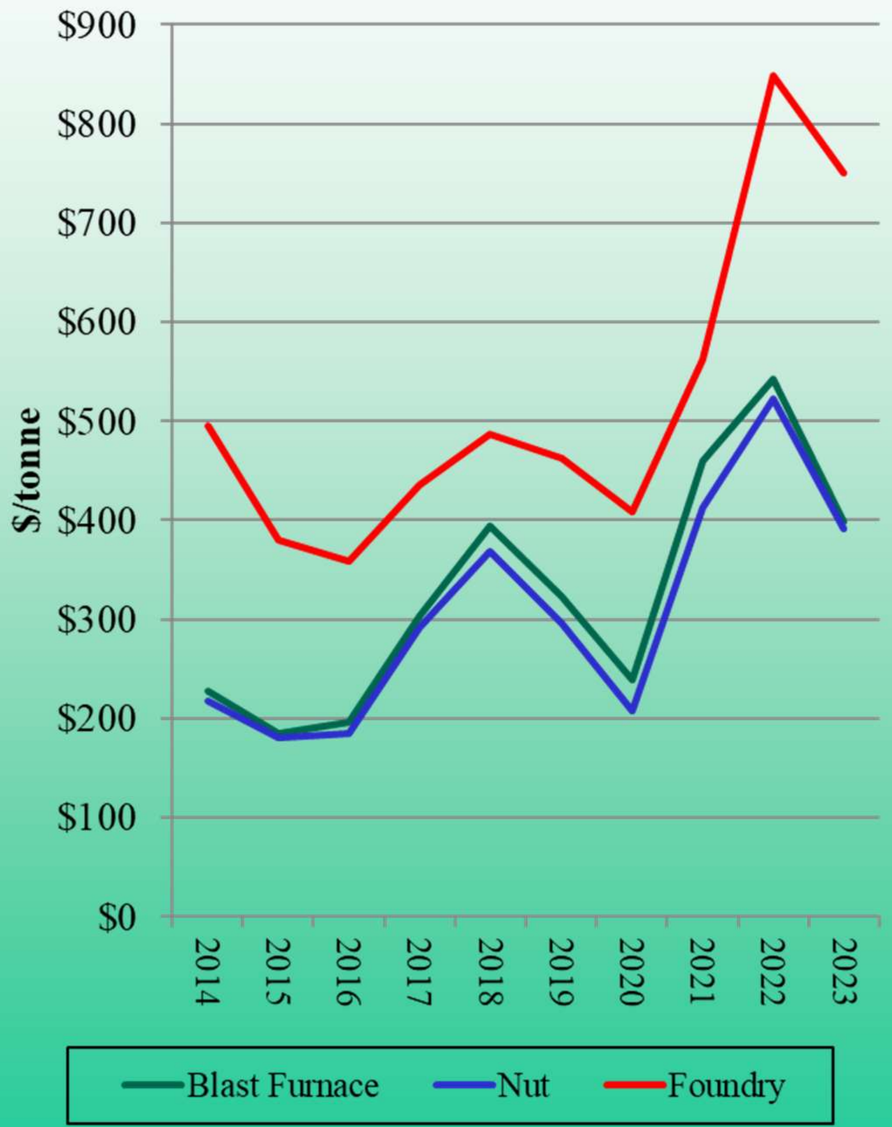
www.resource-net.com

World Cross-Border Coke Trade



- By summing imports of the major economies, we obtain the figures for global coke trade over the past 20 years.
- Following the economic crisis of 2009, coke trade volumes have steadily risen.
- Over the past three years, world coke trade has been on a high level, remaining in a range 28-30m tpy. One reason has been the low price of coke versus that coking coal; another is the closure of some coke plants in past few years.

European Coke Pricing



- The blast furnace coke market is set primarily by Poland and to some extent by other sources such as China and Colombia.
- Following two years of increases, European coke prices were lower last year. By historical standards they remain at a high level, however.
- Foundry coke has retained its premium over blast furnace coke.

www.resource-net.com

Permanent Coke Battery Closures in 2022-23

Plant	*Location*	*Total, M tpy*
Ahmsa	Monclova, Mexico	1.60
ArcelorMittal	Krivoi Rog (Batteries #1-2), Ukraine	1.00
Avdiivka (Metinvest)	Ukraine	4.00
Azovstal	Mariupol, Ukraine	1.50
British Steel	Scunthorpe, UK	0.60
Cleveland-Cliffs	Follansbee (WV), USA	1.20
Liberty Steel	Ostrava (Battery #11), Czech Republic	0.90
Liberty Steel	Whyalla, Australia	0.65
US Steel	Clairton (PA) (Batteries #1-3), USA	0.70
Usiminas	Ipatinga (MG) (Batteries #5-6), Brazil	0.80
Total		**12.95**

Coke Battery Additions in 2022-23

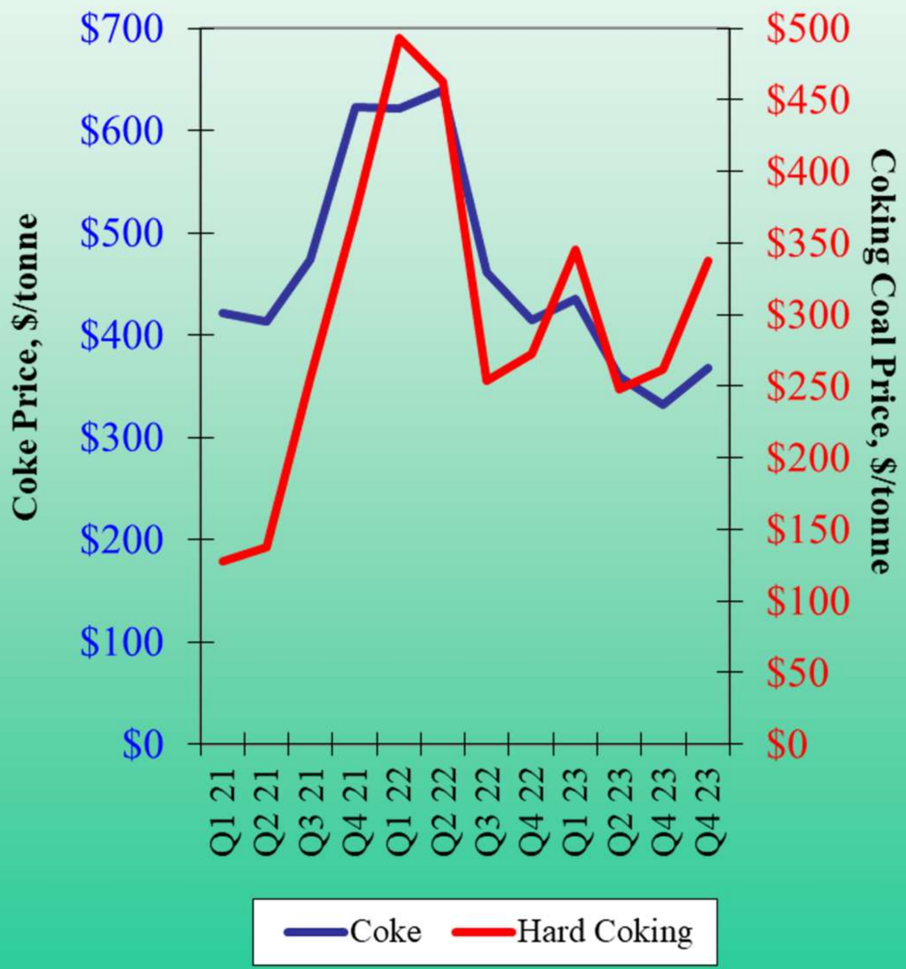
Plant	*Location*	*Total, M tpy*
ArcelorMittal	Serra, Brazil	0.70
Carbones Andinos	Boyaca, Colombia	0.21
Detian Coking	Sulawesi, Indonesia	1.30
Jinrui Coke	Sulawesi, Indonesia	2.60
Jinxiang	Sulawesi, Indonesia	1.30
JSW Steel	Karnataka, India	3.00
NMDC	Chhattisgarh, India	1.60
Risun Wei Shan	Sulawesi, Indonesia	0.80
South Mining	Hwange, Zimbabwe	0.36
ZZCC	Hwange, Zimbabwe	0.18
Total		**12.05**

Coking Coal Market Overview

Coking Coal Pricing - Annual

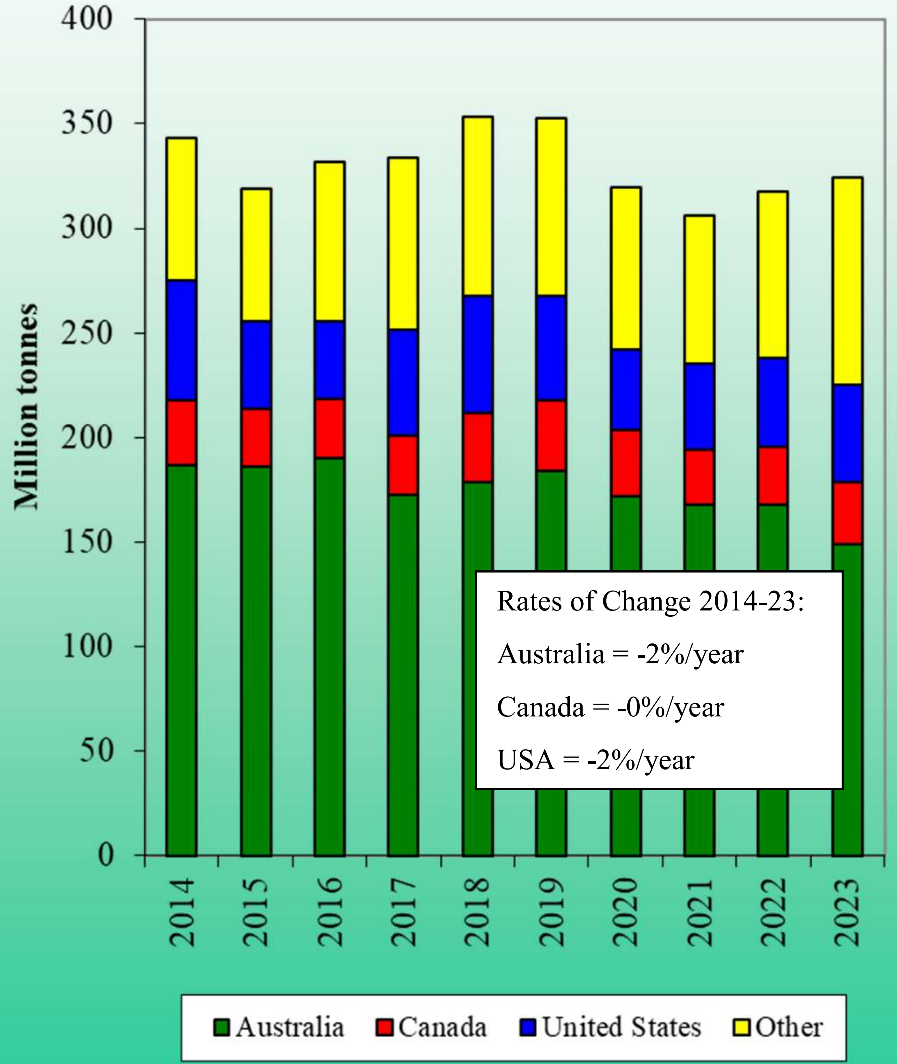
- Shown are annual averages premium hard coking coal “$/tonne fob Australia”, quarterly benchmark and spot.
- In the past 20 years or so, there have been four price “spikes”, the latest in 2021-22. But over the long term, prices have generally kept rising.
- Last year’s spot price averaged $298/tonne fob, more than $70/tonne down from the previous year.

Coke versus Coal Pricing – By Quarter from 2021



- The chart shows the coke price (cfr India) against hard coking coal price.
- In the past year, the coking coal price (Australia fob) has been abnormally higher versus the coke price.
- As a result, it has become more economic to import coke than produce it from coal in many countries.

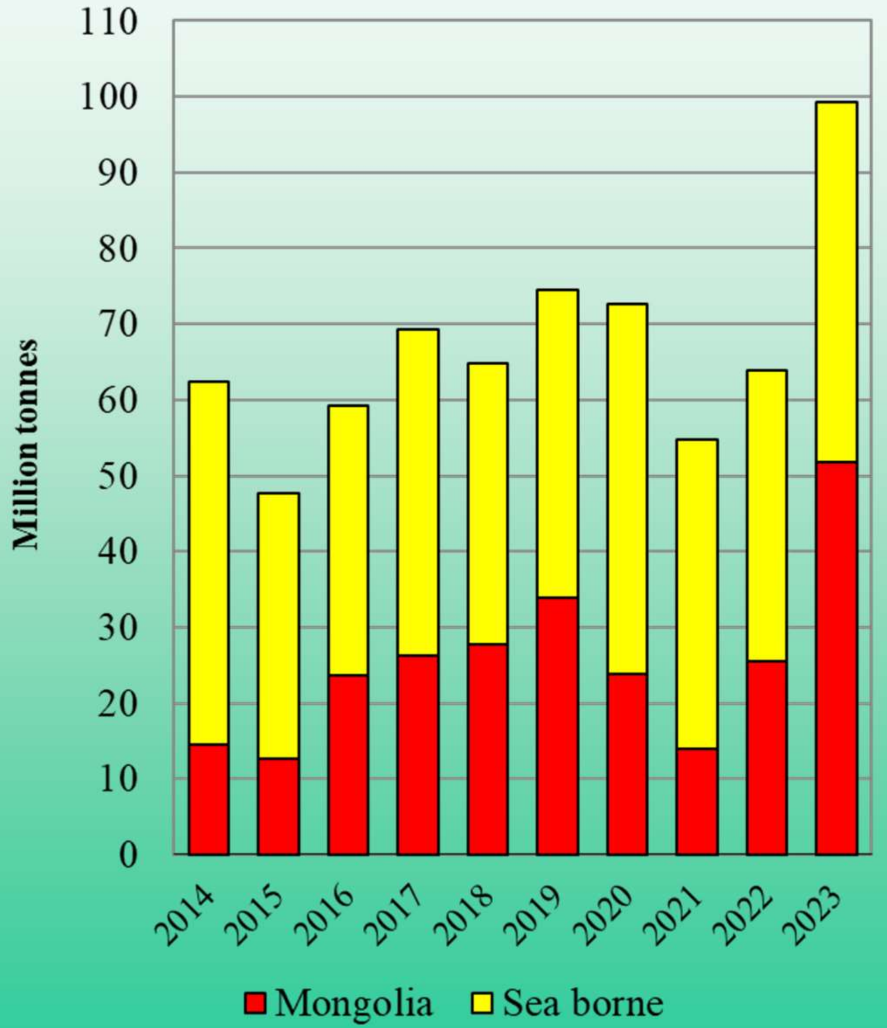
Metallurgical Coal Exports



- Australia, Canada and the US collectively account for almost 70% of world metallurgical coal trade. Total trade has seen a steady increase over the past three years, the rise in exports from Mongolia being a key factor. Exports from the three primary suppliers has been in slow decline.

- We estimate that world trade in metallurgical coal was around 324m tonnes in 2023, 2% up from previous year.

China's Metallurgical Coal Imports



- There was substantial increase in Chinese coal imports this year. Part of the reason is an improvement in logistics of moving coal from neighbouring Mongolia into China.
- Another factor is low-priced coal from Russia, kept out of other markets by embargo. Very low shipments from primary sea-borne suppliers, notably Australia.
- Chinese imports of metallurgical are likely to have reached almost 100m tonnes in 2023.

www.resource-net.com

Market Outlook for 2024

The outlook for coke and coking coal prices remains quite positive in 2024, despite the slow world economy. The coking coal prices reported for Australia on "fob basis" appear to over-state the strength of the market. Clearly, current prices are unrealistic against the prices we report for metallurgical coke.

Closures of coke capacity are set to continue in the western developed economies as steelmakers transition away from carbon-intensive processes. Capacity additions continue in less developed economies, most notably in Indonesia last year.