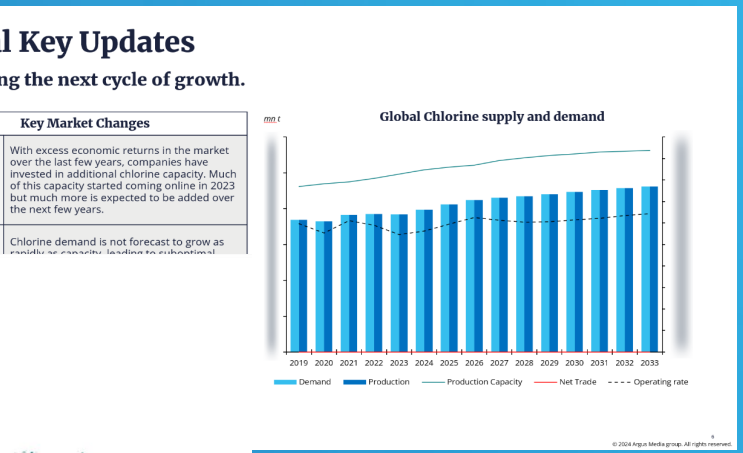
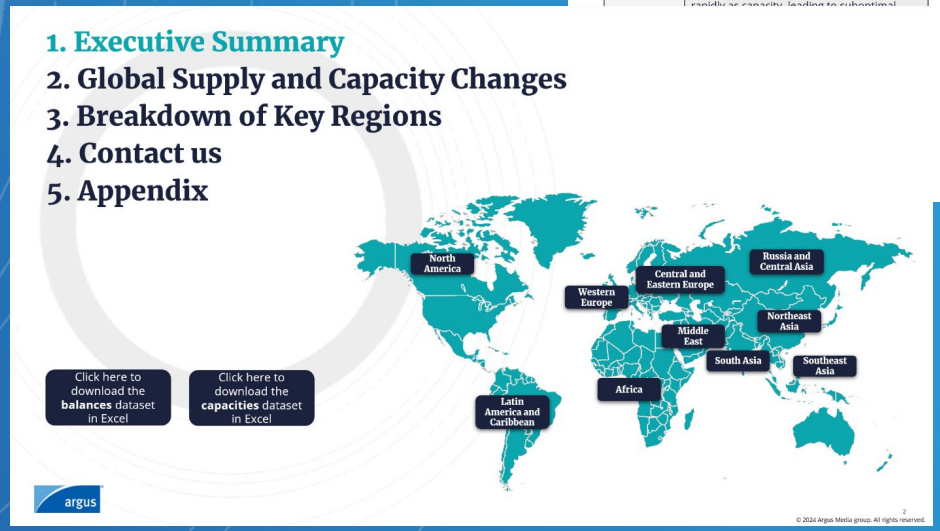
Argus report sample

Chlorine Analytics

24 May 2024





About this report

Argus Chlorine Analytics is a data-driven evaluation of supply-demand fundamentals forecast for chlorine and derivatives markets, published twice a year.

The service includes a 10-year forecast and 5-year history covering balances and capacities, organized by country and region.

Subscribers receive a PowerPoint PDF written by our experts plus the accompanying Excel data files.

This is a sample of the full report only. It includes insights for North America.

To find out more about the full Argus Chlorine Analytics service, click here to get in touch.

Key features

10-year forecast and a five-year history
Covering capacities, supply and demand, trade, and feedstock forecasts for leading derivatives, by country and region, published twice a year.

Detailed report
In an easy-to-read PowerPoint format focusing on new plant capacities, growth rates in relevant markets, and regulatory developments.

Regional insight
Covering capacities and operating rates based on global trade and economics.

Downloadable datasets
With data on supply, demand, capacities, operating rates and trade balances, by country and region.

Access to specialists
Speak to the experts behind Argus' long-term analytics forecast services.

Associated data

Global supply, demand and trade by country; chlorine capacities

Capacity list for chlorine, '000t

Product	Region	Country	Location	Country Subdivision	Operating Company	Source	2019	2020	2021	2022	2023	2024
Chlorine	Middle East	Iran	Abadan		Abadan Petrochemicals	Mercury	27	27	27	27	27	27
Chlorine	South Asia	India	Mundra, Gujarat		Adani (Mundra Petrochem Ltd)	Membrane						
Chlorine	Southeast Asia	Thailand	Map Ta Phut		Aditya Birla Group	Membrane	73	100	100	100	100	100
Chlorine	Middle East	Iran	Bandar Imam		Arvand Petrochemicals	Membrane	636	636	636	636	636	636
Chlorine	Africa	Algeria	Mostaganem		ADWAN Chemical	Membrane	25	25	25	25	25	25
Chlorine	Southeast Asia	Thailand	Map Ta Phut		AGC Chemicals	Membrane	227	227	227	227	227	227
Chlorine	Southeast Asia	Thailand	Samut Prakan		AGC Chemicals	Membrane	94	94	94	94	94	94
Chlorine	Northeast Asia	Japan	Chiba	Chiba	AGC Inc	Membrane	208	208	208	208	208	208
Chlorine	Northeast Asia	Japan	Kashima	Ibaraki	AGC Inc	Membrane	263	263	263	263	263	263
Chlorine	Black Sea	Turkey	Yalova		Akkim AS	Membrane	30	30	30	30	30	30
Chlorine	Middle East	Iran	Bandar Imam		Bandar Imam Petrochemicals	Membrane	236	236	236	236	236	236
Chlorine	Northeast A											
Chlorine	Middle East											
Chlorine	Latin Amer											
Chlorine	Latin Amer											
Chlorine	Latin Amer											
Chlorine	North Amer											
Chlorine	North Amer											
Chlorine	Southern E											
Chlorine	Latin Amer											
Chlorine	Northeast A											
Chlorine	Northeast A											
Chlorine	Northeast A											
Chlorine	Middle East											
Chlorine	Middle East											
Chlorine	Northeast A											
Chlorine	Southeast											
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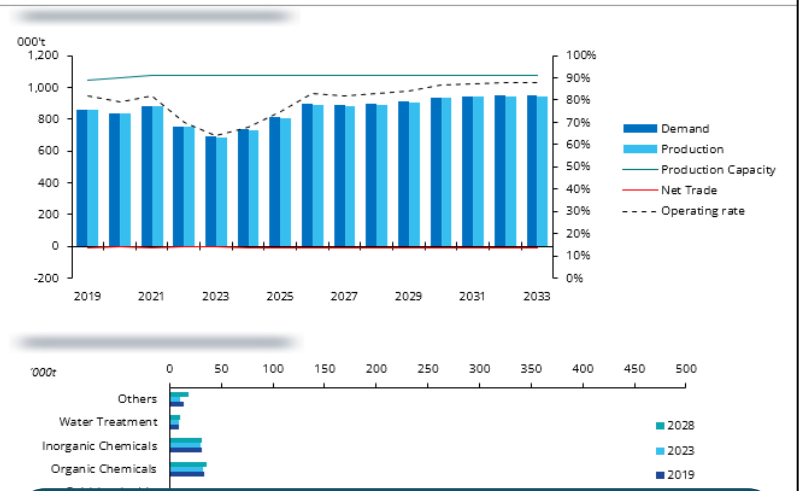
Chlorine	Southeast											
Chlorine	Southeast											
Chlorine	South Asia											
Chlorine	Latin Amer											
Chlorine	South Asia											
Chlorine	North Amer											
Chlorine	Middle East											
Chlorine	Southeast											
Chlorine	Northeast A											
Chlorine	Middle East											

	Estimate						Outlook										CAGR %		
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2018-27	2022-27	2027-32
Capacity																		
Diaphragm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Mercury	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Membrane	1,044	1,059	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	0.7%	0.0%	0.0%
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Speculative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Total capacity	**1044**	**1059**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**1074**	**0.7%**	**0.0%**	**0.0%**
Production																		
Diaphragm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Mercury	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Membrane	856	836	880	752	687	730	805	891	882	893	904	933	939	945	945	-5.3%	5.4%	1.1%
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Total production	856	836	880	752	687	730	805	891	882	893	904	933	939	945	945	-5.3%	5.4%	1.1%
Operating rate	82%	79%	82%	70%	64%	68%	75%	83%	82%	83%	84%	87%	87%	88%	88%			
Import	8	7	8	6	7	7	7	7	7	7	7	7	7	7	7	-3.3%	0.0%	0.0%
Total supply	**864**	**843**	**888**	**758**	**694**	**737**	**812**	**898**	**889**	**900**	**911**	**940**	**946**	**952**	**952**	**-5.3%**	**5.3%**	**1.1%**
Derivative demand																		
Vinyls	420	415	425	366	332	354	393	430	428	433	434	438	439	440	441	-5.7%	5.5%	0.4%
TDI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
MDI	296	279	300	250	231	245	272	317	314	315	320	333	336	338	341	-6.0%	6.4%	1.6%
Polycarbonate	59	57	60	52	48	49	53	55	55	56	56	56	57	57	57	-5.1%	3.2%	0.5%
Propylene Oxide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Epichlorohydrin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	0.0%
Organic chemicals	33	33	38	33	32	33	35	36	36	36	37	38	40	41	41	-0.8%	2.3%	2.8%
Inorganic Chemicals	31	31	36	31	30	31	33	34	34	31	32	34	37	39	38	-0.9%	0.6%	4.4%
Water Treatment	9	9	11	9	9	9	10	10	10	10	10	11	11	11	11	-1.3%	2.9%	1.4%
Others	14	16	15	13	10	13	15	15	9	18	21	27	24	23	21	-6.9%	12.1%	2.9%
Total consumption	861	840	885	755	691	735	810	896	887	898	909	938	944	950	950	-5.4%	5.4%	1.1%
Export	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	0.0%	-7.8%	0.0%
Total demand	**864**	**843**	**888**	**758**	**694**	**737**	**812**	**898**	**889**	**900**	**911**	**940**	**946**	**952**	**952**	**-5.3%**	**5.3%**	**1.1%**
Net Trade	-5	-4	-5	-3	-4	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5.4%	4.6%	0.0%



Subscription includes detailed Excel downloads

>>Want to see more data?
Click here to enquire.

Chlorine Analytics Executive Summary

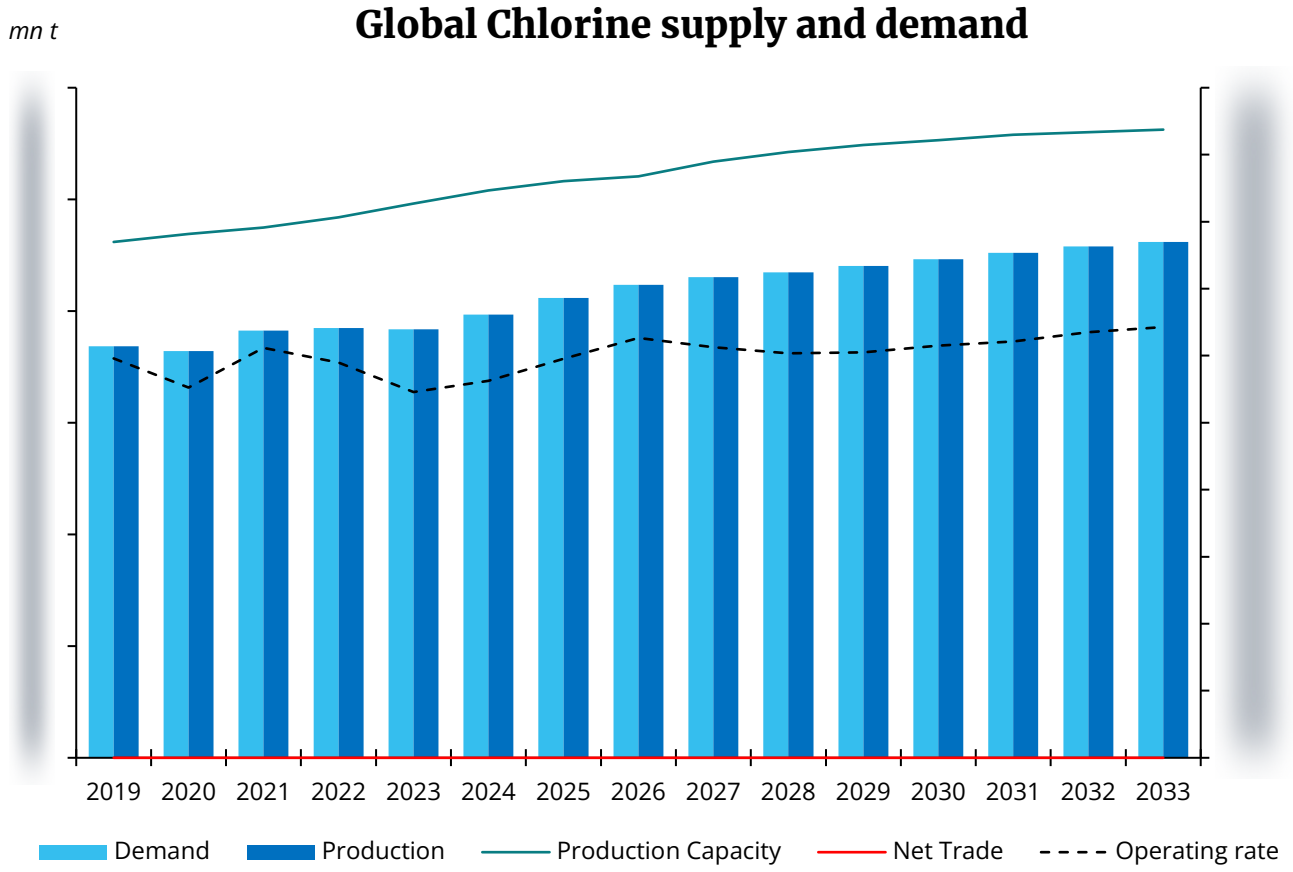
May 2024 update of 10-year global chlorine supply, demand and trade analysis.

- The global economy has slowed over the past couple of years, but forecasts are beginning to show a rebound in economic activity over the next couple of years. This rebound in economic activity is anticipated to drive chlorine demand growth from 2024.
- While chlorine is not directly traded, its derivatives are and the trade in the derivatives has been impacted by the low water levels in the Panama Canal and hostilities in the Red Sea essentially closing a critical trade route through the Suez Canal. The changes in trade have shifted chlorine demand from Asia to Europe and North America, at least temporarily.
- Excess profits from the post-pandemic era have led to a significant amount of investment in chlorine and related derivatives, leading to excess capacity. This new capacity will take several years to absorb into the market, potentially leading some older plants to become rationalized that have not been identified in this study.
- North American chlorine capacity is expected to decline to its lowest in recent history as Olin has rationalized massive amounts of capacity and further capacity rationalizations are expected to take place in 2025 as a chlorohydrin-based propylene oxide plant is expected to close. These rationalizations far exceed new capacity additions.
- North America's capacity is forecast to start increasing again in 2027 as speculative capacity is added to the market. This new capacity is anticipated to be integrated into regional water treatment applications and then in 2029, additional speculative capacity integrated into vinyls will be added.
- Some chlorine derivatives remain under environmental pressure with a few identified to be phased out over the next decade.
- The decarbonization of industrial processes as well as the electricity grid may lead some countries to rationalize chlorine capacity to reduce their carbon dioxide footprint, becoming importers of chlorine derivatives instead of traditional exporters.

Global Key Updates

Beginning the next cycle of growth.

Key Market Changes	
Supply	With excess economic returns in the market over the last few years, companies have invested in additional chlorine capacity. Much of this capacity started coming online in 2023 but much more is expected to be added over the next few years.
Demand	Chlorine demand is not forecast to grow as rapidly as capacity, leading to suboptimal operating rates for a number of producers. More cost-advantaged regions will operate at higher rates and these regions are different depending on the chlorine derivative.
Trade	Only a small fraction of chlorine is traded regionally, and this is not forecast to materially change, however chlorine derivatives trade and their trade flows will have an impact on where chlorine is produced.



Global: Economy

Central banks appear to have tamed inflation for now. Global GDP forecast continues to be revised lower for longer as growth in China continues to be revised lower.

GDP Forecast Assumptions

Inflation

Inflation to be more volatile than before the pandemic. Central banks likely to keep inflation close to target in the medium and long term.

Monetary Policy

Central banks to cut rates this year. They will move cautiously to bring rates down slowly.

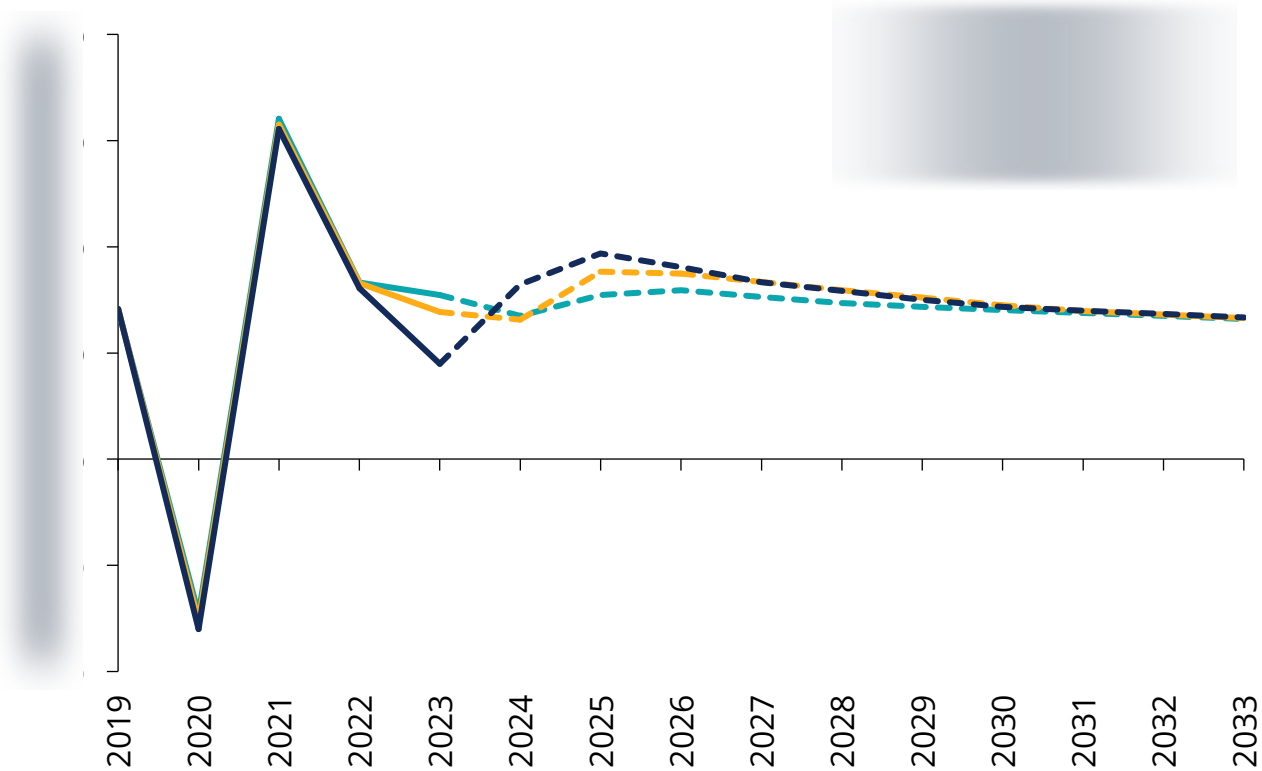
War in Ukraine

Russia sanctions stay in place long after any cease-fire. Europe avoids any future energy problems during winter months.

Globalisation

No meaningful change in the global trading system or US/China relationship. Recent tariffs and other trade barriers stay in place.

Global GDP growth rate forecast, Oxford Economics (OE)



Source: Oxford Economics

Global: Supply

Capacity is being added at a rapid pace.

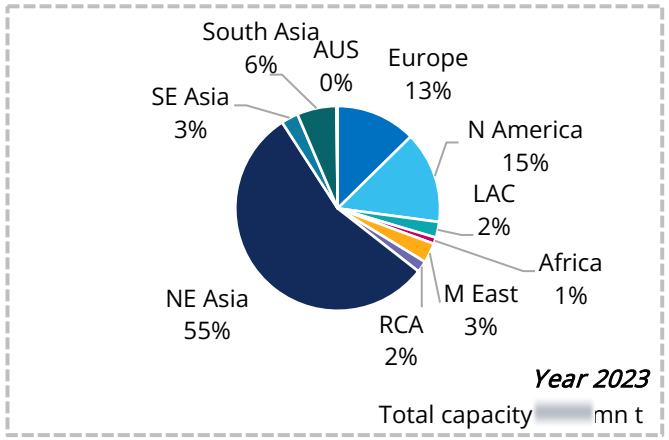
Chlorine demand is growing at a rapid pace after strong industry earnings experienced in 2021-2022. Many of the projects approved during this time have started coming online.

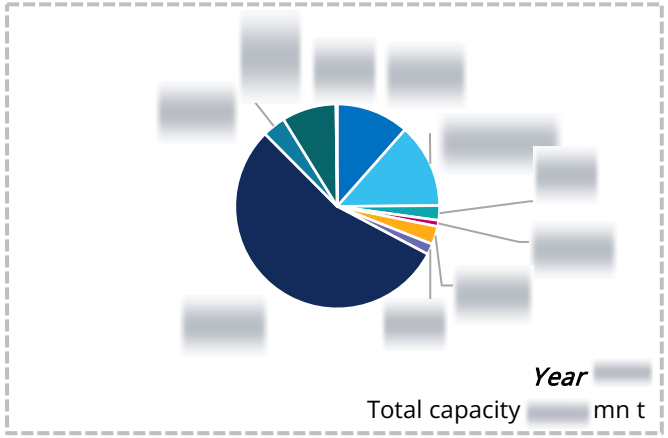
The strong increase in capacity additions is leading to falling operating rates as the additions are coming more quickly than the world needs for the related derivatives. This is leading to unsustainably low operating rates in high cash cost regions, at least over the next [redacted] before underlying demand begins to catch up with supply.

The balance between caustic soda and chlorine demand has shifted to chlorine as economists are expecting global GDP growth to accelerate in [redacted] potentially leading to the next industry cycle being [redacted] instead of a more traditional seven years.

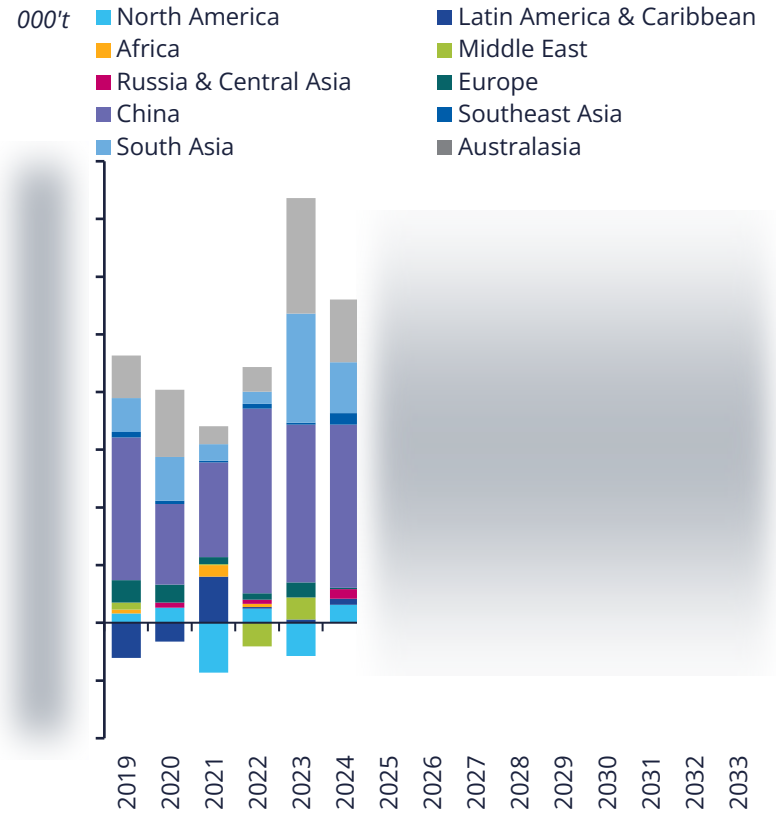
At the end of the forecast period, operating rates are anticipated to approach levels requiring additional investment in capacity, which will require sufficient price levels to drive global reinvestment.

Capacity by region





Capacity year-on-year changes



Global: Demand

GDP growth forecast to increase from 2025.

Economists are expecting global GDP growth to increase from 2025. With chlorine being a leading indicator, operating rates have increased in the first few months of 2024 although they are expected to slow in the second half of the year.

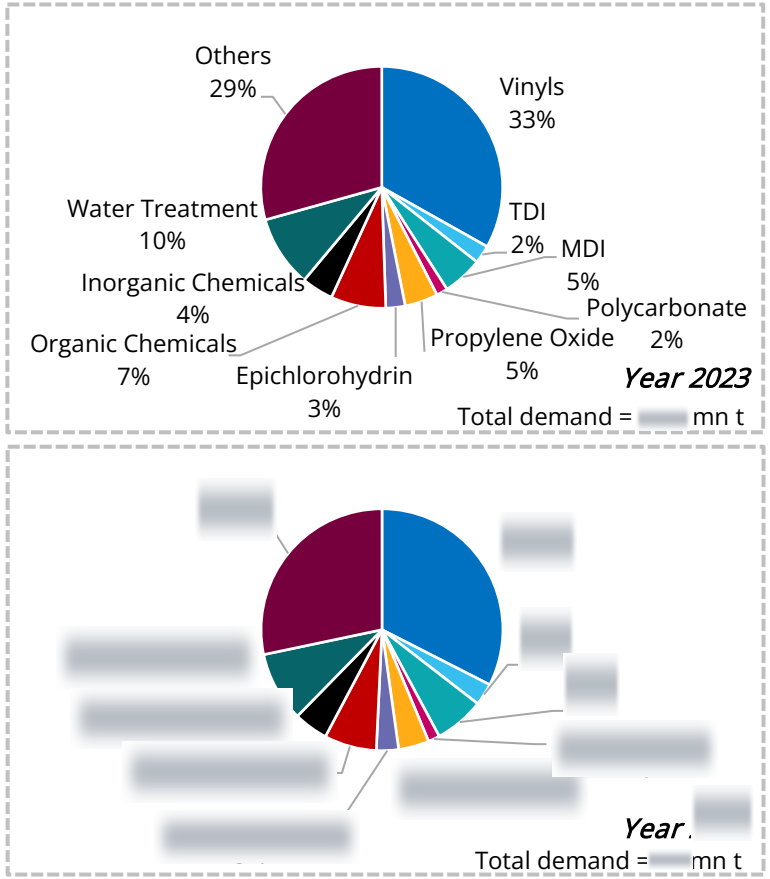
Average chlorine demand is likely to grow at slightly below global GDP rates over the forecast period.

High caustic soda prices have led some consumers to integrate chlorine derivatives such as vinyls and isocyanates in order to support their caustic demand. This is leading to an oversupply situation for the chlorine molecule in the forecast period.

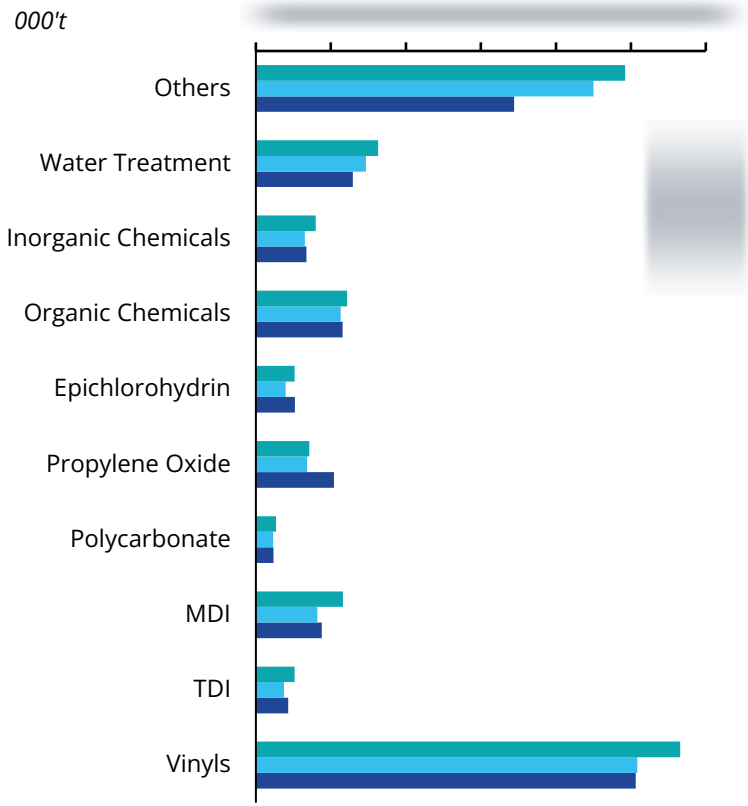
South and southeast Asia are forecast to be the fastest growing regions over the study period, although from smaller bases.

The chlor-alkali cycle is expected to shift from caustic soda back to chlorine leading to the need for higher caustic soda consumption rates in [redacted]. Caustic soda demand growth will likely lead to the need for additional investments in capacity by [redacted]

Demand by derivative



Demand by derivative

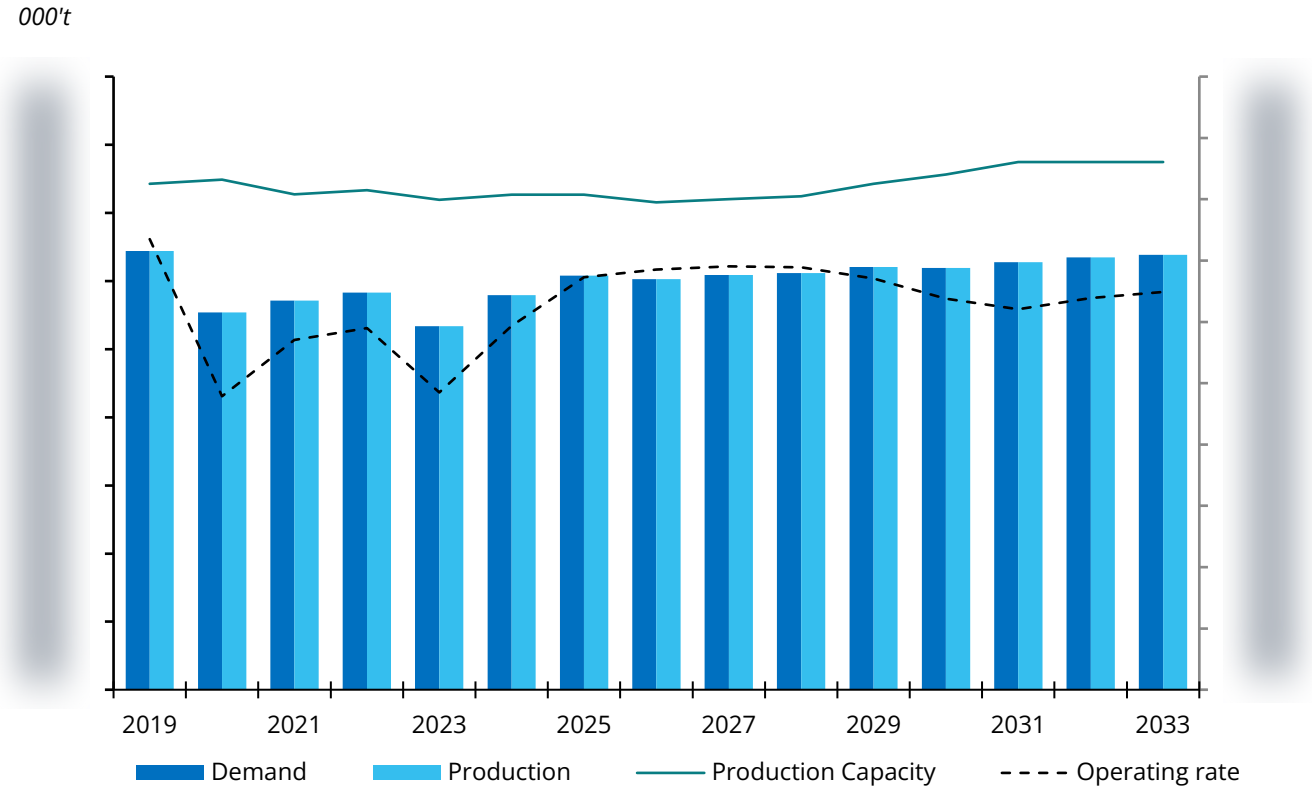


North America: Key Updates

Capacity expansions primarily integrated to vinyls and isocyanates.

Key Market Changes	
Supply	High margins experienced in the vinyls industry over the last couple of years have led to expansion and back-integration to chlorine.
Demand	Chlorine demand in North America is forecast to be the weakest in 2023 and growing from there. The demand forecast is not expected to recover to 2019 levels.
Trade	Chlorine trade within the region is not expected to change significantly over the forecast, but the vinyls chlorine derivative is expected to see significant export growth.

North America chlorine supply and demand



North America: Supply

Optimization of production assets reduced capacity, but it has resumed growth.

The region has close to [redacted] t/yr of chlorine production capacity with the US contributing to more than [redacted] of regional capacity.

Diaphragm capacity has shrunk by close to [redacted] t in the past couple of years owing to the rationalisation of under-utilised assets as well as some assets being located in economically disadvantaged areas of the US. This trend is expected to last into [redacted]

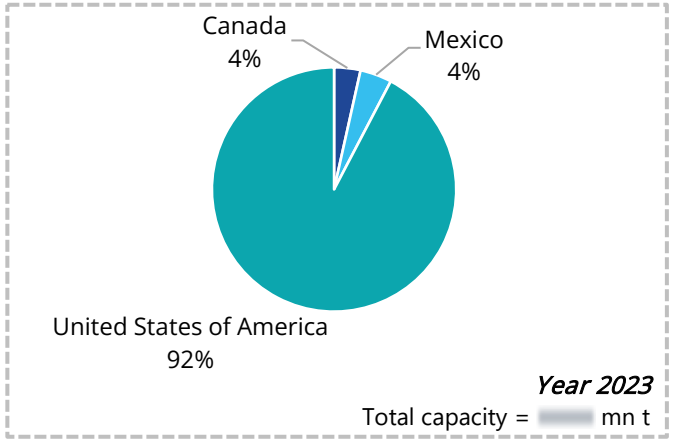
The closure of chlor-alkali facilities coupled with unplanned operations shutdowns has tightened chlorine supply in the region in recent years, leading to a rapid increase in chlorine prices.

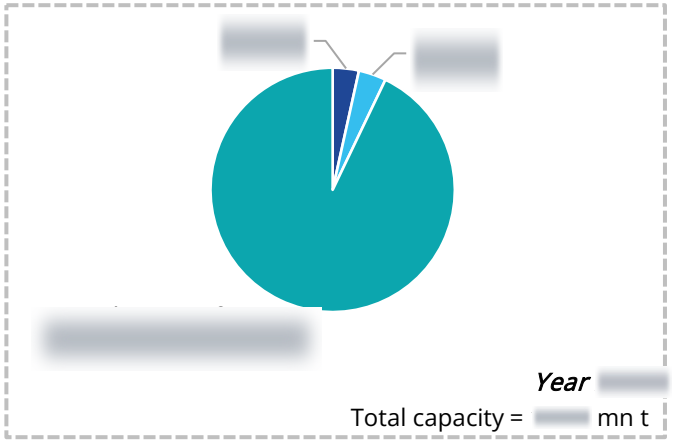
Much of the new capacity growth in North America will be on the US Gulf Coast with chlorine integrated into derivatives such as vinyls and isocyanates, while some will be into derivatives such as water treatment.

Merchant chlorine by rail demand is expected to continue its long-term structural decline in the region.

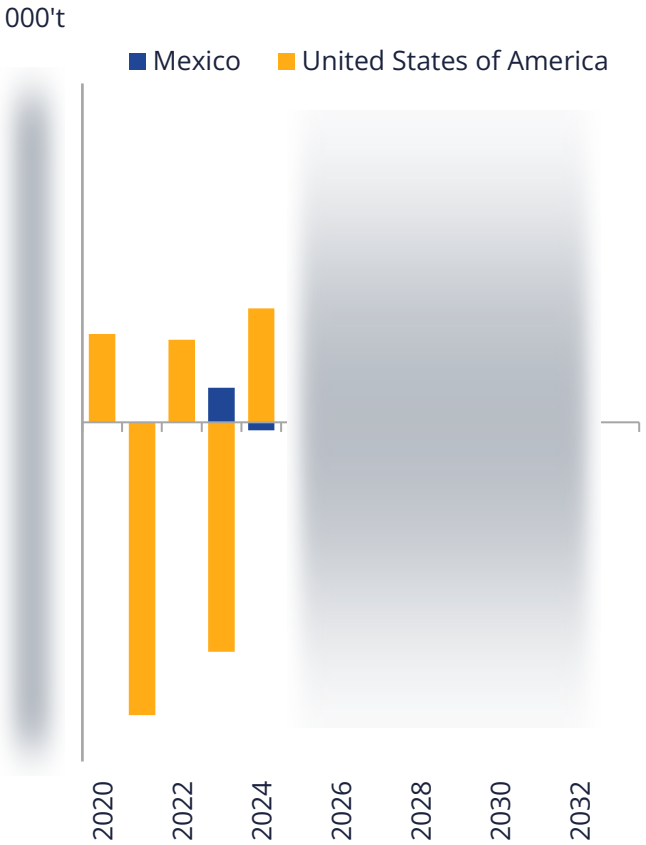
Chemtrade Logistics in Vancouver, Canada will not be permitted to ship chlorine by rail by 2030. It is anticipated that the site will invest in hydrogen production to allow it to produce and ship more hydrochloric acid, although no final investment decision has been announced.

Capacity by country





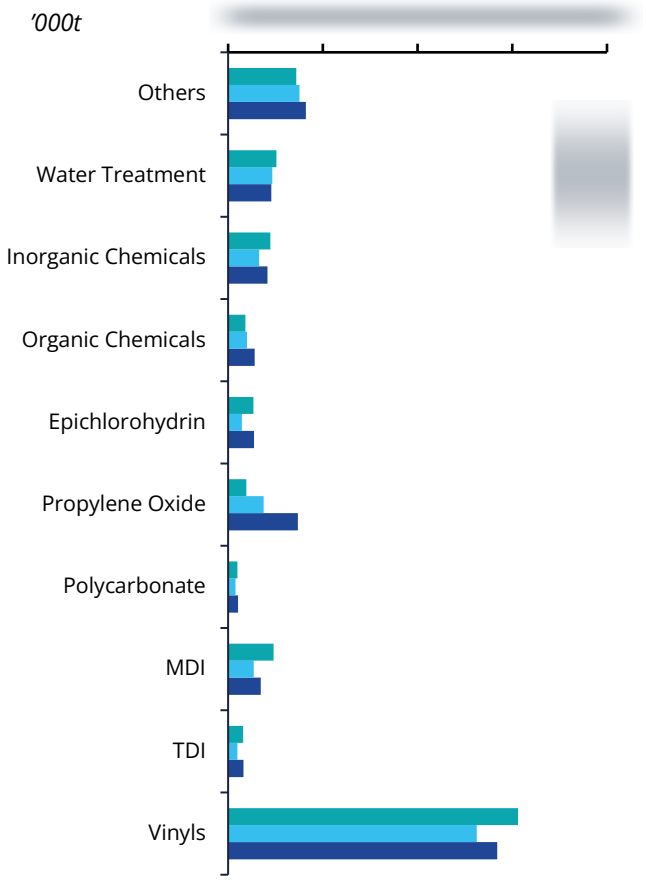
Capacity year-on-year changes



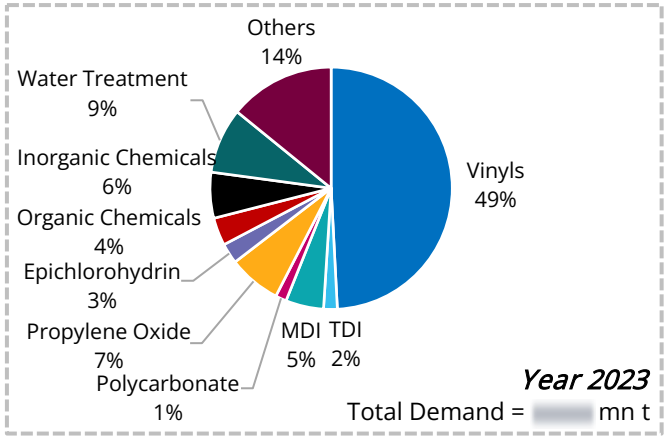
North America: Demand

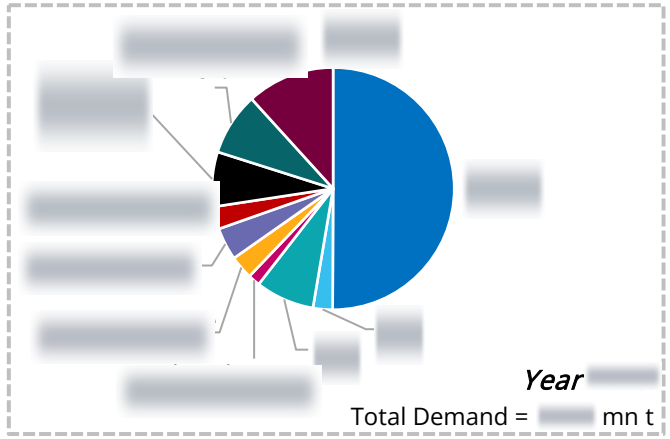
Vinyls lead the growth in chlorine demand.

Demand by derivative



Demand by derivative





Vinyls is the largest demand sector in North America and is anticipated to increase to in 2028 from in 2018.

Some chlorine demand segments are anticipated to decline owing to regulatory restrictions or high cash costs. Methylene chloride applications such as paint stripping have been banned in the US, leading to a lower demand for chlorine in that segment. Chlorohydrin-based propylene oxide is also seeing a decline as this technology has a higher production cost than other technologies such as PO/MTBE, which is continuing to expand in the US.

Isocyanates are experiencing above GDP growth rates and a couple of expansions are anticipated to increase the derivative's share of chlorine demand in North America to in 2028 from in 2023.

North America represents of global demand for chlorine, but its share has declined owing to rapid growth in Asia.

We hope you found this sample report for Argus Chlorine Analytics valuable.

The Chlorine Analytics service is for anyone engaged in the chlor-alkali market and seeking insight into the fundamentals driving key trends, including global supply, demand growth, exports, operating rates, etc.

If you want to learn more about becoming an Argus subscriber and receiving full PDF reports complete with accompanying Excel data files twice a year, click below:

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Meet our experts

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George Eisenhauer

Vice-President Chlor-Alkali

George Leads the global chlor-alkali team, He has 30+ years' experience with roles in acquisition and asset management as well as operations control and strategic objectives, prior to his consulting career. Before joining to Argus in 2012, he was director Chlor-Alkali for IHS. George's past experience also includes roles at FMC Technologies, Dow Chemical and Union Carbide. He holds a BSc in Chemical Engineering from University of Texas and an MBA from Rice University.

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Stephanie Koenig

Head of European Chlor-Alkali

Stephanie is Editor for European Chlor alkali market she oversees contents and analytical standards across the European operations, spanning from editorial, to outlooks, analytics and events. She also contributes to single client consulting projects and has over 15 years' experience directly related to the chlor-alkali industry. Before this, she spent time at IHS Chemical, leading the global Bleaching Chemicals Service and contributing to chlor-alkali products. Stephanie has a Master's Degree in Business Administration from the University of Leipzig, Germany.

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Bernard Law

Chlor-Alkali Editor

Bernard Law is Editor and covers the chlor-alkali and vinyl markets in Asia. Bernard has more than 25 years of experience in the chemical industry in Asia, holding various responsibilities in market and competitive analysis, benchmarking, sales, marketing, and business development. He spent 13 years working for specialty and commodity chemicals in the Asia-Pacific region. He generated benchmarking pricing and assessments, including northeast Asia and southeast Asia caustics to alumina indexes. He also contributes to single client consulting projects.

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Anshu Pandey is lead analyst for Argus' chlor alkali and derivatives services and supports fundamentals and outlook services. Prior to joining Argus, she has worked in research and development on projects associated to hydrogen storage and environmental assessment of fuels. Anshu holds master's degree in Chemical Engineering.

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