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November 2023

Argus Chlorine *Analytics*

A global supply/demand analysis for 2018 through 2032



Petrochemicals
illuminating the markets®

Commodity Markets Intelligence

Consulting & Forecasts

Events

Associated data and analysis

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Argus Chlorine Analytics Service

- This presentation is based on an update of the Argus Chlorine Analytics 10-year supply/demand forecast, which was published in October 2023. The annual study provides a comprehensive overview of global supply and demand fundamentals and balances on a country-by-country basis.
- The *Argus Chlor-alkali and Derivatives Service* has continued its record of service and growth since its startup in 2017. This inaugural launch of the *Argus Chlorine Analytics Service* expands the depth of knowledge and expertise offered to clients.
- Argus consultants analyze the global market for chlorine and its primary derivative and link them to caustic soda markets as well as the primary energy markets worldwide.
- It is a commercially-oriented consulting service whose aim to provide the most accurate and timely analysis of industry trends and events including supply and demand, cost drivers for chlorine and its major first-level derivatives.
- *Argus* also offers a rolling 24-months price forecast ([Argus Chlor Alkali Outlook](#)) backed by an analysis of future market trends.
- Detailed data downloads of the supply/demand and capacity files are available to subscribers.
- Methodology is available in the Appendix.



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Executive Summary

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Strong economic growth from pandemic lows led to strong demand growth in chlorine through early 2022, setting the stage for an over-supplied market in the mid-term.

- The global economic outlook has worsened significantly in the last year, reducing demand for multiple chlorine derivatives.
- Excess profits from the post-pandemic era has led to a significant amount of investment in chlorine and related derivatives, leading to excess capacity.

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instead of traditional exporters.

- Some parts of the chlorine industry remain under environmental pressure with a number of chlorine derivatives identified to be phased out over the next decade.



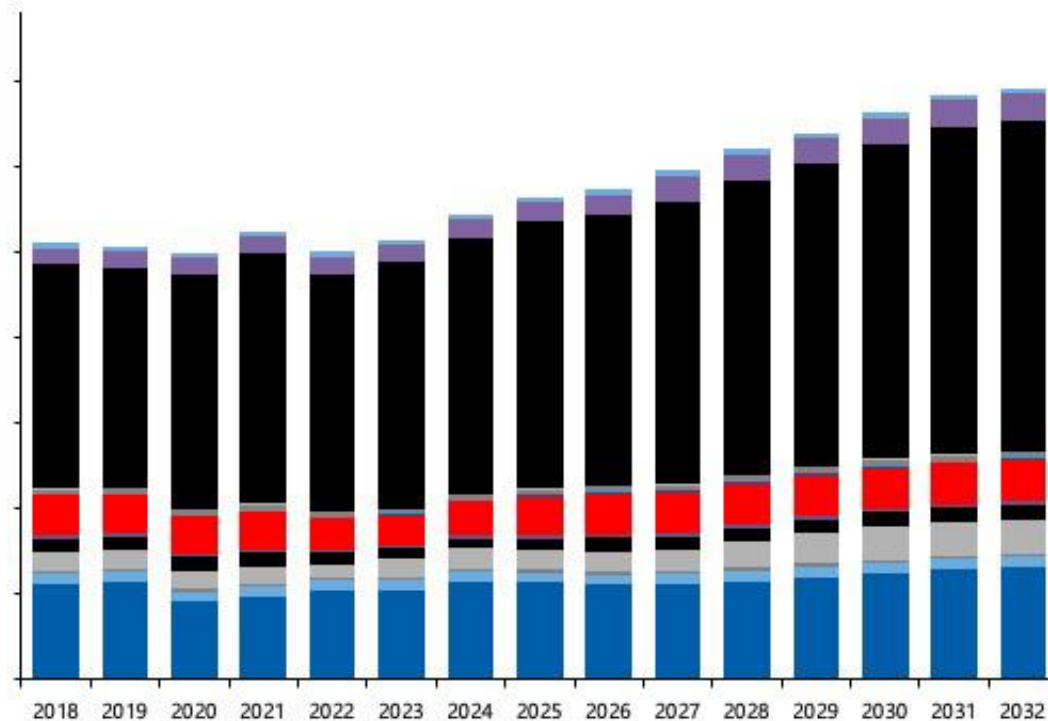
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Spotlight: Vinyls

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Strong growth driven by the construction industry.

Global Chlorine Demand, Vinyls



—Argus Consulting Services

- Vinyls demand recently peaked in 2021 as a low interest environment drove new home construction and governments stoked demand with infrastructure bills and water distribution bills.
- Rising interest rates and inflation has restricted vinyls demand in 2022-2023.

largest regions for vinyls investment.

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Central and eastern Europe key updates

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Chlorine supply and demand have bottomed out in 2023

Key Market Changes



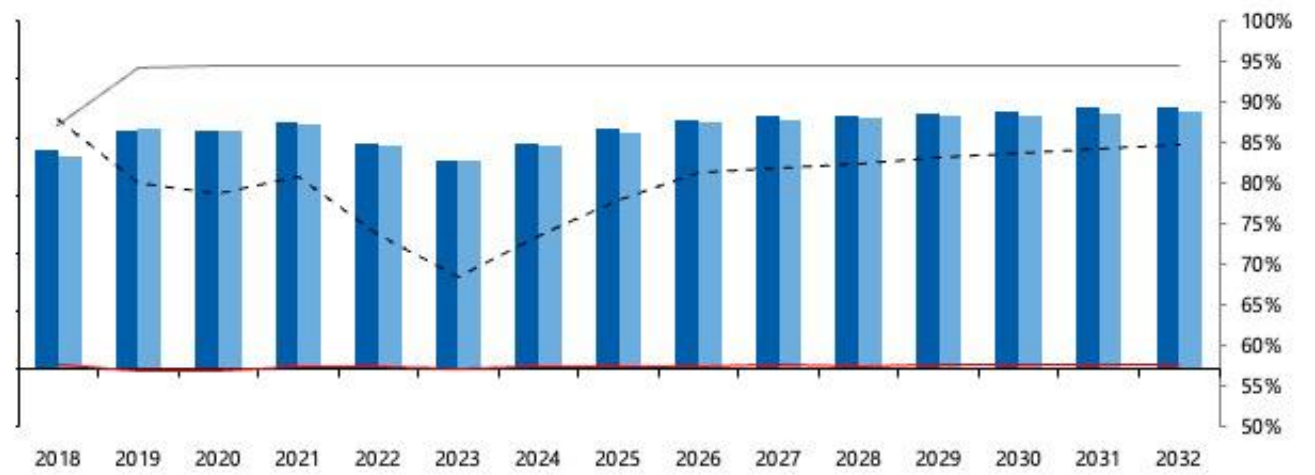
Supply

Output has declined in 2023 owing to slow consumption into the major end uses



Demand

Blended chlorine demand has declined in 2023 owing to slow consumption into the major end uses



— Argus Consulting Services

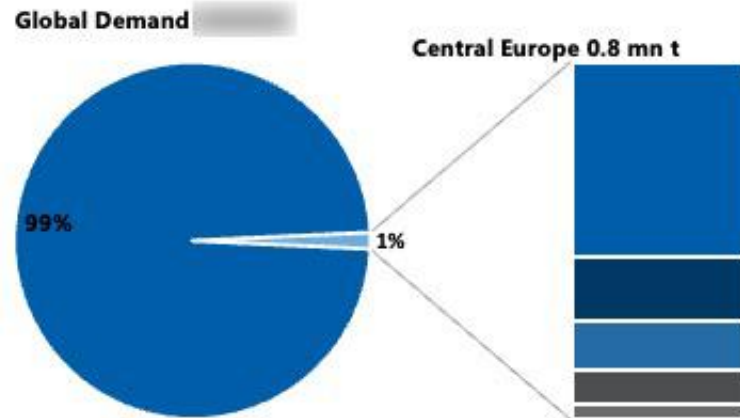


Central and eastern Europe demand

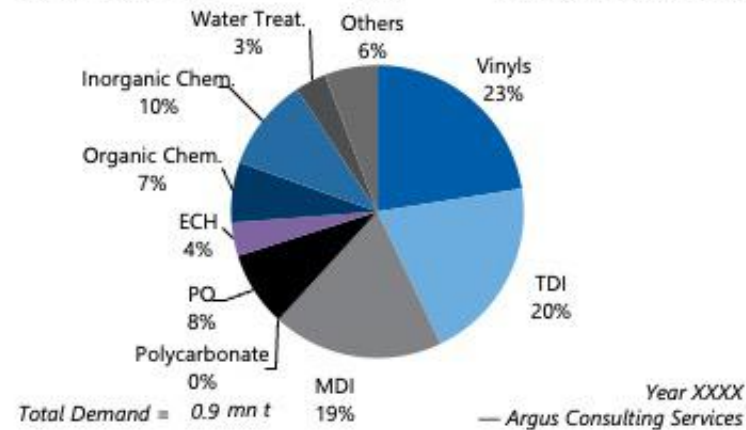
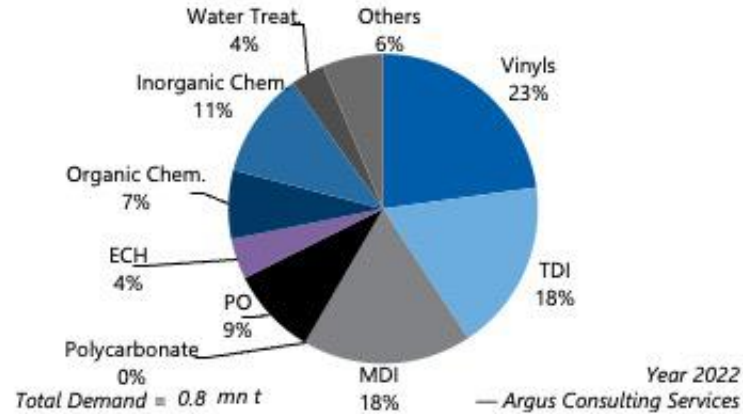
Slow consumption into vinyls and isocyanates

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Demand by Derivative (2022)



Demand by Derivative



Methodology behind the Global Chlorine Analytics

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Period presented

The annual period for this study is the calendar years 2018 through 2022, and forecast data is for 2023 through 2032, inclusive of the latter date.

Analysis and forecasting

The analytics service contains detailed information such as capacities, production, demand and trade for most producing and consuming countries in the world. Demand forecasts are based on relationships to derivative and end-use consumption trends and expected country-by-country economic growth projections.

Argus uses data, market opinions and views on market trends to develop medium-term supply and demand and corresponding price and margin forecasts. When appropriate, *Argus* makes adjustments to published data, for example trade data reported by countries or government-reported statistics.

Although data gathering is essential to understanding the chlorine market history and potential future trends, *Argus* believes the interpretation of this data is the most valuable part of this analysis.

Weights, currencies and percentages

Unless explicitly stated, all weights are given in metric tonnes and all references to dollars are to US dollars.

Currency conversions have been made either at a current or relevant historical exchange rate, as required by the context.

Numbers may be rounded. This means that table totals may differ from the sum of the individual figures, and percentages may sometimes appear not to total exactly 100pc.

Your feedback is welcome

Argus thanks our valuable clients and contacts for sharing opinions and expertise during the compilation process. Data verification is the cornerstone of the quality of the analysis, and the input received from global market participants is critical to arriving at logical and realistic conclusions.

It is important that this product meets the client's expectations, and we encourage feedback to ensure continuous improvement.

If additional company-specific or more detailed long-term analysis is desired regarding chlorine or other petrochemicals, please contact the *Argus* team.



Argus Chlorine experts

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George Eisenhauer
VP, Chlor-Alkali

George is responsible for reporting on the Americas market for the Chlor-Alkali and Derivatives service. He has 8 years' experience in Chlor-Alkali including roles in mergers and acquisition, operations control and strategy. George has also worked for IHS Markit, Air Liquide, FMC Technologies, Dow Chemical and Union Carbide. He has a degree in chemical engineering from the University of Texas and an MBA from Rice University.



Stephanie Koenig
Head of Chlor-Alkali Services, Europe

Stephanie joined in 2017 as part of the team setting up the Argus chlor-alkali business. After a period of strong growth she is now overseeing contents and analytical standards across the European operations, spanning from editorial, to outlooks, analytics and events. Stephanie also contributes to client consulting projects and has over 15 years' experience directly relating to the chlor-alkali industry. She has also 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.



Bernard Law
Head of Chlor-Alkali Services, Asia

Bernard oversees is based in Singapore and oversees the chlor-alkali and vinyl markets in Asia and the Middle East. He has over 25 years' experience in the chemical industry in Asia, holding various responsibilities in market and competitive analysis, benchmarking, sales, marketing, and business development. Bernard also worked for Harriman Chemsult, and then IHS, where he developed benchmark pricing and assessments, including the Northeast Asia and Southeast Asia caustic to alumina indexes. Before that, he spent 13 years working for specialty and commodity chemicals in the Asia-Pacific region. Bernard holds a degree from University Malaya, majoring in Mathematics and Chemistry.



Anshu Pandey
Business Analyst, Chemicals

Anshu supports global supply and demand analysis for Argus' Chlor-Alkali and Butadiene Services. She also has 5 years' experience in the R&D sector contributing carbon and hydrogen projects. Anshu holds a master's degree in Chemical Engineering.



Dhanish Kalayarasu
Deputy Analyst Manager

Dhanish is a Deputy Analyst Manager in the London Consulting office. He focuses on olefins, polyolefins and chlor-alkali. Before joining Argus, Dhanish held roles in power generation, project management, agriculture and analytics. He also worked at an edible oil refinery within operations and managed projects related to high pressure biomass boilers, steam turbines, water treatment, and fuel management. Dhanish holds a degree in Chemical Engineering and a master's degree in Finance Analytics from the University of Newcastle, Australia and King's College London.



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