Coke Market Survey

Historical Iron Output
000 tonnes

	2015	2021	2022	2023	*2024*	*% Change 2015-24*
Europe						
Austria	5,805	6,144	5,803	5,498	*6,000*	*0.0%*
Belgium	4,248	4,212	4,426	3,640	*3,450*	*-2.9%*
Bosnia & Herzegovina	845	1,055	690	525	*300*	*-4.9%*
Czech Republic	4,031	3,874	3,385	2,682	*2,100*	*-5.1%*
Finland	2,270	2,473	1,875	2,231	*2,100*	*-0.9%*
France	10,097	9,470	8,183	6,171	*6,400*	*-5.2%*
Germany	27,842	22,691	23,729	23,635	*24,700*	*-2.2%*
Hungary	1,247	621	492	211	*0*	*-16.4%*
Italy	5,048	3,926	3,464	3,070	*2,500*	*-8.0%*
Netherlands	6,050	5,895	5,514	4,135	*5,400*	*-2.6%*
Poland	4,821	3,587	3,061	2,707	*3,400*	*-6.3%*
Romania	1,983	2,089	1,481	618	*600*	*-8.8%*
Serbia	904	1,186	1,145	1,022	*1,000*	*-1.4%*
Slovakia	3,738	4,014	3,153	3,595	*3,400*	*-1.9%*
Spain	4,391	4,050	3,399	3,035	*3,300*	*-4.0%*
Sweden	2,865	2,991	2,821	2,900	*2,800*	*-0.7%*
United Kingdom	8,774	5,805	4,779	4,480	*4,100*	*-6.4%*
Total - Europe	**94,960**	**84,083**	**77,401**	**70,155**	***71,550***	***-3.6%***
Eurasia						
Kazakhstan	3,235	3,065	2,920	2,745	*2,800*	*-2.5%*
Russia	52,553	53,775	51,606	54,590	*52,000*	*0.2%*
Ukraine	21,797	21,165	6,391	6,003	*6,800*	*-11.8%*
Total - Eurasia	**77,585**	**78,005**	**60,917**	**63,339**	***61,600***	***-2.7%***
North America						
Canada	5,851	6,208	5,800	6,100	*5,900*	*-0.5%*
Mexico	4,573	2,669	2,454	1,000	*900*	*-14.3%*
United States	25,435	22,246	20,000	22,500	*20,000*	*-1.9%*
Total - North America	**35,859**	**31,123**	**28,254**	**29,600**	***26,800***	***-2.9%***
Latin America						
Argentina	2,685	2,142	2,060	1,978	*1,600*	*-3.4%*
Brazil	27,985	28,530	26,813	25,770	*25,500*	*-0.8%*
Chile	632	695	581	622	*400*	*-2.6%*
Colombia	236	219	213	217	*210*	*-0.8%*
Paraguay	71	44	40	29	*36*	*-6.4%*
Total - Latin America	**31,610**	**31,629**	**29,707**	**28,616**	***27,746***	***-1.1%***

Data for 2024 are estimated

(Cont'd)

Coke Market Survey

Iron & Steel Production Forecasts (cont'd)

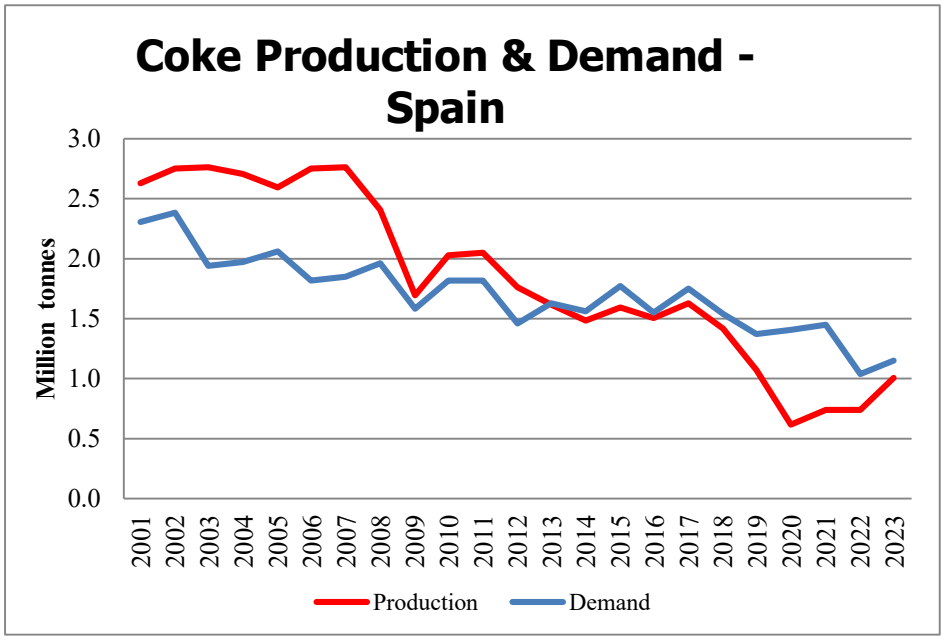
Iron Output by Region	Comments
Sub-Saharan Africa *2014: 5.1m tonnes* *2024: 2.7m tonnes* *2034: 2.9m tonnes*	*In recent years, output in this region has only been at two sites in South Africa, both ArcelorMittal. The Newcastle long products site is likely to close in 2025. A coke-based steel plant started producing this year in Zimbabwe, Chinese owned.*
Middle East & North Africa *2014: 13.3m tonnes* *2024: 14.5m tonnes* *2034: 13.6m tonnes*	*Iron output in this region is running counter to the general declining trend and may be 2m tonnes higher this year at 14.5m tonnes. Turkey is the largest producer in this region, and its iron output has increased over the last ten years.* *Iron output in Algeria restarted in 2017 under government ownership, following ArcelorMittal's withdrawal. In 2021 the Egyptian steel plant, Hadisolb, closed on a permanent basis. In the same year, a second integrated steel plant started production in Iran.*
Asia *2014: 910.8m tonnes* *2024: 1097.1m tonnes* *2034: 937.2m tonnes* China *2014: 706.0m tonnes* *2024: 869.0m tonnes* *2034: 736.6m tonnes* Asia excl China *2014: 204.7m tonnes* *2024: 228.1m tonnes* *2034:200.6m tonnes*	*Total Asian iron output is likely to be around 1.1bn tonnes this year, on the same level as in 2023.* *Chinese iron output might be 870m tonnes in 2024, similar to the levels of the previous two years. Despite the government's long-term attempts to move away from carbon-based steelmaking, iron output has yet to decline.* *Japan's iron output continues to show a gradual long-term decline, but the steel industry is reluctant to close plants. After several decades of growth, iron output in South Korea and Taiwan has stabilized over the past five years or so. In Taiwan there has been a decline for the past few years.* *Indian production at major steel sites is likely to rise to 89m tonnes this year, 3m tonnes up from 2023. It continues to grow due to new investments. This figure excludes the small-scale "mini blast furnace" sector, which appears to be in long-term decline.* *In the south-east Asian economies, Indonesia, Malaysia and Vietnam, investment in steelmaking based on the blast furnace continues, the justification being their steel trade deficits and high-growth economies.*
Australia *2014: 4.0m tonnes* *2024: 3.4m tonnes* *2034: 2.3m tonnes*	*There are two integrated steelmakers in Australia. The smaller Whyalla plant has already embarked on a path to coke-free steelmaking.* *There is small-scale iron production in New Zealand, but this process is also being scaled back.*
Total World ***2014: 1180.6m tonnes*** ***2024: 1305.4m tonnes*** ***2034: 937.2m tonnes***	***We estimate that world iron output will be 1.3bn tonnes, similar to the level of last year. In ten years, we expect iron production to be lower on a world level, as the Chinese economy matures and due to environmental pressures.***

Coke Production (cont'd)

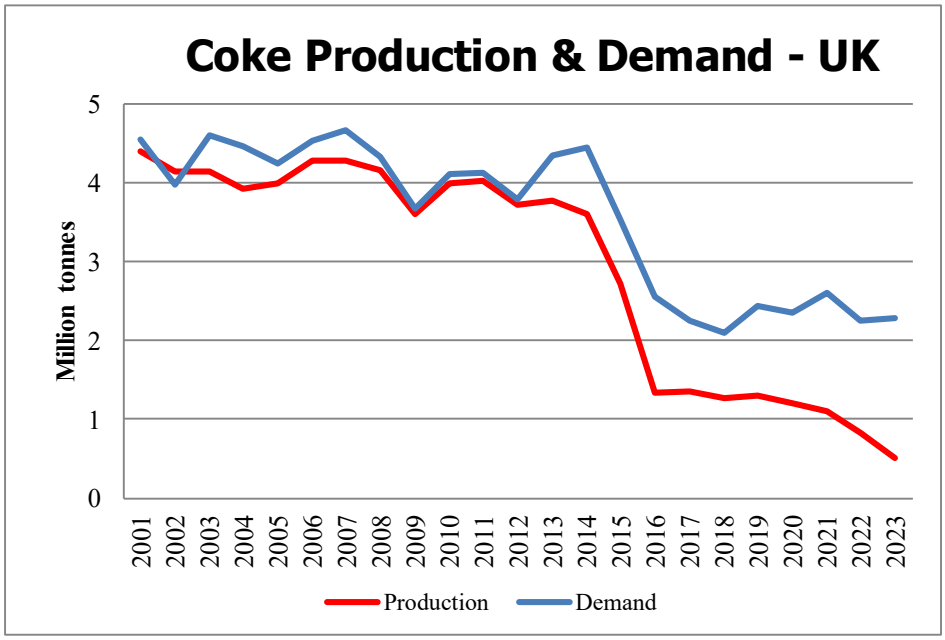
Europe (cont'd)	Effective Capacity, Million tonnes/yr	Comments
Poland	**8.05**	**Poland's coke production is estimated to have been 8.0m tonnes last year. In the years up to 2020 it exceeded 9m tpy. Most production is blast furnace grade, but up to around 0.9m tpy is foundry grade. Exports account for typically 80-85% of production. JSW, the producer of coking coal in Poland, owns three of the eight coke plants. ArcelorMittal closed its Krakow coke plant in 2024 but continues to produce at Zdzieszowice. JSW's Debiensko plant and two batteries at Zdzieszowice closed in 2018. Two batteries for foundry coke were completed at KCN and Victoria in 2019.**
ArcelorMittal Krakow	-	The remaining coke battery at Krakow closed in 2024, following months on hot idle. Two batteries were shut back in 2009. Blast furnace operations at the Krakow steel plant were closed in 2020.
ArcelorMittal Zdzieszowice *No of Batteries: 6* *Year of Battery Start-Up:* *(#1 – 1978, closed 2008)* *(#2 – 1981, closed 2008)* *(#3 –1993, closed 2018)* *(#4 –1991, closed 2018)* *#5–1986, repaired 2018* *#6 –1988* *#7 –2002* *#8 –1975, rebuilt 2004* *(#9, #10 – 1976, closed 2007, 2005)* *#11 –2006* *#12 –2008*	2.80	Zdzieszowice primarily supplies ArcelorMittal's plant at Dabrowa Gornicza. Around 80% of its production is for internal use. The production level has been around 2.5m tpy in recent years. The plant is also known for supplying nut coke for ferroalloys plants in Europe. Exports outside Europe are only to other ArcelorMittal plants. Six batteries can potentially operate, fewer than in the past. Batteries #3 and #4 were closed permanently in 2018, cutting the plant's capacity by 0.35m tpy. It is possible that more of its batteries may close in the next few years.
Koksownia Bytom Bytom *No of Batteries: 1* *Year of Battery Start-Up:* *#2 – 1975, repaired 2022*	0.20	Previously known as Carbo-Koks, there was an ownership and management change in 2022. As a result, there was some investment in the plant. The plant is on the site of a former steelworks, closed in the 1990s. It is the oldest coke plant in Poland and is located near the centre of Bytom town. It is in a poor condition, yet operations continue. Sales are made via K Investments, a solid-fuels distributor. FHU Promix is an authorized coke trader. International sales are via EMTB Trade. Bytom supplies small sizes of coke for industrial uses. It stopped offering foundry coke around 2022.

Coke Market Survey

Coke Production (cont'd)



Surplus in Spanish coke production has disappaeared over past decade.



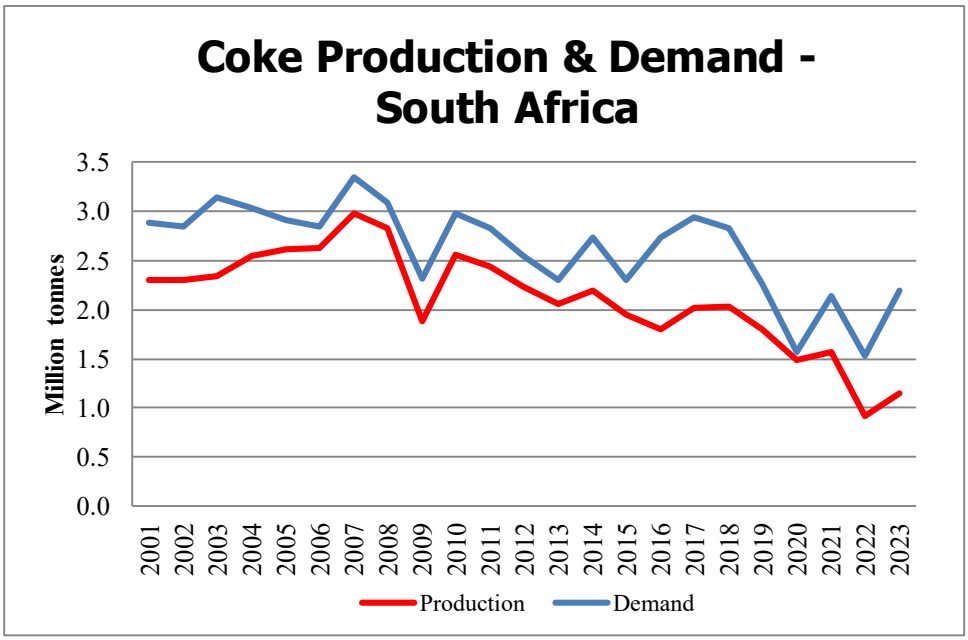
Major collapse in UK coke production and demand from 2014 to 2016.

Coke Production (cont'd)

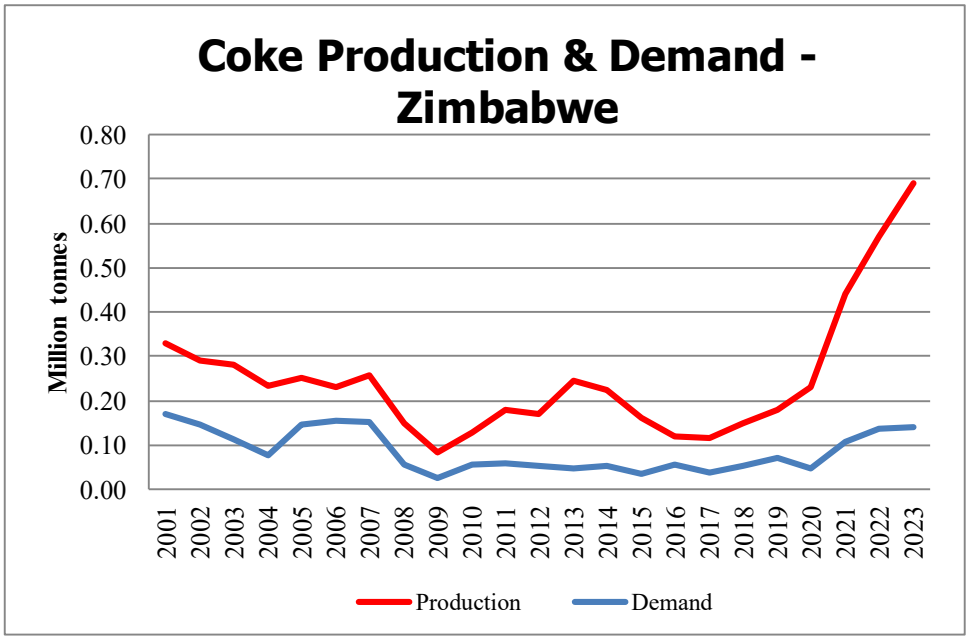
North America (cont'd)	Effective Capacity, Million tonnes/yr	Comments
United States (cont'd)		
SunCoke Energy Middletown, Ohio *No of Batteries: 3* *Year of Battery Start-Up: 2011*	0.55	SunCoke Energy's last investment began in 2011. A contract with Cliffs Steel will run until 2032. Production has run at capacity.
SunCoke Energy Vansant, Virginia *No of Batteries: 3* *Year of Battery Start-Up: 1962*	0.50	Originally completed in 1962 but extensively renovated in 1989-98, the Vansant plant served as a prototype for SunCoke's heat-recovery technology. A 15-year contract with ArcelorMittal expired in 2020. Most of its production is supplied to Cliffs Steel. From 2021 SunCoke produces up to 150,000 tpy of foundry coke at Vansant, replacing double this volume of blast furnace coke. In 2021 an investment of $60m was announced for Vansant.
US Steel Clairton, Pennsylvania *No of Batteries: 6* *Year of Battery Start-Up:* *(#1-3 – 1955, closed 2023)* *B - 1982* *C - 2013* *#13, #14 – 1989* *(#15 – 1979, closed 2024)* *#19 – 1976* *#20 - 1977*	3.20	Clairton is the largest single coke plant in the US and has longstanding environmental issues. In 2016 US Steel signed an agreement to bring the emissions from the Clairton plant's chimneys into compliance within three years. In 2019 US Steel undertook to invest $200m in Clairton. In 2021, this investment was cancelled due to lack of agreement with the local authority. The investment was also inconsistent with the company's goal of achieving carbon neutrality by 2050. Allegheny County issued new coke plant regulations in November 2020 regarding emissions of hydrogen sulphide; but these were successfully challenged in court by US Steel, as they contradicted the 2019 settlement. However, the local authority issued a further $7.3m in fines for emissions in March 2022. Batteries #1, #2 and #3, originally built in 1955, were closed in 2023. This cut capacity by around 0.7m tpy. In 2024 battery #15 was closed due to excessive emissions, cutting output by a further 0.3m tpy. It has been idle since 2020. Before the end of 2024, Nippon Steel is due to complete a $15bn takeover of US Steel. It has undertaken to invest $1.4bn into the Gary, Granite City and Mon Valley steel plants, but no mention has been made of the Clairton coke plant. At some point the total closure of Clairton looks inevitable, given its impact on the local environment.
Total North America	**13.60**	

Coke Market Survey

Coke Production (cont'd)



South African coke production and demand in long-term decline.



The last few years have seen a rebound in Zimbabwean coke production due to Chinese investment.

Coke Production (cont'd)

Capacity Expansions (cont'd)

Plant	*Details*	*Comments*
India (cont'd)		
Tata Steel Kalinganagar, Odisha	Increase: 1.50m tpy Time-frame: 2018-24	The first phase of Tata Steel's third coke plant in India was heated up in 2016. Construction of a third battery began in 2018, but it was only completed in 2024. A fourth battery is planned, but timing is unknown.
Indonesia		
Detian Coking Sulawesi Province	Increase: 2.8m tpy Time-frame: 2023-24	Three batteries have been built with a capacity of 2.8m tpy. ACRE of China is the primary contractor. Production is being sold to outside parties. It is on the same site as Dexin Steel, also Chinese owned but a separate project. Detian is a joint venture between New Tianjin Steel Group (Delong Steel), Tsingshan Group and Risun Group, the latter being the world's largest independent coking enterprise.
Dexin Steel Sulawesi Province	Increase: 1.5m tpy Time-frame: 2024	Steel plant started with two batteries in 2019-20. To supply a third blast furnace, two top-charged batteries were completed in early 2024.
Jinrui Coke Sulawesi Province	Increase: 2.60m tpy Time-frame: 2023-24	Jinrui is a subsidiary of Nanjing Iron & Steel. Four stamp-charged batteries were completed in 2023-24.
Jinxiang Sulawesi Province	Increase: 3.90m tpy Time-frame: 2023-24	Jinxiang is a joint venture between Jinrui and Risun, both of which have their own coke projects in Indonesia. Three stamp-charged batteries were completed in 2023-24. One battery is dedicated to nut coke.
Risun Wei Shan New Energy Sulawesi Province	Increase: 4.80m tpy Time-frame: 2023-25	A Chinese-owned coke plant began production in 2023. It is also sited at the Morowali Industrial Park. Two top-charged batteries were completed in 2023 and two more this year. Two more are planned, which will take capacity to 4.8m tpy.

Metallurgical Coal Markets (cont'd)

Metallurgical Coal Production (cont'd)

Canadian Metallurgical Coal Capacity

Companies ***Mine Locations***	**Capacity, Million tpy**	**Details**
Colonial Coal *Flatbed, Hugeunot*	-	Colonial Coal holds coal resources in British Columbia. Potential production is 3.5-5m tpy, but there is no time-frame for development.
Conuma Coal Resources *Brule, Willow Creek, Wolverine, Quintette*	5.5	In 2016 Conuma Coal Resources acquired three idle mines from Walter Energy and restarted production at two of them – Brule and Wolverine. Brule produces low-volatile PCI coal, Wolverine hard coking coal. Restarted in 2018, Willow Creek produces both hard coking and PCI coal. The Wolverine mine has run out of coal and is being closed this year. After more than 20 years idle, the Quintette mine restarted in 2024.
CST Canada Coal *Grande Cache*	(2.0)	Grande Cache in Alberta closed in 2015, and its Asian owner went bankrupt in 2017. The following year, an entity known as Sonicfield Global bought the mine and ultimately plans to restart under the management of CST Canada.
Glencore *Elkview, Fording River, Greenhills, Line Creek*	27.0	Glencore's acquisition of Teck Coal's assets is being finalized in 2024. Nippon Steel and Posco will hold minority stakes. Coking coal production in 2023 was 23.7m tonnes in 2023**.** The Coal Mountain and Cardinal River (Alberta) mines closed in 2018 and 2020, respectively, production increasing from the other mines to compensate. About three-quarters was hard coking coal, the remainder lower grades of metallurgical coal. Most sales are in Asia.
Total	**32.5**	

Metallurgical Coal Markets (cont'd)

Metallurgical Coal Production (cont'd)

Australia	Production, Million tonnes			Comments
	2022	2023	2024	
Australia	171.0	154.5	147.5	Australia is the world's leading exporter of metallurgical coal, accounting for more than half of world trade. Over the last ten years, the export volume has declined by 3% per year on average. Asia remains by far the largest market for Australian metallurgical coal, accounting for 83% of the total exports last year; due to embargo, the customs data show minimal exports to China. The main markets in Asia were India, Japan and South Korea, followed by Taiwan and Vietnam. Europe was the other major market, accounting for 13% of exports. Metallurgical coal is produced in several regions of Australia: ➢ High-volatile soft and semi-soft coking coals from the Newcastle and Hunter Coalfields, New South Wales; ➢ Low- and mid-volatile hard coking coals from the Southern Coalfields, New South Wales; ➢ Low-, mid- or high-volatile hard coking coals from the Bowen Basin, Queensland. In recent years**, BHP** has been Australia's leading producer of metallurgical coal via two joint ventures with Japanese companies: **BHP Mitsubishi Alliance (BMA)** and **BHP Mitsui Coal (BMC)**. In 2022 Stanmore Resources acquired outright control of the BMC mines; and in 2023 BMA sold two mines to Whitehaven Coal. BMA still operates five mines in Queensland but has indicated that eventually it will dispose of them. **Anglo American** is the second-largest metallurgical coal producer in Australia after BMA. Others include **Glencore**, **Stanmore Coal**, **QCoal** and **Yancoal**.

(Cont'd)

Coke Demand (cont'd)

Summary by Country (cont'd)

Europe (cont'd)	Coke Demand, Million tonnes 2022	2023	2024	Comments
Germany *% Avge Annual Change:* *2020-24: +2.8%* *2015-24: +0.3%*	10.70	11.02	11.00	Investments in coke capacity at HKM and Dillinger cut import demand from 2013-14. The German steel industry is now broadly coke balanced, though there are still some outside purchases. By the end of the decade, most of its five steelmakers will have partly switched to the EAF route. Ten of Germany's blast furnaces are likely to have closed by 2030. Imports of coke by Germany were 2.5m tonnes last year, the highest in more than ten years. More than half comes from Poland, with other European countries, China and Colombia also supplying. Steel plant waste recyclers, DK Recycling and Eisenwerk Amstadt, are significant users of imported coke. There is also a calcium carbide plant, AlzChem, using coke. There are also around 30 iron foundries and five stone wool plants using foundry coke, sourced primarily from Czech Republic and Poland.
Hungary *% Avge Annual Change:* *2020-24: -50.9%* *2015-24: -15.9%*	0.30	0.11	0.02	Due to financial difficulties of Liberty Steel, blast furnace operations halted in August 2023 and will not restart. There are three foundries using coke in Hungary, plus one stone wool plant. Coke is being imported from Czech Republic and Poland.
Italy *% Avge Annual Change:* *2020-24: -6.5%* *2015-24: -0.2%*	1.73	1.57	1.31	The Taranto steel plant is under the joint control of the Italian state and ArcelorMittal. This year the business is under renewed financial distress. There is a plan to switch coke-free steelmaking by 2026 for which no funding in place. Italy's other integrated steel site at Servola closed in 2020. There are around 14 iron foundries using coke, supplied primarily by Italiana Coke.
Lithuania *% Avge Annual Change:* *2020-24: -5.0%* *2015-24: -0.2%*	0.02	0.02	0.02	Paroc's stone wool plant in Lithuania uses foundry coke. Its capacity was expanded by 50% in 2019. It is one of four of Paroc's plants still using coke.
Netherlands *% Avge Annual Change:* *2020-24: -3.5%* *2015-24: -2.6%*	1.93	1.45	1.89	Tata Steel's steel plant at IJmuiden is coke balanced. It is looking at carbon capture and storage in the North Sea by 2030, and in the following decade a switch to hydrogen is planned. By 2030 one of the two blast furnaces is likely to have closed. Rockwool's largest stone wool plant in Europe is at Roermond, and there are also five-six iron foundries using coke.

(Cont'd)

Coke Demand (cont'd)

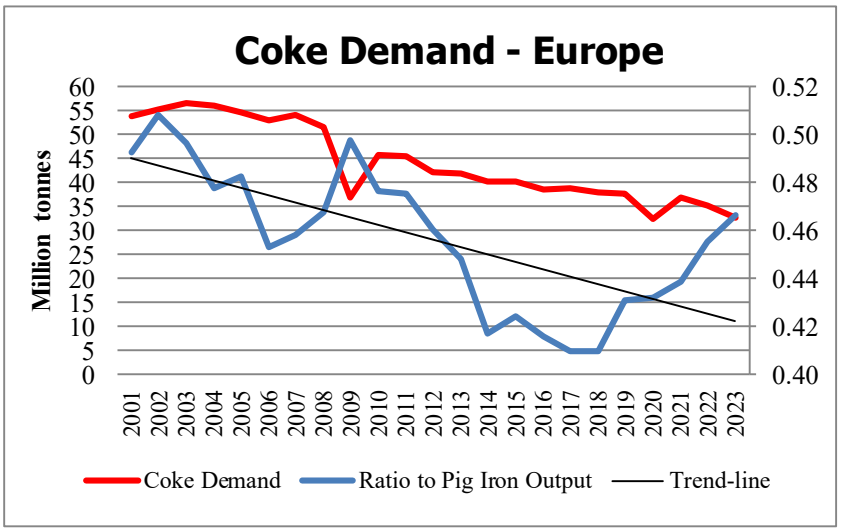
Summary by Country (cont'd)

Asia (cont'd)	Coke Demand, Million tonnes			Comments
	2022	2023	2024	
Japan *% Avge Annual Change:* *2020-24: -2.3%* *2015-24: -3.3%*	28.56	27.47	25.30	Demand is declining at a steady rate of around 3% per year. Around 5-10% of demand is met by imports. Over the past two years, imports have been on a declining trend. Major steelmakers, JFE Steel and Nippon Steel, are buying on a regular basis from China; Kobe Steel and Nisshin Steel buy on spot basis. JFE buys for its Fukuyama and Kurashaki plants, Nippon Steel for Kashima, Kimitsu and Nagoya. Nippon Steel controls more than half of Japan's blast furnace capacity of 90-95m tpy. Some blast furnace closures have occurred in Japan in last few years. Blast furnaces at Kobe Steel, Kobe (1.6m tpy), Nisshin Steel, Kure (3.8m tpy) and Sumitomo Metals, Kokura (1.7m tpy) have no coke capacity, so they rely on supply from affiliated plants or outside supply. The three largest coke traders in Japan are JFE Shoji, Mitsubishi and Sansei Shokai. There are also imports of foundry coke from China of around 150,000 tpy; Japan is by far the largest importer of Chinese foundry coke. There are around 60-70 foundries using coke in Japan. Two stone wool plants use blast furnace coke, not foundry grade.
South Korea *% Avge Annual Change:* *2020-24: -1.6%* *2015-24: -1.1%*	16.16	16.91	16.20	Coke demand in South Korea has been in decline since about five years ago. Imports of coke were 0.21m tonnes in 2023, similar to the levels of previous years; the main source is China, primarily for ferroalloys. There are no foundries using coke in South Korea. Steelmakers Posco and Hyundai Steel are coke balanced with no demand for imports. No investments in blast furnace capacity are likely by Posco in the future due its projects in Brazil and Indonesia. Hyundai Steel started up an 8m tpy integrated steel plant in 2010-11, with internal coke production.

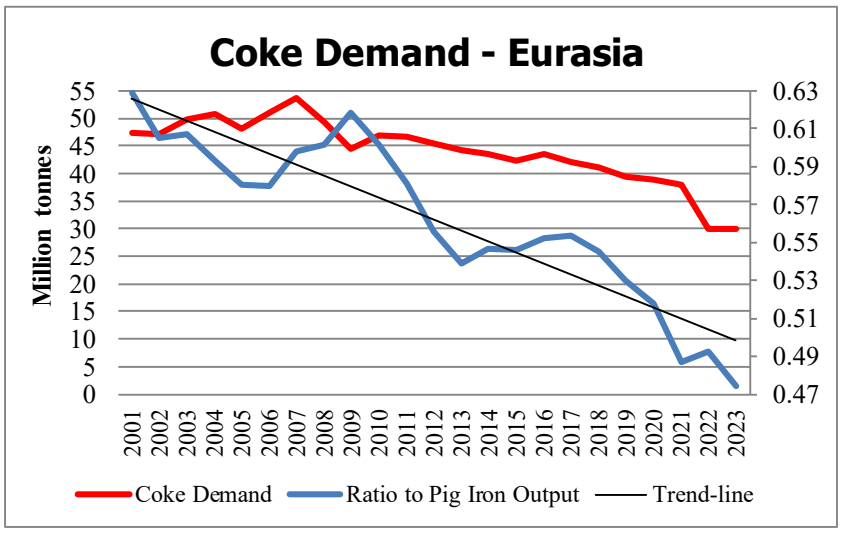
(Cont'd)

Coke Market Survey

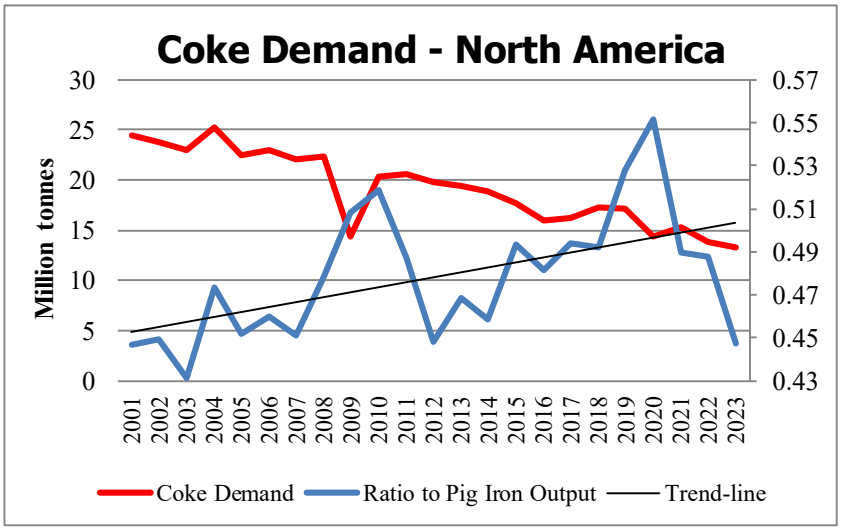
Coke Demand (cont'd)



European coke demand is in slow decline. The ratio of coke demand to iron output has been rising in recent years, however.



The ratio of demand to iron output has fallen in Eurasia as the efficiency of steelmaking improves.



The ratio of coke demand to iron output has been lower in the last few years in North America.

Coke Trade (cont'd)

The outlook for availability - five years into the future - by exporter is summarized, first for the large-scale international suppliers, then for the smaller volume players:

Large-scale Exporters, supplying wordwide markets

		Volume 2023, M tonnes	
China	→	8.79	Future availability from China is likely to be lower due to rising costs and environmental controls. From a historical perspective, India and Japan have been the most important markets for Chinese coke, but demand has been lower in recent years. Other important markets in Asia include Indonesia, Malaysia and Vietnam.
Colombia	→	3.56	Exports of coke from Colombia have doubled over the last five years, but this rise is unsustainable due to logistical bottlenecks and environmental controls. There has been investment recently in coke capacity in Cucuta for the submerged-arc furnace market. But otherwise, further expansion looks unlikely near term.
Indonesia	↑	1.02	Off a low base, Indonesian coke exports have increased significantly due to Chinese investment. India and other Asian countries have been the primary markets.
Japan	↓	1.12	Japanese exports have been lower in the last two years due to maintenance at one of the two major coke-exporting plants. Main markets recently have been Brazil, the UK as well as Asian countries. Blast furnace production in the UK will stop by the end of 2024, however.
Poland	↓	6.65	Long term, we expect Polish exports to fall. Demand in other European countries is in decline, so Poland is looking at other markets around the world. There has been an increasing focus on the foundry coke market.
Russia	↓	1.67	From historical perspective, exports from Russia have been primarily to Europe, Kazakhstan and Ukraine. All grades of coke are exported, except foundry. Advantages for Russia as a coke exporter are local availability of coking coal, as well as low conversion costs. Sanctions from Europe have reduced exports in the past few years, and Ukraine has also had less demand for Russian coke. Main markets this year have been Belarus and Kazakhstan, as well as some central Asian countries.

Expected tendency long term in export volumes is indicated by the arrow.

Appendix B: Comments on Chinese Coke Industry (cont'd)

Coke data

Summarized are data on Chinese coke output and apparent demand from 2014 to 2024:

Milion tonnes	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Coke Output	476.9	447.8	449.1	431.4	438.2	471.3	471.2	464.5	473.4	492.6	488.0
Exports	8.6	9.7	10.1	8.1	9.8	6.5	3.5	6.5	9.0	8.8	9.8
Imports	0.0	0.0	0.0	0.0	0.1	0.4	3.0	1.3	0.5	0.2	0.1
Coke Demand	468.3	438.0	439.0	423.3	428.5	465.1	470.7	459.3	465.0	484.0	478.3
Pig Iron Output	**706.0**	**693.3**	**695.2**	**713.6**	**779.9**	**808.5**	**889.0**	**855.8**	**868.6**	**863.9**	**869.0**
Ratio Coke Demand/ Pig Iron Output	***66%***	***63%***	***63%***	***59%***	***55%***	***58%***	***53%***	***54%***	***54%***	***56%***	***55%***

The above data show that the coke demand to iron output ratio in China has decreased from 66% in 2013 to 54-56% in the last few years; this indicates an efficiency improvement of the Chinese steel industry and other end-user sectors.

Steel exports

In the last few years, steel exports from China have risen significantly. This year they may exceed 100m tonnes, as the chart shows:

This is due to the poor steel market inside in China, due it is said to the property market collapse. Excessive Chinese steel exports are a major de-stabilizing factor in the world commodity markets.