euro chlor

A sector group of Cefic

2023 chlor-alkali industry review 2024

35 years of Euro Chlor

Note: The content in this Industry Review (covering September 2023-August 2024) mostly reflects the four elements of our Mid-Century Strategy (MCS): Safety Leader, Competitive Supplier, Climate Neutral Player and Circularity Champion. Out of all key performance indicators (KPIs) reported for 2023, seven have featured in our Sustainability Programme since 2001 and are marked with an  icon so they can be compared with previous editions. We are delighted to announce that this year's contribution from our members to the 2023 Euro Chlor Sustainability Questionnaire was almost complete, covering 99.2% of members' capacity. The Euro Chlor team will continue its efforts to keep this high participation rate.

This report is also available online.
https://chlorineindustryreview.com

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After 35 years of resilience and progress...

In 2019, Euro Chlor celebrated 30 years of work on a safe, sustainable and successful chlor-alkali industry for Europe. At that time (and as a proud, newly appointed Euro Chlor manager!), I noted a brave and proactive membership who were working hard to keep our industry on track. Since then, we have had a global pandemic, geopolitical instability and an energy crisis, all of which have challenged our sector.

Five years later, we see the ripple effect of these challenges reflected in our activities (presented in this report), and our engaged membership remain our key strength. We have worked together to find solutions to the ongoing energy crisis and have been sharing these with all stakeholders for their input. We have continued raising awareness of our hydrogen, particularly important given recent regulatory developments. We have also collaborated to address safety issues related to safe loading and unloading of our products and are working to better understand where we use fluorinated materials so that we are ready for any action on PFAS. We are also rebuilding our Euro Chlor team with the excellent additions of Eili and Thomas after we said a sad farewell to Kristof and Ton in 2023 and 2024, respectively.

Despite this, there still remains more to do. Whilst we have made progress in some KPIs such as reducing our carbon footprint and Lost Time Injuries (LTIs) and seeing zero transport incidents, our process incidents and losses and capacity utilisation rate remain adversely affected meaning further action is needed. This underpins our continued vigilance and dedicated follow-up on all topics.

We can, and should, proudly celebrate 35 years of Euro Chlor, grateful for the continued collaborative efforts of our members. I would also like to express my warmest and most sincere gratitude to the whole Halogens team for their continuous hard work and unequalled team spirit.

With all the above I truly believe that, for European chlor-alkali, the best is yet to come.

Marleen Pauwels
Euro Chlor Manager
Executive Director Halogens Industry Sector

> **Our engaged membership remain our key strength to face the challenges ahead and initiate the next steps in our journey towards 2050 and beyond.**

... we stay ready to face the future

My past two years as Chair have coincided with turbulent times for Euro Chlor with reduced capacity utilisation, a difficult EU energy situation and a challenging regulatory framework.

Despite these hurdles, since our 30th anniversary, we have passed several milestones with the launch of our third Sustainability Programme that provides data to assist decision makers, and our Cost Competitiveness Study with Argus Media on the differences between regions. We have initiated several successful communications campaigns that highlight the benefits of our chemistry. We have also built on the Mid-Century Strategy (MCS), launched by one of my predecessors in 2020, and held a successful hydrogen event in early 2023 to prepare our industry for the future.

For this future though, we will need to build further on these key achievements. This includes further work on decreasing our environmental impact and to revert the trends seen in our safety performance as we journey towards an even safer, more sustainable and, ultimately, increasingly successful chlor-alkali industry for Europe. Our competitiveness also remains at stake, and we will continue to provide objective data to feed into the European decision-making processes to help here. We must trust the new European Commission to bring the highly needed European Industrial Deal to life, whilst remaining open to contributing where we can, using the strengths of our industry, to ensure EU objectives are met.

Whilst the economic and political situation remains as uncertain as ever, with our dedicated membership and diligent Euro Chlor team, I know we can succeed. I believe we are in a good position as I hand over the leadership to our new Chair, Daniel Koch, to initiate the next steps in our journey towards 2050 and beyond.

Johan Van Den Broeck (Vynova)
Chair of the Management Committee

I would like to thank Johan for his leadership for the past two years. His contributions have been instrumental in guiding us during uncertain times.

As I now take over as Chair, I hope to build on his legacy with continued efforts on competitiveness and a renewed focus on our key safety priority. We will soon be revealing new tools to help us achieve the goals of our MCS and will hold a Technology Conference in Barcelona in 2025 that will showcase recent developments in our sector to make us even safer and more sustainable.

Just considering these first few examples from the start of my term makes me hopeful for the next two years and, indeed, for the long-term future of our association.

Daniel Koch (Covestro)
Vice-Chair of the Management Committee

Advancing our Safety Initiative activities

Over the past year, safety has remained the first item on the agenda of Euro Chlor meetings. Launched a decade ago, our **Safety Initiative** aims to continuously improve our industry's safety performance and strive for its vision of zero incidents.

Euro Chlor has been organising multiple safety training sessions for members and partners. These not only covered the physical properties and potential hazards related to chlorine and caustic, but also the safety aspects related to different construction materials and pieces of equipment. Over the past 12 months, significant effort has gone into rolling out a new **interactive safety game**. This is a board game designed for operators to simulate and respond to safety incidents and issues. Recognising the need for well-trained game facilitators, the Euro Chlor team conducted six training sessions for more than 17 colleagues. Members remain enthusiastic about the game's role, mentioning that it is applicable to real-life plant situations, fosters teamwork, and fills knowledge gaps. Based on the experience gained during the sessions, some adaptations will be made in the coming months to make it even more useful.

A lot of attention has also been given to the follow-up of our **Commitment on safe loading and unloading of chlor-alkali related products**. This commitment was initiated by the Euro Chlor Management Committee as a reaction to an increasing number of incidents seen around the transport of our products. This led to the development of a new training session for transport companies to improve safe unloading at customer sites and to some members further strengthening their interactions with customers on the topic. Despite all these efforts, incidents still occur. As such a new instructional video on the safe loading/ unloading of key chemicals is in development, aiming to provide more accessible guidance to drivers and site operators.

Finally, the Safety and Transport (GEST) Working Group has diligently continued its work in updating safety documents to ensure the continuous improvement of practices across the industry. Over the past year, five GEST recommendations were revised, ensuring that active documents reflect the current best practices. All our technical documentation can be found at **https://www.eurochlor.org/technical-safety/technical-documentation**.

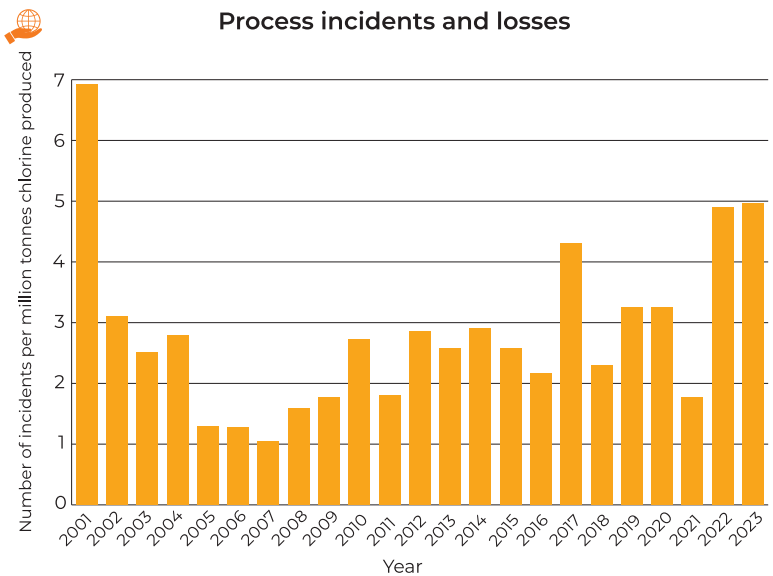
Process incidents and losses and Loss of Primary Containment (LOPC) incidents per chemical

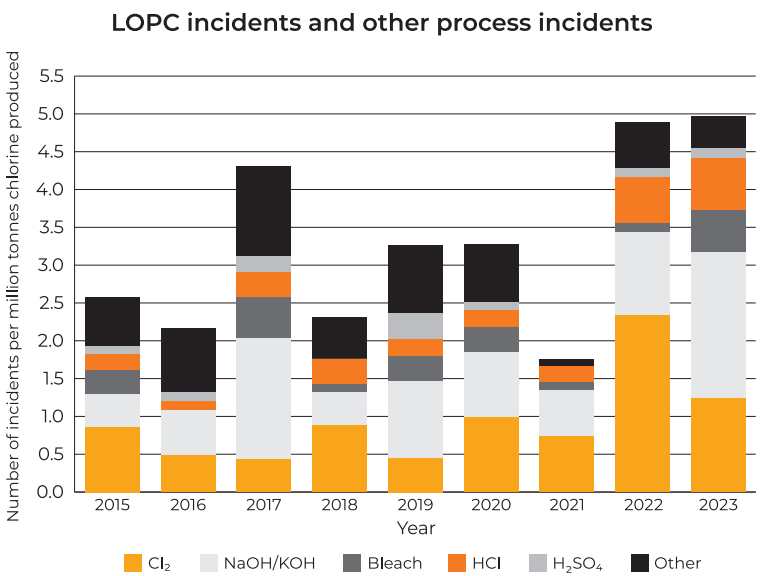
In 2023, our process incidents and losses remained constant compared to 2022 with 4.96 incidents per million tonnes of chlorine (4.90 in 2022). This translates, in absolute numbers, to a total of 36 process incidents reported via our annual sustainability survey.

As illustrated in the first graph, these results tend to fluctuate. We will now strive to move towards, and even below, the 2021 level.

Since we launched our third Sustainability Programme in 2021, we have expanded our reporting on process incidents and losses to include a breakdown of the LOPC incidents for each chemical. Before that only the aggregated number was communicated.

The results show that, whereas in 2022 the main incidents were related to chlorine, they have since shifted to caustic soda in 2023, particularly during loading/ unloading operations. The upcoming video for transport companies is intended to help bring this number down.



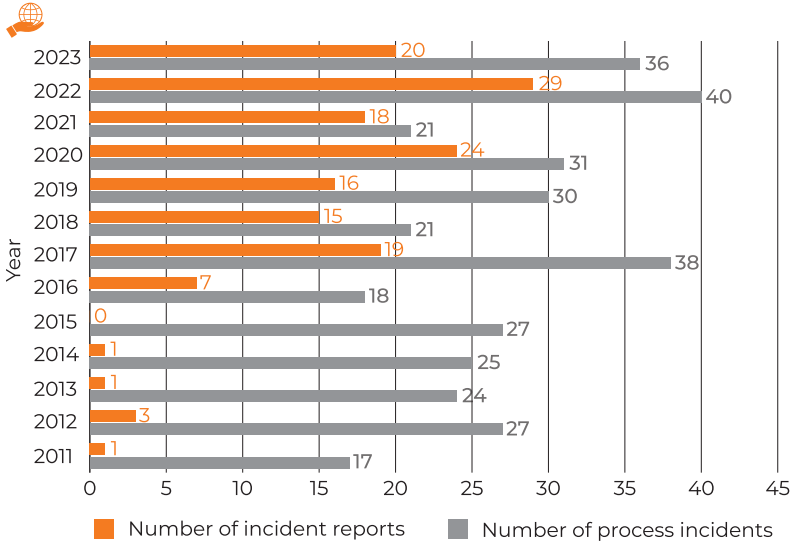


Incident reporting

Ten years of consistent efforts by Euro Chlor members, the General Technical Committee (GTC) and Safety and Transport (GEST) Working Group led to a steadily increasing incident reporting rate of 86% in 2021. Since 2022 however there has been a decline, with rates dropping to 66% in 2022 and further to 55% in 2023.

This downturn may be attributed to persistent economic pressures and mounting workloads, which continue to place strain on production sites. On a positive note we have been informed that for some incidents the reports were declared to be ready but in need of company/ legal clearance, so we may receive them soon.

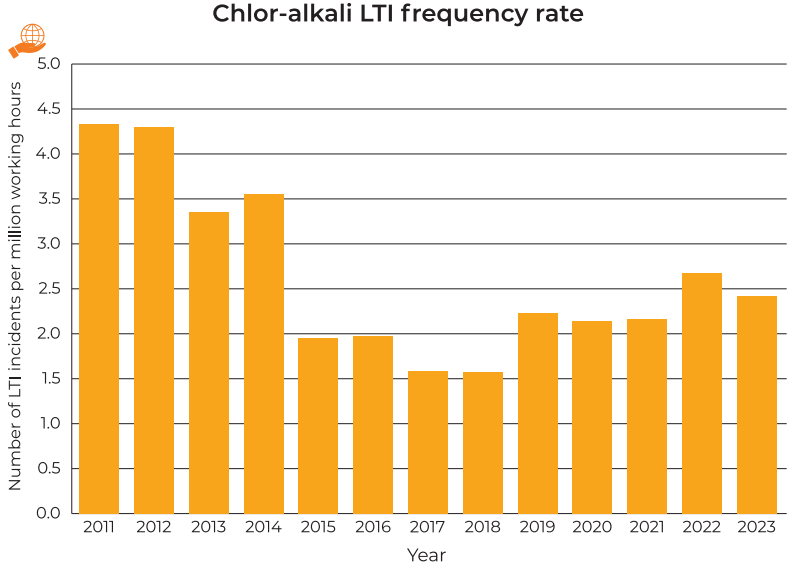
The Euro Chlor team is committed to work with the membership to reduce the workload for the reporting as much as possible as it remains key to learn from past incidents to avoid them in the future.



Lost Time Injuries (LTIs)

As previously noted, Euro Chlor has significantly bolstered its safety efforts in recent years through safety training sessions and thorough discussions on past incidents across all pertinent groups to minimise the number of LTIs per million working hours.

We saw an encouraging result with the LTIs for member company staff and contractors decreasing from 2.68 per million working hours in 2022 to 2.42 in 2023. Whilst this marks progress, zero remains the number to strive for.



Occupational Safety dealt with by the Health Working Group (HWG)

Over the past year, Euro Chlor's HWG published a leaflet to help colleagues working in Safety, Health, Environment and Quality to maintain awareness of legacy mercury in case companies find it on-site in the future.

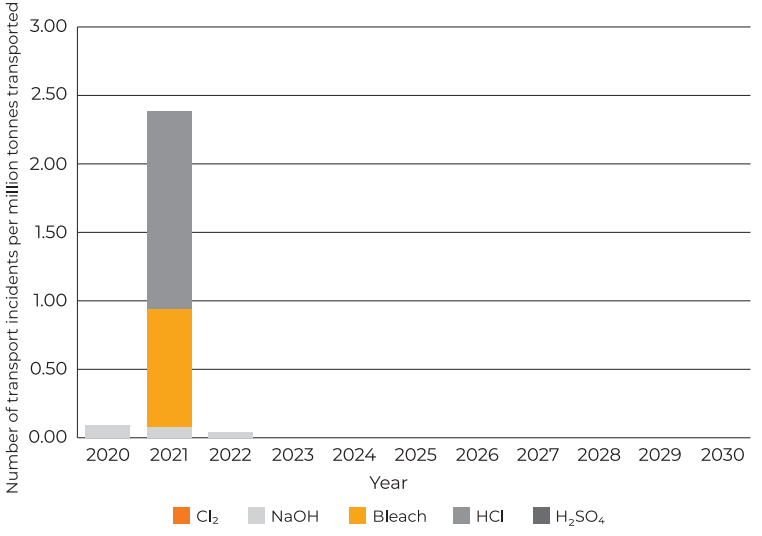
They also finalised their 'Health 13' document, detailing what emergency departments can do to treat people exposed to chlorine gas. It outlines treatment options based on decades of experience. The Group is now working to raise awareness of this document amongst healthcare professionals and authorities.

Additionally, the HWG are exploring topics for new documents including general wellbeing, mental health, keeping an aging workforce healthy and respectfully reintegrating people after a burn-out.

Transport incidents for chlor-alkali related products

No transport incidents were reported in 2023, compared to one incident involving caustic in 2022.

Number of transport incidents



Transportation of chlorine

As chlorine is mostly used on-site or transported to neighbouring sites via pipelines, its transportation percentage has fluctuated between 4% and 6% over the past 15 years. The graph shows the absolute tonnes of chlorine transported via the different modes over the years. We see a slight decrease in 2023 compared to 2022.

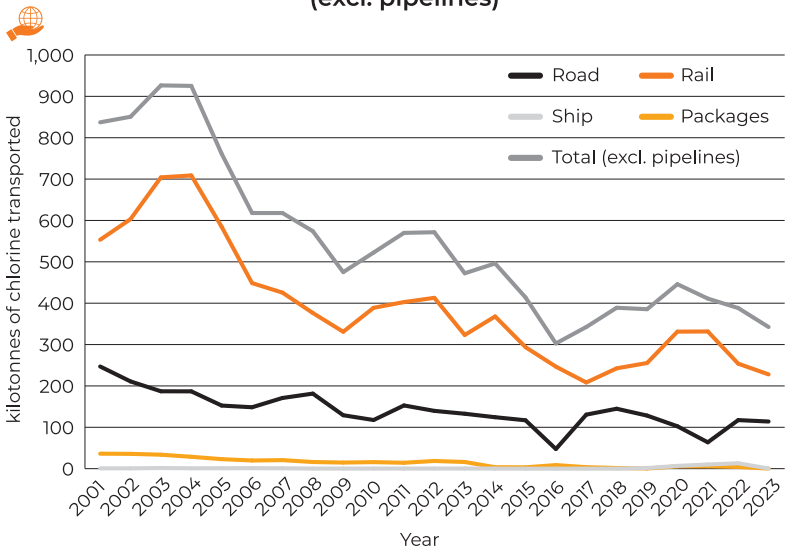
Transportation of caustic

Unlike chlorine, most of the produced caustic is transported.

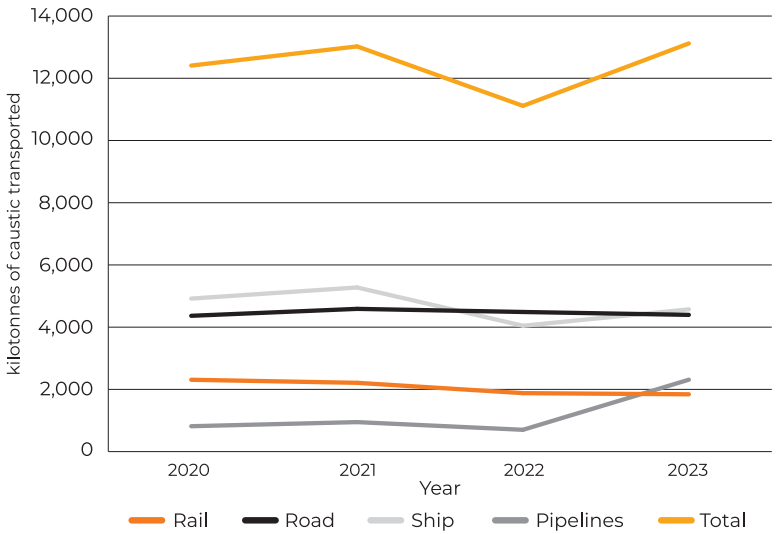
The graph shows the absolute tonnes of caustic transported via the different modes since 2020, the start of our measurements. The 2023 total volume of caustic transported through public areas returned to 2021 levels, reaching 13.1 million tonnes compared to 11.1 million tonnes in 2022.

Shipping reemerged as the primary transport option, surpassing road transport.

Chlorine transported outside industrial sites (excl. pipelines)

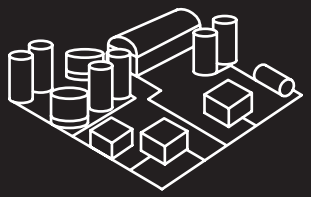


Modes of caustic transport in the public area



2023 SAFETY AT A GLANCE

INTERACTIVE SAFETY BOARD GAME



well-received

LOADING AND UNLOADING INCIDENTS

increased focus

LOST TIME INJURIES (LTIs)

improved results

PROCESS INCIDENTS

extra efforts required

TRANSPORTATION OF CHLORINE

342kt

chlorine transported

mainly by rail

TRANSPORTATION OF CAUSTIC

13,120kt

caustic transported

mainly by ship and road

TRANSPORT INCIDENTS

0

incidents

reported for chlor-alkali related products

Highlights at
https://chlorineindustryreview.com/safety

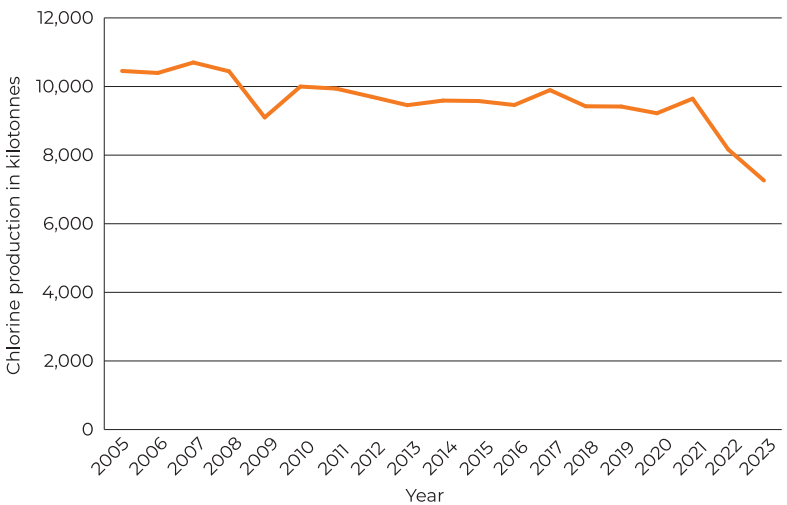
EXPLORE ONLINE

2023 Chlorine Production

Euro Chlor systematically publishes the monthly European production and capacity utilisation of chlorine and caustic soda stocks at **https://www.eurochlor.org/production**. These are aggregated figures reported by our members to Cefic.

In 2023 **7,289 kilotonnes of chlorine** were produced, marking an **11% decrease** from 2022. The capacity utilisation rate further decreased from 69.8% in 2022 to 62.2% in 2023. This continuing downturn is attributed to a decline in economic activity, driven partly by increased European energy prices.

Together with Cefic colleagues, the Euro Chlor team and other Cefic members continue to flag the severity of the long-lasting low production volumes to the European Commission and Member State authorities.

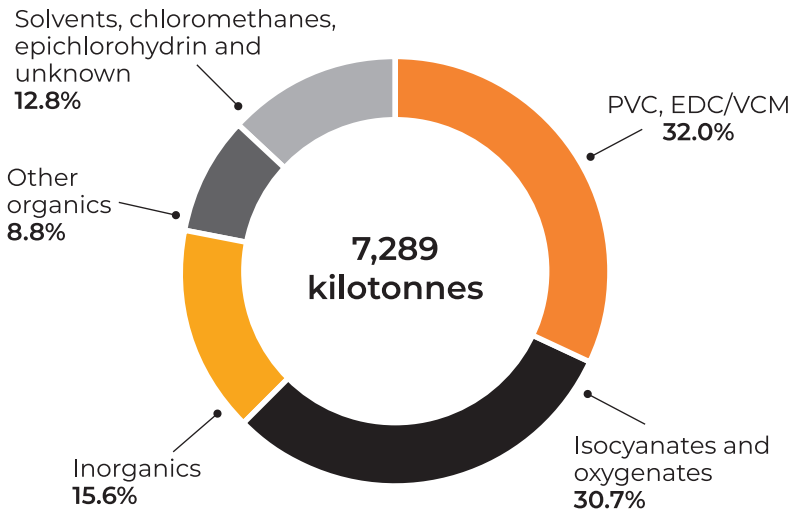


2023 Chlorine applications

The two main applications for chlorine, together accounting for almost two-thirds, remain **PVC, EDC/ VCM** and **isocyanates/ oxygenates**.

For a comprehensive overview of chlorine products, visit **https://trees.eurochlor.org/**.

European chlorine applications 2023 (percentage of total 7,289 kilotonnes)

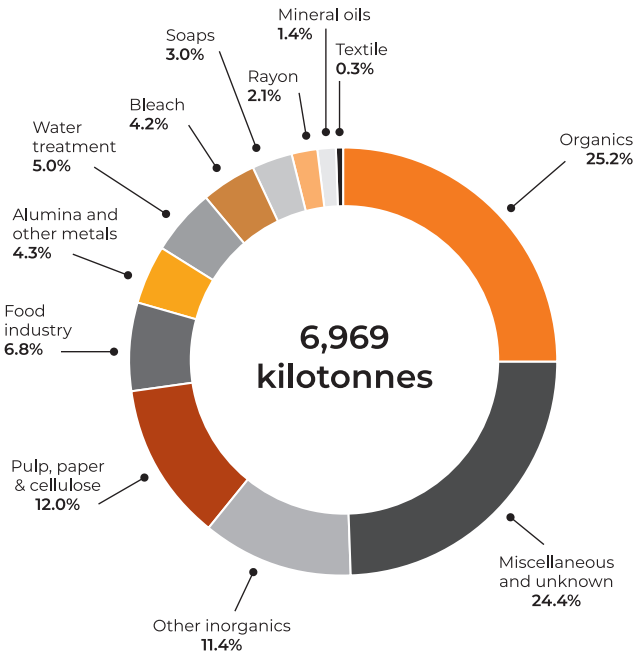


2023 Caustic soda applications

Caustic soda (sodium hydroxide) has a diverse range of applications.

For a detailed overview of caustic soda products, see **https://trees.eurochlor.org/products-of-sodium-hydroxide/**.

European caustic soda applications 2023 (percentage of total 6,969 kilotonnes)



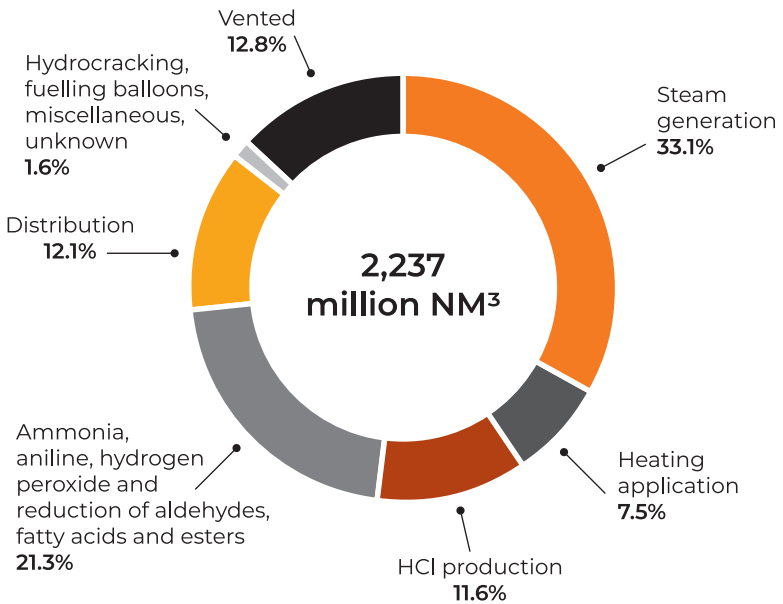
2023 Hydrogen applications

Most of the hydrogen produced is used for steam generation and chemical production, but it also has various other applications.

See all the hydrogen products at **https://trees.eurochlor.org/products-of-hydrogen/**.

European hydrogen applications 2023 (percentage of total 2,237 NM³)

Note: The figure for vented hydrogen varies from that reported elsewhere in this report as it results from a separate questionnaire with a different level of detail.

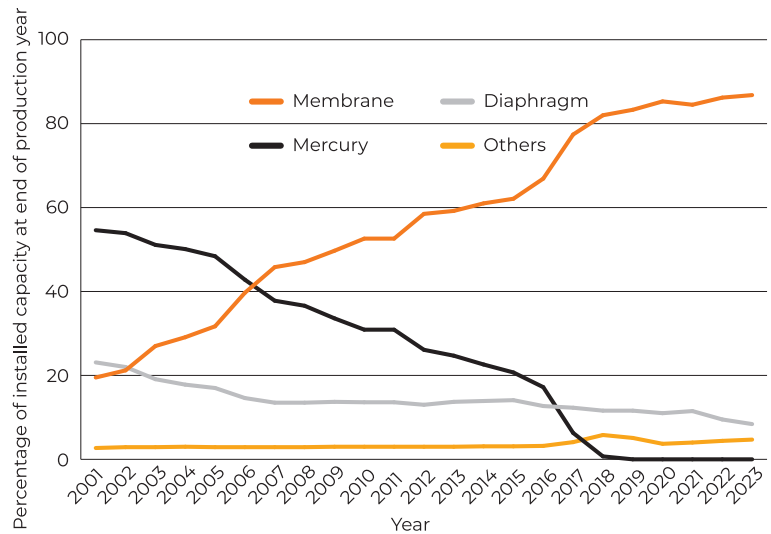


Manufacturing technologies

Membrane technology remains the dominant method for producing chlor-alkali in Europe, consisting of 86.8% of installed EU capacity in 2023 (86.2% in 2022). Diaphragm technology slightly decreased to 8.4% of capacity in 2023 from 9.5% in 2022.

The remaining 4.7% covers chlorine-alcoholate production, hydrochloric acid conversion to chlorine, metal production with chlorine and caustic production without hydrogen as a by-product.

Chlorine manufacturing processes



Progressing Euro Chlor's Cost Competitiveness Study

As reported in our **2022/ 2023 Industry Review**, a study on the cost competitiveness of the European chlor-alkali industry was conducted by Argus Media. It revealed that, as early as 2015, our industry and its main downstream products were at a cost disadvantage compared to other regions. Since 2022 though, the European energy crisis has exacerbated this situation, contributing to the reduced capacity utilisation we see today.

Euro Chlor continues to track the latest legislative developments concerning energy and hydrogen, to build on the findings of the report and disseminate them further. More specifically, we have been emphasising the need for abundant and competitively priced low-carbon or renewable power with the European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), as well as with the European Commission Directorate-General for Energy (DG ENER).

The above efforts were supported and reinforced by Euro Chlor's Energy Crisis Team and Cefic colleagues from the Climate Change and Energy and Industrial Policy Departments.

Electricity costs within the EU and compared to the US

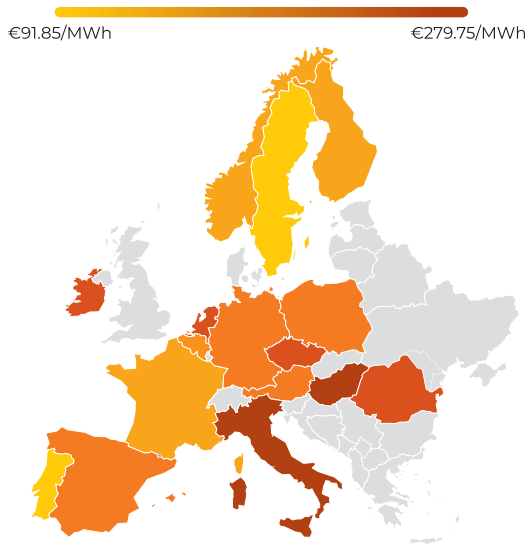
For the third Sustainability Programme in 2021, Euro Chlor started assembling available public data on the cost of electricity in Europe, on the comparison with prices in the USA and the cost of CO_2 in Europe compared with other regions.

As far as differences in electricity prices amongst EU Member States are concerned, the following heat map gives a view on all those EU countries in which Euro Chlor members have some production capacity.

The graph below compares average US electricity prices with the weighted average values seen in Europe. We saw a sharp increase of the gap to 102 Euro/MWh compared to 50 Euro/MWh in 2022 and 9 Euro/MWh in 2021.

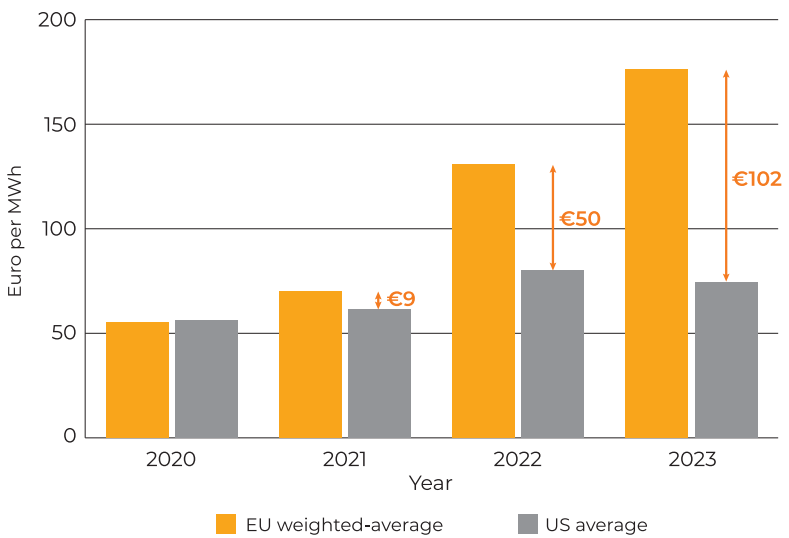
Electricity price for consumers between 70-150 GWh/year in 2023 excl. VAT and other recoverable taxes and levies

(Source: Eurostat)



Comparison of electricity price for industrial consumers

(Source: Eurostat)

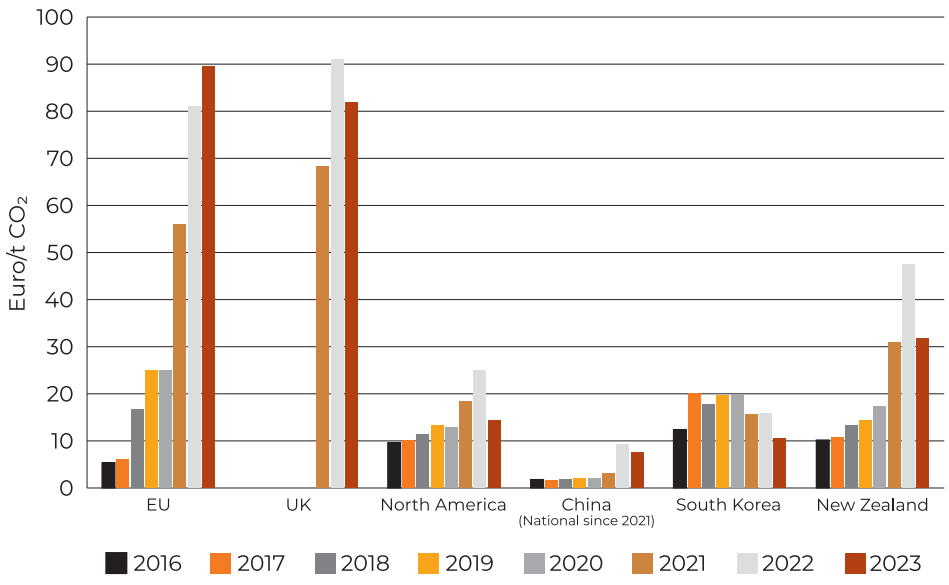


CO_2 prices around the world

CO_2 prices also increased in the EU over the past year and remain much higher than in other regions of the world.

CO_2 prices around the world (2016-2023)

(Source: World Bank Group)

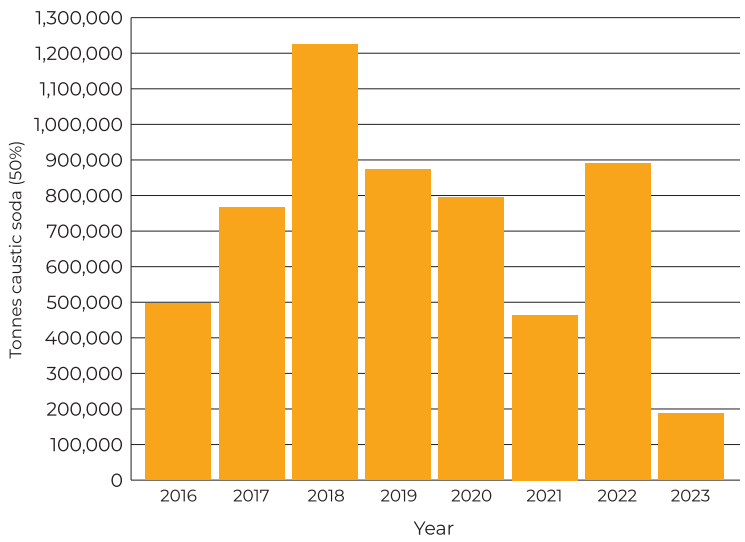


Differences in electricity and CO_2 prices between the EU and other parts of the world continue to increase.

Net caustic soda import

The level of net import of caustic soda (as 50%) into the EU is a KPI implemented by Euro Chlor in 2017. A peak can be seen in 2018, primarily due to the completion of the remaining mercury conversion projects. From 2019 onwards, the imports seem to steadily decrease, with an unexpected increase in 2022 followed by a historically low net import value of 187,772 tons of NaOH (50%) in 2023.

Net caustic soda imports (as 50%) in the EU



Recognising the importance of a sound Electricity Market Design (EMD)

The EMD rules are currently under review and are intended to help address escalating electricity costs and to improve electricity security; two key issues for Europe's chlor-alkali industry. They identify Power Purchase Agreements (PPAs) as a useful tool for the rollout of renewable power. Member States are being asked to increase the availability of PPAs, without impacting industrial competitiveness as part of these rules.

This year, Euro Chlor has provided input through Cefic and continues to track the development of the PPA system due to the challenges in acquiring such agreements when competing with 'big tech' for their availability. The link between PPAs and availability of 'green electrons' is also relevant for global commitments on greenhouse gas reductions.

Gearing up for 2025 chlorine benchmark review

Electricity generation is linked to carbon emission costs that are passed on to our consumers. As electricity represents about 60% of the production costs in the chlor-alkali industry, we are vulnerable to these additional costs and so our sector has been recognised as being eligible for compensation via State Aid under the Emissions Trading Scheme (ETS). Such so-called 'indirect compensation' is based on a benchmark against the 'best-in-class' for any given product. Every four years, the benchmark is reviewed, and, in 2021, the technology selected for chlorine production unexpectedly changed from membrane to oxygen-depolarised-cathode (ODC) technology. The latter represents less than 0.8% of our industry and does not produce hydrogen. Considering this significantly lowers the benchmark, it may deprive many companies from receiving adequate compensation for any indirect costs linked to the mainstream membrane process.

Under the lead of its Energy and Climate Change Committee, Euro Chlor has now been preparing the necessary data to feed into the next consultant report that will form the basis for the 2025 benchmark.

> **Adequate compensation of unavoidable indirect CO_2 emission costs and easy access to green electrons will be indispensable.**

Carbon Border Adjustment Mechanism may be part of the solution, but its design will be key.

Following up on Carbon Border Adjustment Mechanism (CBAM)

Europe's **CBAM** aims at putting a fair price on the carbon emitted during the production of carbon intensive goods that are entering the continent. This should safeguard European competitiveness whilst mitigating the risks of industries relocating to regions with lower carbon costs. The mechanism entered its transitional period in October 2023 which currently consists of reporting for cement, iron and steel, aluminium, fertilisers, electricity and hydrogen. Chemicals may be included as a separate sector in the next phase.

The potential impact on the chlor-alkali industry can be described at two levels. In the first instance, we produce hydrogen as a by-product and once the CBAM system kicks in, the ETS system will no longer cover free allocation for this product. This is of interest to our sector as any related impact on indirect compensation remains unclear. Secondly, should the entire chemical sector be included, chlorine and caustic will follow.

Together with Cefic colleagues, Euro Chlor has continued to investigate the implications of CBAM for the chlor-alkali industry and its downstream products.

Future initiatives affecting upstream and downstream stakeholders

Upstream

The Directorate-General for Trade (DG Trade) of the European Commission is developing policies that may affect EU companies' access to **Critical Raw Materials (CRMs)** from outside the EU. This initiative arises from growing concern within the EU about secure and reliable access to certain raw materials due to global political challenges. DG Trade is thus seeking input from the private sector to identify current or anticipated issues. Since certain materials may be needed during chlor-alkali production (e.g. metals for electrolysers), Euro Chlor has been identifying which ones may be most relevant to ensure that Cefic is well informed for their follow-up on this file.

Downstream

In late 2023, the European Chemicals Agency (ECHA) submitted a report to the European Commission detailing their investigation into PVC and its additives for the European Commission to decide on next steps. As the PVC sector is a significant user of chlorine, any impact on utilisation will have implications for the entire chlor-alkali value chain. Therefore, Euro Chlor has been working with related associations, including VinylPlus and European Plasticisers, to share information and provide input where appropriate to discussions around the report.

2023 COMPETITIVENESS AT A GLANCE

PRODUCTION VOLUME

7,289kt

chlorine produced

an 11% decrease from 2022

MAIN CHLORINE APPLICATIONS

62.7%

of chlorine

go into PVC/ EDC/ VCM and isocyanates/ oxygenates together

MEMBRANE TECHNOLOGY

86.8%

of installed EU capacity

still the dominant method for producing chlor-alkali in Europe

UTILISATION RATE

62.2%

capacity utilisation

versus 69.8% in 2022

Highlights at
https://chlorineindustryreview.com/competitiveness

EXPLORE ONLINE

Chlorine production plants 1st January 2024 capacities

Process:

D = diaphragm

M = membrane

'**Others**' includes HCl electrolysis, ODC, molten salt electrolysis, alcoholates.

Non Euro Chlor members are indicated in italics.

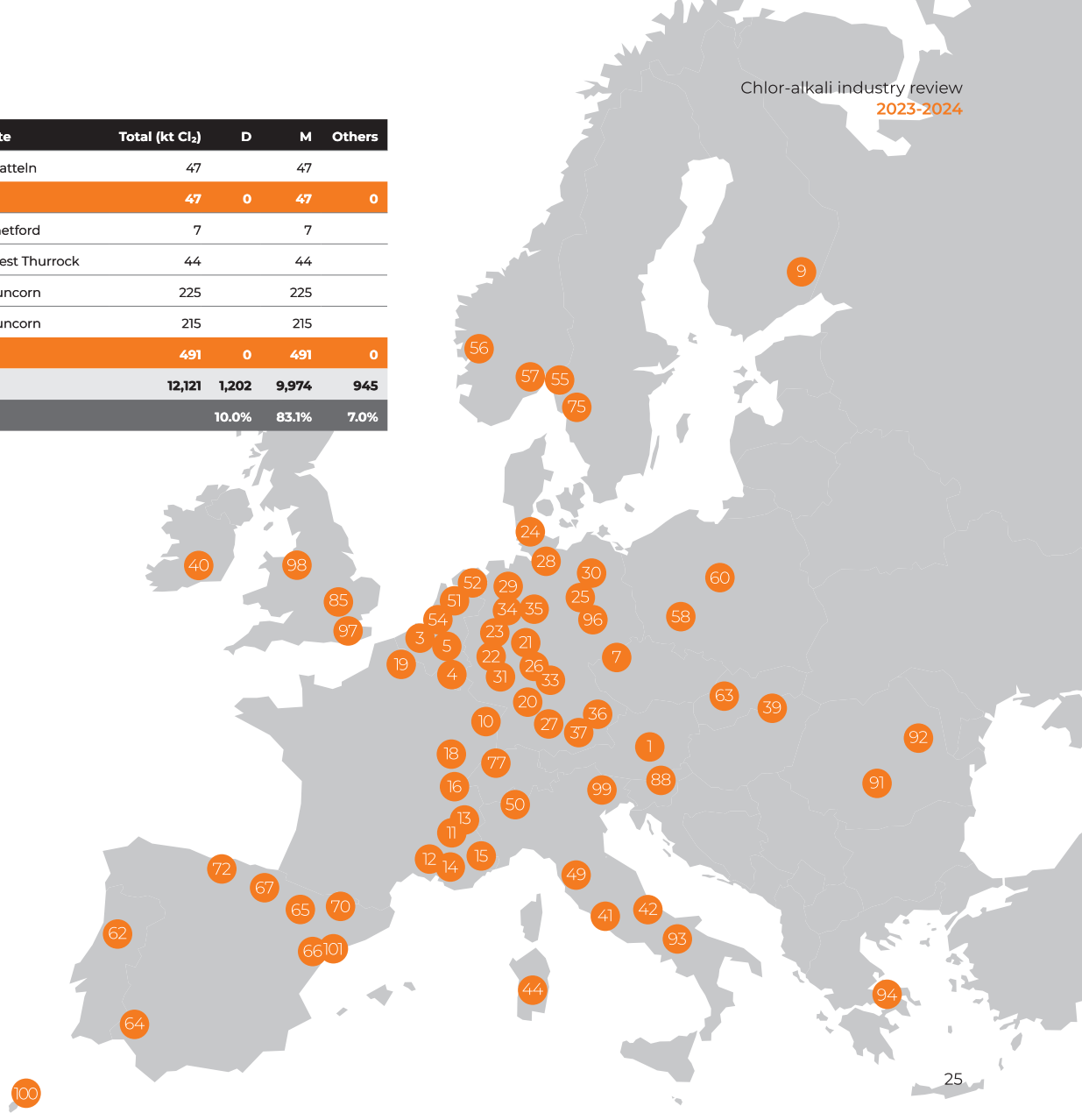
	Country	Company	Site	Total (kt Cl_2)	D	M	Others
1	Austria	Donau Chemie	Brückl	75		75	
Austria Total				**75**	**0**	**75**	**0**
3	Belgium	INEOS Inovyn	Lillo	500		500	
4	Belgium	INEOS Inovyn	Jemeppe	174		174	
5	Belgium	Vynova	Tessenderlo	400		400	
Belgium Total				**1,074**	**0**	**1,074**	**0**
7	Czech Republic	Spolek (Spolchemie)	Ústí nad Labem	78		78	
Czech Republic Total				**78**	**0**	**78**	**0**
9	Finland	Kemira	Joutseno	75		75	
Finland Total				**75**	**0**	**75**	**0**
10	France	Vynova PPC	Thann	42		42	
11	France	Vencorex	Pont de Claix	118		118	
12	France	KEM ONE	Fos	333	178	155	
13	France	Arkema	Jarrie	75		75	
14	France	KEM ONE	Lavera	341		341	
15	France	Arkema	Saint-Auban	20		20	
16	France	MSSA	Pomblière	42			42
18	France	INEOS Inovyn	Tavaux	370		370	
19	France	Kuhlmann France	Loos	38		38	
France Total				**1,379**	**178**	**1,159**	**42**
20	Germany	BASF	Ludwigshafen	595		315	280
21	Germany	Covestro	Dormagen	480		400	80
22	Germany	Covestro	Leverkusen	390		390	
23	Germany	Covestro	Krefeld-Ürdingen	290		290	
24	Germany	Covestro	Brunsbüttel	220			220
25	Germany	Dow	Schkopau	253		253	
26	Germany	Westlake Vinnolit	Hürth-Knapsack	250		250	
27	Germany	CABB GmbH	Gersthofen	57		55	2

	Country	Company	Site	Totel (kt Cl_2)	D	M	Others
28	Germany	Dow	Stade	1,624	1,024	600	
29	Germany	Neolyse Ibbenbüren GmbH	Ibbenbüren	82		82	
30	Germany	Nobian	Bitterfeld	99		99	
31	Germany	Lülsdorf Functional Solutions	Lülsdorf	77			77
33	Germany	Nobian	Frankfurt	283		283	
34	Germany	INEOS Inovyn	Rheinberg	110		110	
35	Germany	Vestolit	Marl	260		260	
36	Germany	Westlake Vinnolit	Gendorf	205		205	
37	*Germany*	*Wacker Chemie*	*Burghausen*	*55*		*55*	
96	*Germany*	*LEUNA-Harze*	*Leuna*	*15*		*15*	
Germany Total				**5,345**	**1,024**	**3,662**	**659**
94	Greece	Kapachim	Inofita Viotias	11		11	
Greece Total				**11**	**0**	**11**	**0**
39	Hungary	BorsodChem	Kazincbarcika	480		384	96
Hungary Total				**480**	**0**	**384**	**96**
40	Ireland	Micro Bio	Fermoy	11		11	
Ireland Total				**11**	**0**	**11**	**0**
41	Italy	Altair Chemical	Saline di Volterra	75		75	
42	Italy	Società Chimica Bussi (GIG)	Bussi	18		18	
44	Italy	Società Chimica Assemini (GIG)	Assemini	27		27	
49	Italy	INEOS Inovyn	Rosignano	150		150	
50	Italy	Altair Chemical	Pieve Vergonte	42		42	
93	Italy	Fater	Campochiaro	20		20	
99	*Italy*	*Halo Industry*	*Torviscosa*	*25*		*25*	
Italy Total				**357**	**0**	**357**	**0**
51	The Netherlands	Nobian	Botlek	637		637	
52	The Netherlands	Nobian	Delfzijl	121		121	
54	*The Netherlands*	*Sabic*	*Bergen op Zoom*	*89*		*89*	
The Netherlands Total				**847**	**0**	**847**	**0**

	Country	Company	Site	Total (kt Cl_2)	D	M	Others
55	Norway	Borregaard	Sarpsborg	45		45	
56	*Norway*	*Elkem*	*Bremanger*	*11*		*11*	
57	Norway	INOVYN Norge	Rafnes	315		315	
Norway Total				**371**	**0**	**371**	**0**
58	Poland	PCC Rokita	Brzeg Dolny	210		210	
60	Poland	Anwil	Włocławek	195		195	
Poland Total				**405**	**0**	**405**	**0**
62	Portugal	Bondalti Chemicals	Estarreja	142		94	48
Portugal Total				**142**	**0**	**94**	**48**
91	*Romania*	*Chimcomplex*	*Râmnicu Vâlcea*	*106*		*106*	
92	*Romania*	*Chimcomplex*	*Borzești*	*102*		*102*	
Romania Total				**208**	**0**	**208**	**0**
63	*Slovak Republic*	*Fortischem*	*Nováky*	*70*		*70*	
Slovak Republic Total				**70**	**0**	**70**	**0**
88	*Slovenia*	*TKI Hrastnik*	*Hrastnik*	*16*		*16*	
Slovenia Total				**16**	**0**	**16**	**0**
64	Spain	Electroquímica Onubense	Huelva/Palos	44		44	
65	Spain	Ercros	Sabiñanigo	45		45	
66	Spain	Ercros	Vila-seca	172		172	
67	Spain	Electroquímica de Hernani	Hernani	30		30	
70	Spain	Química del Cinca	Monzón	60		60	
72	Spain	Bondalti Chemicals	Torrelavega	60		60	
100	Spain	Biomca Química	Santa Cruz de Tenerife	5		5	
101	Spain	Covestro	Tarragona	100			100
Spain Total				**516**	**0**	**416**	**100**
75	Sweden	Inovyn Sverige	Stenungsund	123		123	
Sweden Total				**123**	**0**	**123**	**0**

	Country	Company	Site	Total (kt Cl_2)	D	M	Others
77	Switzerland	CABB AG	Pratteln	47		47	
Switzerland Total				**47**	**0**	**47**	**0**
85	UK	Brenntag UK Ltd	Thetford	7		7	
97	UK	Industrial Chemicals Ltd	West Thurrock	44		44	
98*	UK	Runcorn MCP Ltd	Runcorn	225		225	
98*	UK	INOVYN ChlorVinyls Limited	Runcorn	215		215	
UK Total				**491**	**0**	**491**	**0**
Grand Total (kt Cl_2)				**12,121**	**1,202**	**9,974**	**945**
Per process (percentage)					**10.0%**	**83.1%**	**7.0%**

**Both operating on the Runcorn Site*



Energy consumption

Primary energy consumption decreased slightly from 85.6% in 2022 to 85.1% in 2023 (with respect to the 2001 reference year).

Even though this may seem like a positive trend, it should be considered that the lower production rates of 2022-2023 has allowed electrolysers to run at lower current densities, thus requiring less energy per tonne produced.

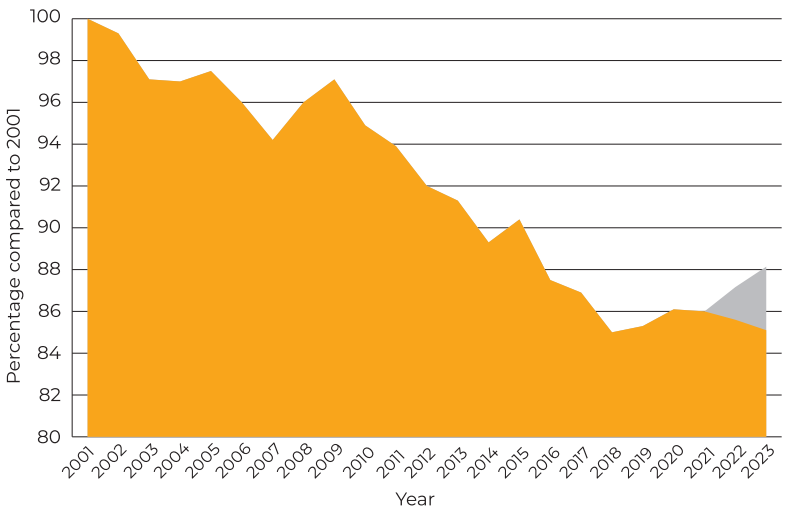
If one calculates the energy consumption using the higher current densities needed at higher production rates (e.g. in 2021), the 2023 number would have increased to around 88.1% compared to 2001. This is shown by the grey section in the graph.

Electricity and steam consumption

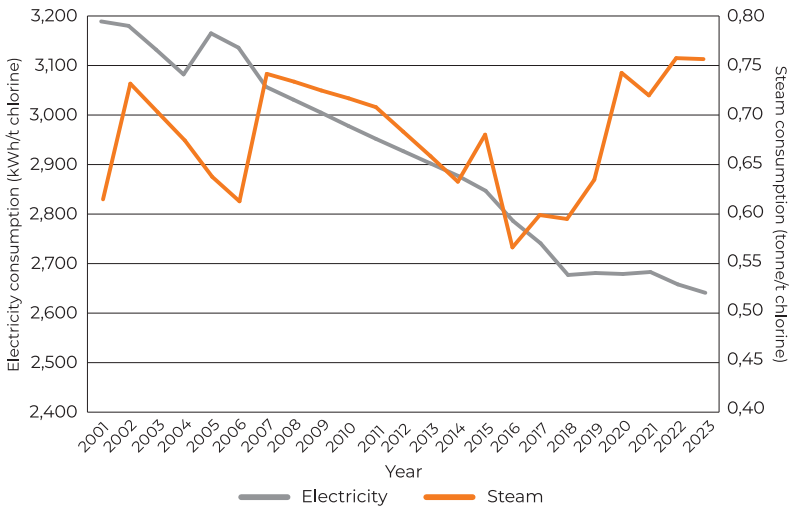
The weighted average electricity consumption slightly declined compared to 2022 levels. Again, this electricity consumption would have increased had we compared it to the same production utilisation rate as 2021 (see explanation on the left).

Steam consumption remained stable in 2023.

Primary fuel energy consumption



Electricity and steam consumption per tonne of chlorine



Grid balancing

To prevent blackouts amidst increasing production of (volatile) renewable electricity sources (e.g. wind and solar), there is a growing need for grid stability solutions.

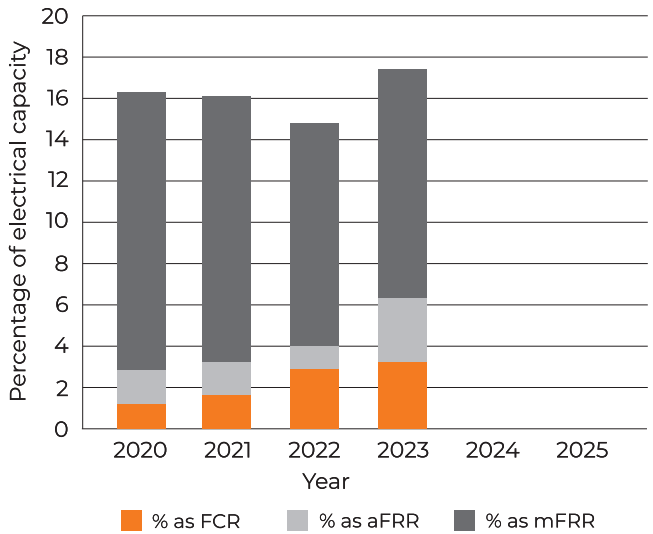
For years, Euro Chlor has been discussing its role in this and many companies are already adapting their production levels according to the grid's needs. This support however is limited by the fact that companies need to ensure product availability for their customers whilst respecting the restricted volumes of chlorine that are allowed to be stored.

In our third Sustainability Programme, we began reporting on the grid balancing support provided by our members as a percentage of the total installed electricity demand capacity. In 2023, 17.5% of this capacity was available for grid balancing, a notable increase from 14.8% in 2022 (see graph).

As the chlor-alkali sector can play a role in flexible production, Euro Chlor is exploring ways to further enhance flexibility to assist Europe's roll out of renewables.

Grid balancing

FCR = Frequency Containment Reserve
aFRR = Automatic Frequency Restoration Reserve
mFRR = Manual Frequency Restoration Reserve

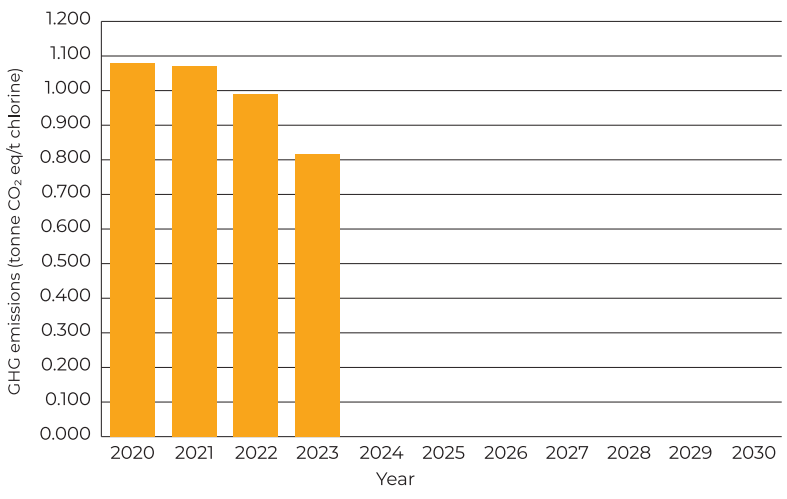


Carbon footprint reduction

In 2023, our carbon footprint/ CO_2 emissions decreased by 17.6% compared to 2022. In 2022, we already noted a 7.4% decrease. This is due to a combination of factors: the integration of more low-carbon electricity into the overall EU-wide grid, members who have switched from fossil-based to carbon-neutral electricity, and the utilisation rate still being at a lower rate in 2023.

We now report Scope 1 and 2 emissions of CO_2 from member production units for chlor-alkali and hydrogen.

Carbon footprint of Euro Chlor members' production



Investigating the potential impact of Europe's 2040 Climate Target

Building on the 2030 emission reduction targets aiming for climate neutrality by 2050, the European Commission published **Europe's 2040 Climate Target**, proposing a further intermediate 90% net greenhouse gas reduction (compared to 1990 levels) by 2040. Like the 2030 target, the 2040 target will need to be translated into regulatory action, with a public consultation and legislative proposals expected from the European Commission by late 2025.

Euro Chlor's Energy and Climate Change Committee is investigating the possible impacts of the new target, specifically for chlor-alkali, and the ways to achieve it. Liaising with Cefic, we have continued providing data to show that a successful EU climate policy will need to deploy essential infrastructures, allow all abatement technologies and solutions, scale up innovative technologies, and stop carbon and investment leakage. These elements are crucial to restore the competitiveness of energy-intensive industries such as chlor-alkali.

Chlor-alkali hydrogen affected by Renewable Energy Directive (RED III) and 'Gas Package'

With the revision of the **RED III**, the European Parliament intends to boost the deployment of renewable energy. It specifies that every Member State needs to have 42.5% of renewables in its final energy consumption by 2030.

In addition, specifically for hydrogen, RED III includes a definition of renewable hydrogen and a target of **42% Renewable Fuels of Non-Biological Origin (RFNBO)** hydrogen used in Member States **by industry by 2030**, increasing to **60% by 2035**. The targets do not apply to by-produced hydrogen, reducing the pressure on chlor-alkali industry from that side. However, 1) Member States still need to implement the targets and may individually include some by-products, and 2) many companies may wish to label their hydrogen as RFNBO, viewing that it has a very low carbon footprint. However, the RFNBO label is hampered by the stringent criteria that RED III imposes via one of its Delegated Acts.

Another piece of legislation relevant to our sector is the **Gas Package**, for which a provisional agreement was reached in December 2023. The Gas Package intends to phase out fossil gas across all sectors of the economy, including the power sector and industry and promotes the use of 'low-carbon' gases. A clear definition of 'low-carbon' and the methodology for the certification of low-carbon gases is foreseen to be published via a Delegated Act at the end of 2024. The certification methodology remains of importance to us, as it will define the way we need to allocate our greenhouse gas emissions to our three products.

Throughout this past year, Euro Chlor's Energy and Climate Change Committee has intensively discussed the impact of these policies and our role in the evolving 'RFNBO' and 'low-carbon' landscape.

> **The criteria and definitions for Renewable Fuels of Non-Biological Origin and 'low-carbon' hydrogen will define our future.**

Chlor-alkali hydrogen utilisation

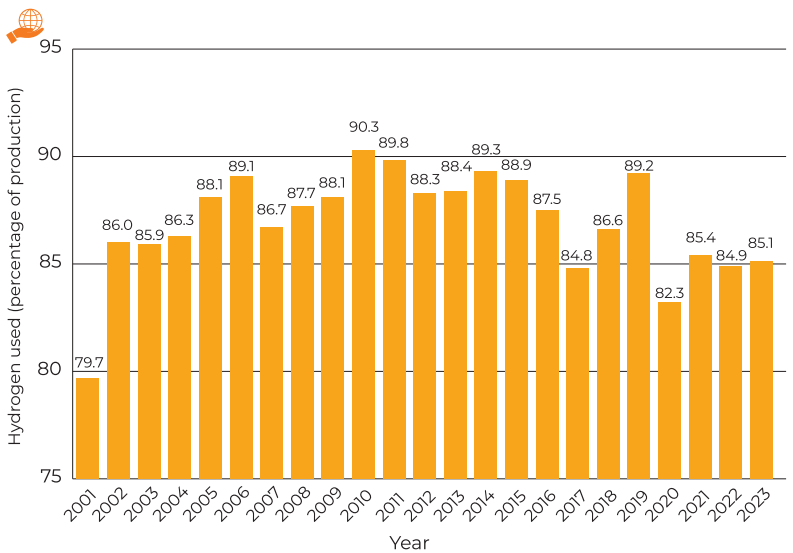
Euro Chlor produced around 240,000 tonnes of hydrogen in 2023. Hydrogen utilisation remained stable, at 85.1% in 2023 (versus 84.9% in 2022).

However, it remains challenging to reach our Mid-Century Strategy goal of 100% utilisation. In the past 12 months, our Energy and Climate Change Committee has repeatedly discussed the hurdles and these have been conveyed to the European authorities. For example, members have flagged that it is not always possible to obtain the permission for a physical connection to an existing hydrogen pipeline. In addition, the number of hydrogen pipelines is currently insufficient. The need for improvement of the European gas and electricity infrastructure remains an issue for all industrial sectors.

Finally, to adequately value our hydrogen, reaching the RFNBO criteria and/ or obtaining a special status for our very low-carbon hydrogen is indispensable but not evident in the current legislative framework.

Chlor-alkali hydrogen utilisation

Note: The figure for vented hydrogen varies from that reported previously as it results from a separate questionnaire with a slightly different level of detail.



2023
CLIMATE NEUTRALITY
AT A GLANCE

CARBON FOOTPRINT

-17.6%

GHG emissions

tonnes CO_2 eq/t Cl_2

GRID BALANCING

17.5%

of electrical capacity

available for grid balancing

BY-PRODUCT HYDROGEN

14.9%

hydrogen vented

percentage of production

Highlights at
https://chlorineindustryreview.com/climateneutrality

EXPLORE ONLINE

Per- and polyfluoroalkyl substances (PFAS) in our industrial equipment

With the harsh conditions in chlor-alkali plants, the use of resistant PFAS is currently indispensable for certain pieces of equipment.

Last year, five countries ('the Dossier Submitters') introduced a proposal to the European Chemicals Agency (ECHA) restricting PFAS as a group in all uses. The proposal identified a limited number of PFAS uses that would still be allowed via so-called 'derogations' with any non-derogated use being 'banned'. Next to many other sectors, the use of PFAS in industrial equipment (including chlor-alkali plants) was not proposed to be derogated.

As with every restriction, a six-month consultation period followed this 'Universal PFAS REACH restriction proposal'. An unprecedented number of 5,642 responses were introduced by authorities, NGOs, businesses and citizens from around the world by the end of September 2023 to ECHA as part of this consultation. One of these was from Euro Chlor, providing more information on the chlor-alkali industry's use of fluorinated materials.

Cefic also introduced a response, including a comprehensive study on the uses of PFAS in chemical plant equipment based on the input of more than 100 Cefic members. Many Euro Chlor members also participated in this Cefic survey.

Viewing that the Dossier Submitters and ECHA Committees now need to process the 5,642 contributions (over 100,000 pages of attachments), final decisions may experience delays.

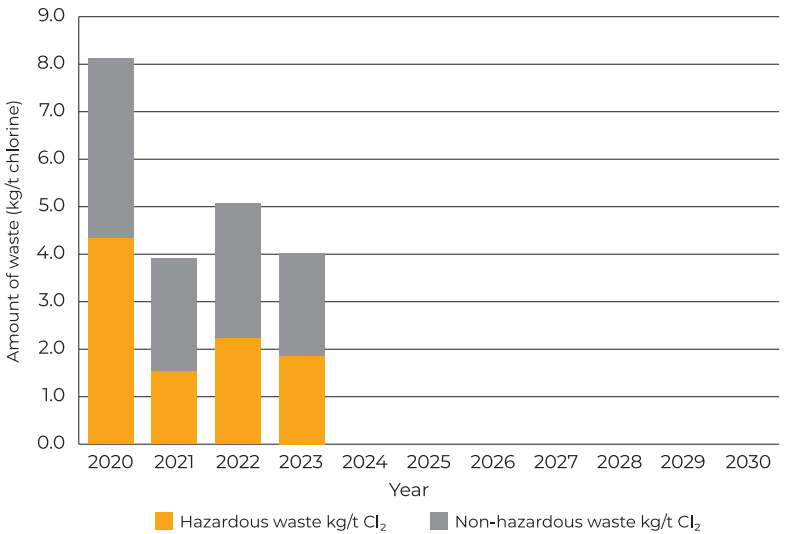
Meanwhile, Euro Chlor continues to work on this important file. The Advocacy and Regulatory Affairs Committee continues to monitor developments closely to keep members informed and help them to collect the most relevant technical and science-based input to the process. Concurrently, the General Technical Committee (GTC) is actively engaging with equipment suppliers to discuss their use of PFAS, options for alternative materials and optimal end-of life solutions.

The proposed restriction on the use of PFAS in our industrial equipment is of concern to the membership. Euro Chlor introduced a submission to the ECHA consultation by giving more information on our use of, and need for, certain fluorinated materials.

Waste from the production process

As part of our third Sustainability Programme we report on the amount of waste generated by members. In 2023, we observed positive trends in waste reduction compared to 2022. The amount of **hazardous waste** decreased from 2.2 kg per tonne of chlorine in 2022 to 1.9 kg per tonne of chlorine in 2023.

Similarly, **non-hazardous waste** also decreased from 2.9 kg per tonne of chlorine in 2022 to 2.2 kg per tonne of chlorine in 2023.



EU's new 'Essential Use concept' covers end-of-life, waste and recycling

The EU Chemicals Strategy for Sustainability suggested developing an 'Essential Use' concept for the assessment of chemicals, aiming to address the most harmful substances in 'non-essential' uses. More than three years later, in April 2024, the European Commission answered this request by publishing a Communication on potential criteria and principles for integrating this concept into EU chemical legislation. It clarifies the concept and provides guidance for its practical implementation, including questions and examples useful for conducting essential use assessments.

The conditions for an 'Essential Use' include minimising exposure to humans and animals and reducing emissions to the environment during production, use, end-of-life and recycling. It also ensures substitution and transition to safe and sustainable chemicals, potentially including substitution plans with commitments and timelines and ensuring that consumers and waste operators are informed about the use in the supply chain. Euro Chlor is monitoring any potential implementation of the concept into regulation via its Advocacy and Regulatory Affairs Committee.

2023+ CIRCULARITY AT A GLANCE

The amounts of hazardous and non-hazardous waste produced by our industry are carefully monitored and declined from 2022 to 2023.

Euro Chlor is monitoring any potential implementation of the 'Essential Use' concept into regulation via its Advocacy and Regulatory Affairs Committee.

Highlights at
https://chlorineindustryreview.com/circularity

EXPLORE ONLINE

Ton Manders retires after 38 successful years in chlor-alkali

Ton joined Euro Chlor in 2016 as Technical and Safety Director, coming directly from AkzoNobel Industrial Chemicals (now Nobian) in the Netherlands, where he had been responsible for Technology, Research and Development in the chlorine and chloromethane business since 2005. During that period, he became well-acquainted with Euro Chlor as an active member of the General Technical Committee (GTC) and Safety and Transport (GEST) Working Group.

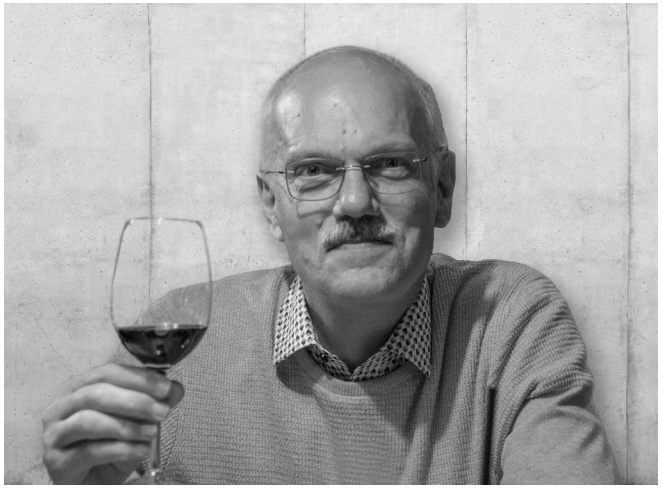
He has been Euro Chlor's technical expert for the last eight years and, upon joining, threw himself into detailed data gathering and analysis, safety trainings, the writing and updating of technical and background documents and much more.

All of the colleagues that worked with him will never forget Ton. He was the 'go-to-person' for technical questions and never failed to either have the answer immediately, to find it in two hours via his extended network of past and current colleagues, or to provide it in two days after an extensive search (and one or more Excel sheets performing complex calculations!).

Proof of the overall appreciation for Ton is that he was not only the 'go-to-person' for the technical, but also for organisational, strategic and personal issues. He never once told anyone he did not have time for them.

The good news is that he has not gone too far and we still invite Ton for some meetings and, as friends, the occasional drink organised in Brussels.

Grateful for everything he has done for and meant to us, we can only say we will greatly miss a valued colleague and friend, but we all wish him the very best in this new exciting chapter of his life!



Two new colleagues joined the team

Thomas Vanfleteren joined Euro Chlor as Technical and Safety Manager in February 2024, succeeding **Ton Manders**. He was previously Technical Manager at Petrochemicals Europe within Cefic for the past four years. He holds a Ph.D. in chemistry from the Université Libre de Bruxelles and has experience in scientific consultancy. He now leads the GTC, GEST and Equipment Working Groups.

A month later in March, **Eili Skrivervik** joined Euro Chlor as Energy and Hydrogen Manager, succeeding **Kristof May**, who left Cefic to pursue a new, exciting career opportunity. Prior to Cefic, Eili was at the University of Oslo and École des Mines de Paris, working towards a Ph.D. in innovation and the energy transition. She is now the key point of contact on all energy and hydrogen regulatory matters and leads Euro Chlor's Energy and Climate Change Committee.

New Management Committee members

Over the past year, Euro Chlor's Management Committee welcomed seven new members to their ranks. **Domenico Greco** (Società Chimica Bussi), **Markus Mingenbach** (Nobian) and **Jakub Racek** (Spolchemie) joined in September 2023. In early 2024, **Jan Hesterkamp** joined from VESTOLIT, **Charley Liere** from KEM ONE, **Jan Nouwen** from BASF and **Charlotte Röber** from ECVM. For a complete list of members, visit **https://www.eurochlor.org/about-us/organisation-and-governance**.

Continued connection with our downstream stakeholders

This past year, we continued to strengthen our connections with downstream stakeholders, notably through various meetings with the **European Council of Vinyl Manufacturers (ECVM)** and the **European Diisocyanate & Polyol Producers Association (ISOPA)**, and through our new benefits campaign.

Launching a communications campaign on benefits of chlor-alkali products to society

In October 2023, Euro Chlor launched a communications campaign to highlight the benefits of products in the chlor-alkali value chain. Over a period of one year, one video is released per month, often aligning with seasonal events or official thematic days.

Our flashy videos demonstrate the diverse applications of chlor-alkali, showing our products' uses in sunglasses and solar panels, buildings and chocolate, protective vests and helmets and more! The campaign runs until the end of 2024 and can be viewed at **https://www.eurochlor.org/benefits**.

With strategic advice from the Euro Chlor Communications Committee, related content is carried on all Euro Chlor social media channels (LinkedIn, X (formerly Twitter), Facebook, Instagram, and YouTube). This supplements content from other Euro Chlor communications materials such as ChlorineThings and Mr C videos, the 17 Success and 17 Careers programmes, the trees for chlorine, caustic soda, caustic potash and hydrogen. All of this builds on the 'Uses' section of our website at **https://www.eurochlor.org/uses**.

New Information Sheets and Science Dossiers

To bolster the benefits campaign and provide even more science-informed content, Euro Chlor published new information sheets covering topics such as electronics and energy, health, electrolysis and production costs, polycarbonate, and polyurethane.

Additionally, the 'Focus on Chlorine Science (FOCs)' dossiers on chlorinated swimming pools and respiratory health and hydrogen were revised and republished. An information sheet detailing installed hydrogen production capacities was also released. All these publications are available at **https://www.eurochlor.org/resources/publications**.

Four new 17 Chlor-Alkali Careers videos

Inspired by chlorine's position on the Periodic Table of elements, Euro Chlor's 17 Chlor-Alkali Careers programme presents real Europeans whose work contributes to the production of chlor-alkali chemicals.

Over the past year, Euro Chlor has released four new videos at **https://www.eurochlor.org/17careers**. These feature Klaus from Nobian, Daniel from Bondalti, Bart from Nobian and Roman from Spolchemie. This brings the total to 11, with more in the pipeline.

Optimising our website and presence on social media

The Euro Chlor team constantly updates the website with latest information including technical documents, news items, videos and more! Over the past year, we have seen an increase in traffic for the website (94% growth in sessions and 139% growth in users).

As mentioned before, the benefits campaign is linked to an enhanced presence on social media. Here, our follower counts steadily increased with LinkedIn being the most popular platform.

Launching the 12th International Chlor-Alkali Technology Conference and Exhibition

The next **International Chlor-Alkali Technology Conference & Exhibition** will take place on 13-15 May 2025 in Barcelona. A call for exhibitors and presentations was sent out in May 2024, and audience registration opens in September 2024.

The triennial conference features a variety of technical sessions and a comprehensive exhibition and offers unique networking opportunities. Not only can member companies meet with chlor-alkali and hydrogen technology suppliers, but they will also hear from industry experts on innovative technologies, developments in production and process safety, progress in the area of hydrogen (NEW!), and regulatory developments.

More information and registration details are available at **https://eurochlor2025.org**.

Assuming the World Chlorine Council Secretariat for two years

In January 2024, Euro Chlor took over the management of the World Chlorine Council (WCC). WCC assembles chlor-alkali associations from Canada, China, Europe, India, Japan, Latin America, North America, and South-Korea. The aim of the group is to be a global forum that promotes health, safety, and environmental best practices related to chlorine production and highlights the benefits of chlor-alkali chemistry.

Several WCC events have already taken place in 2024, including a webinar on PFAS for WCC members. A WCC virtual meeting has also covered the updates from the three main global teams, dealing with safety, advocacy and science, and communications, respectively. Euro Chlor members are encouraged to learn from WCC events at their own convenience with more information being available at **https://worldchlorine.org**.

The next event will be the WCC Annual meeting scheduled for 15-17 October 2024 in Spain, which will feature a site visit, networking opportunities and two brief online briefing sessions on key topics for all association memberships.

Supporting the Cefic Antwerp Declaration

Through Cefic, Euro Chlor is supporting the Antwerp Declaration signed in February 2024 with the President of the European Commission, Ursula von der Leyen and Belgian Prime Minister Alexander De Croo. Approximately 73 business leaders from across industry expressed their commitment to the EU Green Deal and asked to make European industry competitive, resilient and sustainable again with a 10-point plan known as the Industrial Deal. Numerous additional CEOs and related associations have since endorsed this Declaration for the next European Commission and several official instances have picked up the messages.

For more information, see **https://antwerp-declaration.eu**.

2023+ COMMUNICATION AND COLLABORATION AT A GLANCE

NEW CHLOR-ALKALI BENEFITS CAMPAIGN

12 flashy videos over 12 months

showing the diverse applications of our products

17 CAREERS CAMPAIGN CONTINUES

4 new videos

featuring real Europeans whose whose work is to produce chlor-alkali chemicals

NEXT TECHNOLOGY CONFERENCE & EXHIBITION

13-15 May 2025 Barcelona

#eurochlor2025

WORLD CHLORINE COUNCIL (WCC)

2024-2025

Euro Chlor assumes WCC's secretariat for 2 years

SOCIAL MEDIA STATISTICS REVEAL AN INCREASED EXPOSURE TO OUR CONTENT

https://linkedin.com/company/eurochlor

https://facebook.com/eurochlor

https://instagram.com/eurochlor

https://twitter.com/eurochlor

Highlights at
https://chlorineindustryreview.com/collaboration

EXPLORE ONLINE

Halogens
Cefic Industry Sector

Euro Chlor forms part of Cefic's Halogens Industry Sector, together with nine other Sector Groups. Mainly via their managers, these groups collaborate closely on various topics. The ten Chairs, forming the Halogens Board, come together once per year. To ensure that the Halogens Industry Sector has a say in general Cefic activities, every Cefic Programme Council (PC) or Forum also has a seat reserved for us. The representatives are chosen by the **Halogens Board** and form the **Halogens Coordination Group (HCG)**. They convene quarterly to update each other and to ensure consistency. The current list of representatives includes:

- Marc Boelens (Honeywell) for PC Product Stewardship,
- Angelica Candido (Cefic) for PC Industrial Policy,
- Eili Skrivervik (Cefic) for PC Climate Change and Energy,
- Darius Richardson (INOVYN) for PC Health, Safety and Environment, Logistics and Responsible Care,
- Dirk Dompas (INEOS) for PC Innovation,
- Mary B Walsh (Honeywell) for the Advocacy Forum,
- Thomas Vanfleteren (Cefic) for the Sustainability Forum,
- Francesca Ortolan (Cefic) for the Legal Forum.

For more information, contact the Euro Chlor team.

Halogens Industry Sector at scientific event

Richy Mariner, Euro Chlor's Science and Regulatory Affairs Director, represented the Halogens cluster at the Society of Environmental Toxicology and Chemistry (SETAC) Europe conference in Seville, Spain in May 2024.

This event brought together over 3,000 experts in environmental chemistry and sustainability from academia, NGOs, authorities and industry to view posters and presentations on a range of topics including presentations on PFAS and the use of hydrogen from chlor-alkali.

FPP4EU continues to collaborate with Euro Chlor, other Sector Groups, and Cefic

The **Fluorinated Products and PFAS for Europe (FPP4EU)** Sector Group represents the views of producers, importers and users of fluorinated products and PFAS across Europe. FPP4EU liaises with as many downstream users' sectors as possible through its Collaboration Platform.

With the Universal PFAS REACH restriction proposal on the table, FPP4EU has worked with many stakeholders to feed data into the process, aiming for a realistic and balanced piece of legislation. The group has also been instrumental in explaining the REACH restriction process to many other downstream sectors and organised workshops to bring key authorities and PFAS users together to discuss common challenges.

Via its website, FPP4EU shows some applications of PFAS as well as those where alternatives are currently unavailable. Whilst the Sector Group does not defend specific types of PFAS or uses, it aims to provide authorities and society with objective information on this complex file.

The Sector Group has also collaborated with Euro Chlor, EFCTC and Cefic on their respective submissions to the ECHA consultation on the restriction proposal. A common overarching topic is the use of PFAS in industrial equipment in chemical plants, which affects the whole Cefic membership and other industrial sectors. Here, the Cefic Board are also involved to ensure that thorough coordination is in place.

See **https://www.fpp4eu.eu** for more details.

> **PFAS in industrial equipment is a universal topic for the entire chemical industry.**

ECSA products facing some regulatory challenges

The European Chlorinated Solvents Association (ECSA) became an important stakeholder in the recent revision of the EU's **Ozone Depleting Substances (ODS) Regulation** when chlorinated substances came into focus for ozone depletion. More specifically, the new version of the ODS regulation includes perchloroethylene and methylene chloride. These substances now require reporting for manufacturing, import and selected uses. No use bans are imposed but a reporting requirement remains.

Additionally, methylene chloride is now subject to the **Harmonised Classification and Labelling (CLH) process**. ECSA members, through the ChlorSolv REACH Consortium, responded to the 2023 public consultation with a scientific statement. This process is now with the ECHA Regulatory Affairs Committee (RAC), which is expected to adopt an opinion by February 2025. The final decision will then rest with the European Commission and the Competent Authorities for REACH and CLP (CARACAL) without further industry involvement. See **https://www.chlorinated-solvents.eu** for information about ECSA.

Other Halogens news

The Chloroformates Sector Group has recently finalised guidance on incident response, which is available via **https://www.halogens.eu/cfsg**.

Eurofluor continues its intensive work on safety matters related to hydrogen fluoride, whilst the **European Sulphuric Acid Association (ESA)** is active in multiple areas, involving classification and uses of sulphuric acid. Both groups are heavily involved in the Large Volume Inorganic Chemicals BREF revision process.

Finally, the **Chloro Alkanes**, **EFCTC**, **Potassium**, and **Sodium Chlorate Sector Groups** have continued discussions on regulatory highlights.

HALOGENS INDUSTRY SECTOR

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The interests of the Halogens Industry Sector are ensured via their representation in key Cefic horizontal groups.

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For details on the activities of the different Sector Groups:

- Chloro Alkanes Sector Group
  https://www.halogens.eu/about-us/casg
- Chloroformates Sector Group
  https://www.halogens.eu/cfsg
- European Chlorinated Solvents Association (ECSA)
  https://www.chlorinated-solvents.eu
- European FluoroCarbons Technical Committee (EFCTC)
  https://www.fluorocarbons.org
- Eurofluor (CTEF, Comité Technique Européen du Fluor)
  https://www.eurofluor.org
- European Sulphuric Acid Association (ESA)
  https://www.sulphuric-acid.eu
- Fluorinated Products and PFAS for Europe (FPP4EU)
  https://www.fpp4eu.eu
- Potassium Sector Group
  https://www.halogens.eu/about-us/psg
- Sodium Chlorate Sector Group
  https://www.halogens.eu/about-us/scsg

Highlights at
https://chlorineindustryreview.com/halogens-news

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Euro Chlor supports a safe, sustainable and successful chlor-alkali industry for Europe.

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Based in Brussels, Belgium, Euro Chlor is a Sector Group of Cefic (European Chemical Industry Council) within the Halogens Industry Sector.

Euro Chlor is a member of the World Chlorine Council (WCC), a global network of regional organisations that represents producers accounting for more than 85% of worldwide chlor-alkali production capacity.

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