



Chlor-alkali
industry review

2020

2021

A Pivotal Moment:
Third Euro Chlor
Sustainability
Programme
converging with
Mid-Century
Strategy

Note: The content from this year's Industry Review (covering September 2020-September 2021) has been updated to reflect the four main elements of our Mid-Century Strategy. Out of nine key parameters, seven have been reported 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 2020 Euro Chlor Sustainability Questionnaire for these nine key parameters) was almost complete (covering 99.8% of Euro Chlor member's capacity in 2020). The Euro Chlor team will continue its efforts to keep this high participation rate. Under the EU's Green Deal, our commitment to sustainability continues to remain crucial.



The full version of this report is available from:

<https://chlorineindustryreview.com>

04
Foreword

06
Safety Leader

09
Competitive Supplier

15
Climate Neutral Player

17
Circularity Champion

18
Halogens Industry Sector
News

19
Collaboration & Outreach

20
Members & Partners

*Building on two
reliable 10-year
Sustainability
Programmes...*



Marleen Pauwels
Managing Director

The publication of Euro Chlor's second Sustainability Report¹ is a celebration of 20 years of extensive efforts in data collection around three sustainability pillars (environmental, social, and economic) in two consecutive 10-year Sustainability Programmes. It also features the launch of the third programme which involves no fewer than nine new Key Performance Indicators (KPIs). These are based on the content of our **Mid-Century Strategy for a Sustainable Chlor-Alkali Industry** to ensure that a safe, competitive, climate neutral and circular European chlor-alkali industry will be here for the benefit of Europe in 2050. Since the launch of the strategy in 2020, our Committees and Working Groups have incorporated existing sustainability indicators from our first and second Sustainability Programmes into our four Mid-Century Strategy priorities and developed and documented the nine new KPIs.

Reflecting on the past year, I realise how hard the Euro Chlor team and members have worked to increase incident reporting (now up to 80%), organise safety trainings, develop a modern interactive safety game, draft guidance for emergency departments in case of chlorine intoxication, and develop some relevant new communication material (for example 17 Careers videos, 'trees' on our substances and a hydrogen infographic).

What's more, our sector has been tackling the ongoing COVID-19 challenges whilst gearing up for the items related to the EU's Green Deal, most notably the flagship initiatives of the Chemical Strategy for Sustainability (CSS) and the 'Fit for 55' initiative. We have the right tools to enable our industry to adapt to everything that lies ahead, including the activities of our Committees and Working Groups, our value chain partnerships and our membership of the Halogens Industry Sector, Cefic and the World Chlorine Council.

Given all this, Euro Chlor rises to the challenge to combine its third Sustainability Programme with a Mid-Century Strategy at such a pivotal moment in the EU's legislative history.

¹ <https://www.eurochlor.org/topics/sustainability>

As Marleen noted, the Euro Chlor Management Committee is ready to accept the challenge of completing the third phase of our Sustainability Programme in the current regulatory environment. We have always focused on topics that contribute to addressing the global challenges of climate change and environmental degradation and have gathered a comprehensive data set as a solid basis for our actions and messages. Our foreseen monitoring of energy consumption, carbon footprint and waste reduction will further assist in helping to meet Europe's Green Deal priorities.

Equally important is that we never lose sight of our safety priorities. I have personally engaged in initiating the 'Safe Loading and Unloading' commitment that has now been generally adopted by the membership. Safety should not end at the gate of our plants and I count on my fellow members and the Euro Chlor team to assist me in getting this commitment implemented by as many companies as possible.

In addition, we will start measuring transportation incidents for all our products, production capacity serving as grid balancing and the carbon footprint of our production. All these parameters are vital to our role within our Mid-Century Strategy as a Safety Leader and Climate Neutral Player.

Speaking of climate neutral, Euro Chlor will actively engage in the debate around hydrogen. We will not only focus on using 100% of our hydrogen by-product by 2030 but also embark on a campaign to make authorities aware of the fact that our hydrogen is low-carbon and high quality. We may only represent about 4% of the total hydrogen production in the EU, but we have the technology readily available, and our by-product should be valorised.

With all the above, I look forward to another year of intensive collaboration with the entire membership and the Euro Chlor team.

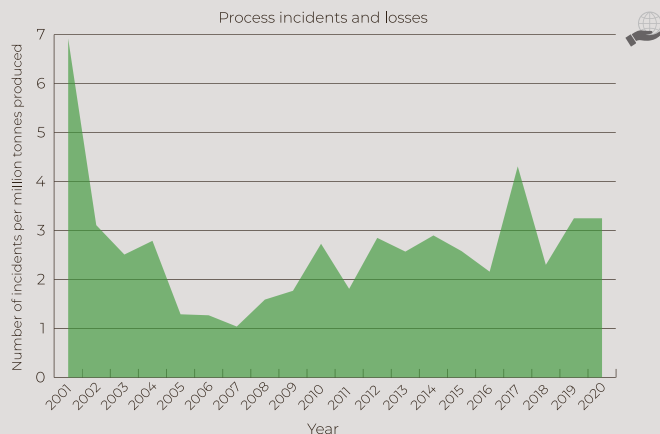
Wouter Bleukx

Chairman of the
Management Committee




*...and looking
forward 10 years
to 2030.*

Safety Leader

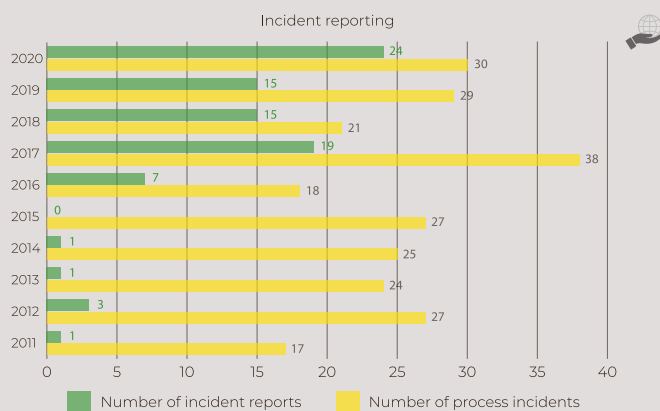


Process incidents and losses

 **No improvement but no decrease in performance compared to 2019.**

Safety will always be at the top of Euro Chlor's agenda. In 2020, our process incidents and losses remained the same as 2019 with 3.25 incidents per million tonnes of chlorine production. This translates, in absolute numbers, to 30 process incidents (reported via our annual Sustainability Questionnaire), which is almost equal to 2019.

Since these figures do not yet correspond to our vision of zero incidents, Euro Chlor and its members are continuously trying to find new ways to reach this vision. One such initiative is a **new safety training programme** launched in 2021, to be continued in the coming years. Another will be the launch of an **interactive safety game** expected by early 2022.



Incident reporting

 **Increase in the coverage rate of incident reports.**

Thanks to a decade of commitment and consistent efforts by the Euro Chlor team, General Technical Committee (GTC) and GEST Working Group, the incident reporting rate has increased from 6% in 2011 to 80% in 2020. The incident reports allow the GTC and GEST to discuss and share the lessons learned. This enables Euro Chlor to enhance the documents so that members can avoid similar future incidents.

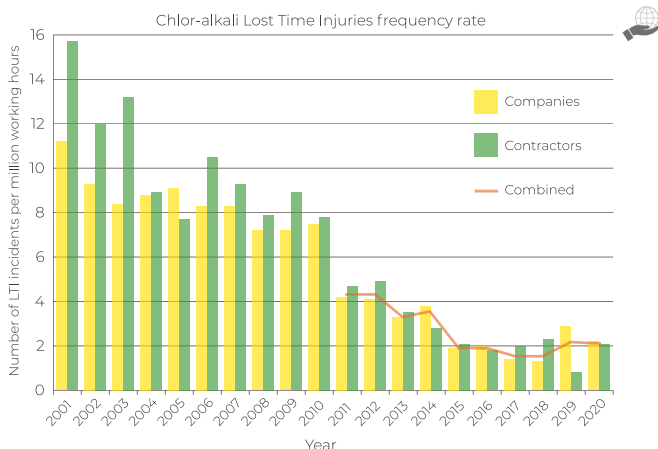
Occupational safety



4% decrease in total number of LTIs (member staff + contractors).

Lost Time Injuries (LTIs) for member company staff improved with a decrease to 2.17 per million working hours in 2020 from 2.93 in 2019. Unfortunately, contractor LTIs increased from 0.82 to 2.06 per million working hours. The combined figure still showed an improvement from 2.23 in 2019 to 2.14 in 2020.

The past six years have seen LTI levels fluctuate between 1 and 3 per million working hours. Even though this represents a reduction from previous years, Euro Chlor and its members will continue to work towards the goal of zero LTIs.



Please note that, since 2011, the LTI frequency rate only includes incidents directly related to chlor-alkali industry specific items.

Workers' health

Despite the members of Euro Chlor's Health Working Group being busy keeping their company personnel safe during the COVID-19 restrictions, they still managed to develop a series of tools to further improve our industry's health. The first is a training to raise awareness on stress and burnout which, whilst not unique to our sector, can have a real impact. The second is a flow diagram that provides voluntary guidance to emergency services on how to treat an acute chlorine exposure.



Safety Leader has been our key priority over this past year from our Mid-Century Strategy with key initiatives launched.



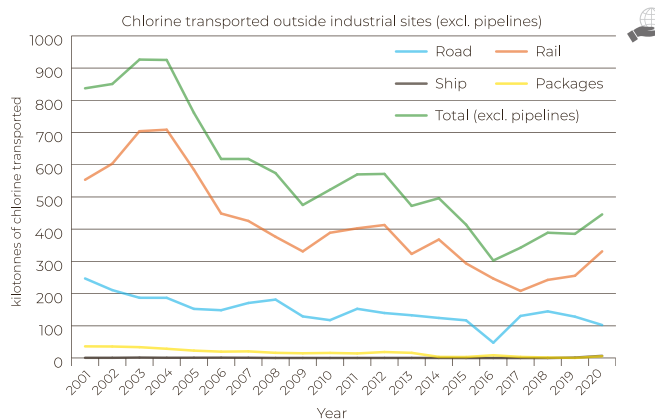
Ton Manders

Technical & Safety Director

Transportation

 **Increase in chlorine transportation mainly due to more participating companies in this year's review.**

The graph below shows a slight increase in the percentage of chlorine transported via road or rail (from 4.3% in 2019 to 4.8% in 2020). This can be explained by an increase in participating companies in 2020. More specifically, the extra companies that took part in this year's reporting exercise have higher transportation rates. Again, we are pleased to note that no transport incidents (with chlorine) were reported in 2020.



Loading and Unloading and safety communication update

Late-2020, Euro Chlor members agreed upon a commitment related to the safe loading and unloading of chlor-alkali chemicals. The commitment has now been translated into several languages and distributed to members for implementation. Progress on implementation is being followed up by the Euro Chlor General Technical Committee (GTC) and the Management Committee.

Euro Chlor's safety communication continued over the past year including the publication of our quarterly safety newsletter with the latest Incident Reports, safety discussions in every relevant meeting and the updates of several recommendations.



Read more details at:

<https://chlorineindustryreview.com/safety>

Members invested in sustainable solutions during COVID-19 and new partners joined



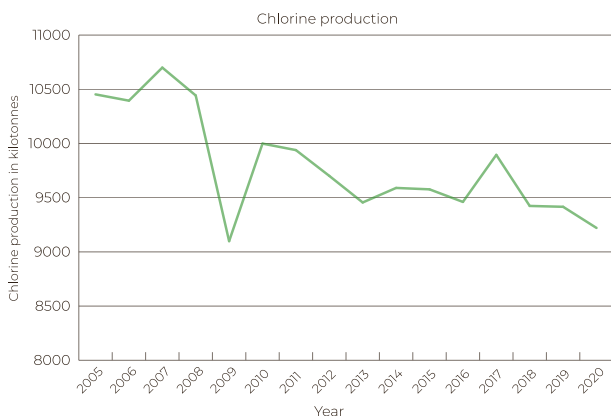
3 new partners joined in the last 12 months.

Industry investments continued in 2020/2021 along the entire chlor-alkali value chain, especially in projects relating to sustainability and hydrogen. In addition, the Euro Chlor family expanded further with new partners joining. These are reported on the Euro Chlor website at <https://www.eurochlor.org/news-events/member-news>.

2020 chlorine production

According to Cefic figures, 9,221 kilotonnes of chlorine were produced in 2020, which is 2% lower compared to 2019. This is most likely an effect of the COVID-19 pandemic.

Utilisation rate, meanwhile, decreased from 81% in 2019 to 79.5% in 2020.



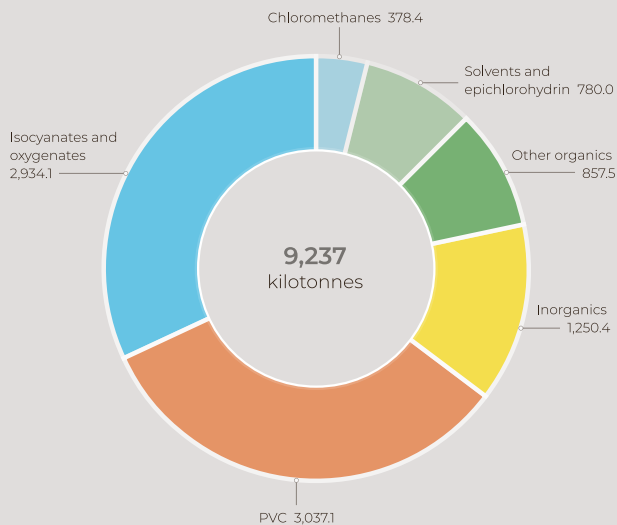
Chlor-alkali chemistry has been vital during the COVID-19 crisis and will continue to be so for Europe's future.



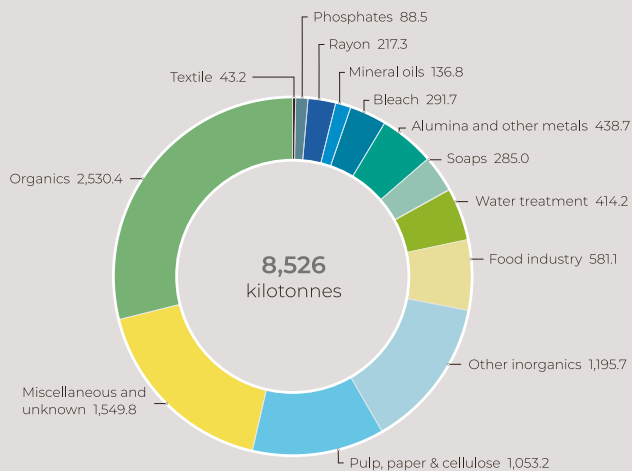
Wouter Bleukx

Chairman of the Management Committee

European chlorine applications 2020



European caustic soda applications 2020

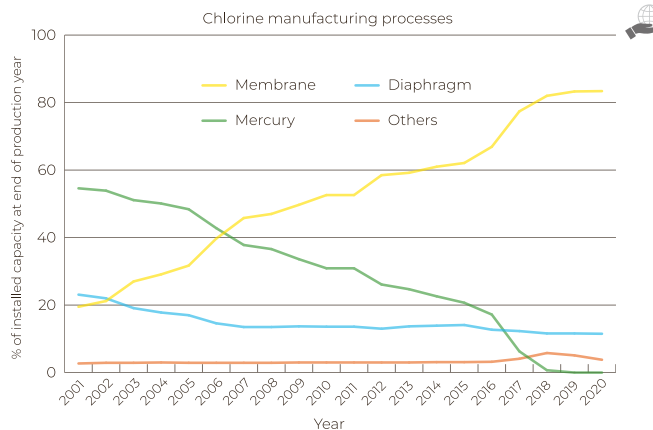


Manufacturing technology



85.2% of European chlor-alkali uses membrane-based production technology.

Membrane remains the dominant technology to produce chlor-alkali in Europe, representing 85.2% of the installed EU capacity. Diaphragm technology, meanwhile, represents 11.1% of capacity and the remaining 3.8% covers chlorine-alcoholate production, hydrochloric acid conversion to chlorine, metal production and chlorine and caustic production without hydrogen as a by-product.



Chlorine production plants

1st January 2021 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 (kilotonnes chlorine)	D	M	Others
1 Austria	Donau Chemie	Brückl	75		75	
Austria Total			75	0	75	0
3 Belgium	INOVYN	Lillo	500		500	
4 Belgium	INOVYN	Jemeppe	174		174	
5 Belgium	Vynova	Tessengerlo	400		400	
Belgium Total			1,074	0	1,074	0
7 Czech Republic	Spolchemie	Ústí nad Labem	69		69	
Czech Republic Total			69	0	69	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	119		119	
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	INOVYN	Tavaux	370		370	
19 France	Kuhlman France	Loos	35		35	
France Total			1,377	178	1,157	42

Competitive Supplier

	Country	Company	Site	Total (kilotonnes chlorine)	D	M	Others
20	Germany	BASF	Ludwigshafen	595*	*Distribution unknown		
21	Germany	Covestro	Dormagen	480		400	80
22	Germany	Covestro	Leverkusen	390		390	
23	Germany	Covestro	Krefeld-Ürdingen	260		234	26
24	Germany	Covestro	Brunsbüttel	210			210
25	Germany	Dow	Schkopau	253		253	
26	Germany	Vinnolit	Hürth-Knapsack	250		250	
27	Germany	CABB GmbH	Gersthofen	57		55	2
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	Evonik Performance Materials	Lülsdorf	77			77
33	Germany	Nobian	Frankfurt	283		283	
34	Germany	INOVYN	Rheinberg	220	110	110	
35	Germany	VESTOLIT	Marl	260		260	
36	Germany	Vinnolit	Gendorf	180		180	
37	Germany	Wacker Chemie	Burghausen	55		55	
96	Germany	LEUNA-Harze	Leuna	15		15	
Germany Total				5,390	1,134	3,266	395
94	Greece	Kapachim	Inofita Viotias	10		10	
Greece Total				10	0	10	0
39	Hungary	BorsodChem	Kazincbarcika	480		384	96
Hungary Total				480	0	384	96
40	Ireland	Micro Bio	Fermoy	10		10	
Ireland Total				10	0	10	0
41	Italy	Altair Chimica (ESSECO GROUP)	Saline di Volterra	75		75	
42	Italy	Società Chimica Bussi (GIG)	Bussi	18		18	
44	Italy	Società Chimica Assemini (GIG)	Assemini	25		25	
49	Italy	INOVYN	Rosignano	150		150	
50	Italy	Hydrochem Italia	Pieve Vergonte	25		25	
99	Italy	Caffaro Green Chemicals (GIG)	Torviscosa	24		24	
93	Italy	Fater	Campochiaro	20		20	
Italy Total				337	0	337	0
51	The Netherlands	Nobian	Botlek	637		637	
52	The Netherlands	Nobian	Delfzijl	121		121	
54	The Netherlands	Sabir	Bergen op Zoom	89		89	
The Netherlands Total				847	0	847	0

Competitive Supplier

	Country	Company	Site	Total (kilotonnes chlorine)	D	M	Others
55	Norway	Borregaard	Sarpsborg	40		40	
56	Norway	Elkem	Bremanger	11		11	
57	Norway	INOVYN	Rafnes	315		315	
Norway Total				366	0	366	0
58	Poland	PCC Rokita	Brzeg Dolny	186		186	
60	Poland	Anwil	Włocławek	195		195	
Poland Total				381	0	381	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 de la Frontera	44		44	
65	Spain	Ercros	Sabiñanigo	45		45	
66	Spain	Ercros	Vila-seca	172		172	
67	Spain	Electroquímica de Hernani	Hernani	30		30	
100	Spain	Biomca Química	Santa Cruz de Tenerife	5		5	
70	Spain	Química del Cinca	Monzón	45		45	
72	Spain	Bondalti Chemicals	Torrelavega	68		68	
Spain Total				409	0	409	0
75	Sweden	INOVYN	Stenungsund	123		123	
Sweden Total				123	0	123	0
77	Switzerland	CABB AG	Pratteln	47		47	
Switzerland Total				47	0	47	0
98	UK	Runcorn MCP	Runcorn	440		440	
85	UK	Brenntag	Thetford	7		7	
97	UK	Industrial Chemicals Ltd	West Thurrock	44		44	
UK Total				491	0	491	0
Grand Total				11,997	1,312	9,509	581
Per process					11.5%	83.4%	5.1%

Competitive Supplier

Euro Chlor submits data to ETS State Aid Guidelines

Maintaining compensation for the EU ETS costs is a priority within the Competitive Supplier element of Euro Chlor's Mid-Century Strategy as electricity is one of the key ingredients for chlor-alkali production. In September 2020, the European Commission (EC) launched new EU ETS State Aid Guidelines for indirect costs and held a public consultation to collect input to the legislative proposals. Using input from its Energy Task Force (TF), Euro Chlor contributed to the Cefic response to the consultation.

In May 2021, the Competition Directorate-General of the EC presented the draft efficiency benchmark value for chlorine for phase IV of the EU Emission Trade System (ETS). The Euro Chlor Energy TF commented on this value, submitting supporting data. The EC subsequently reported that the Euro Chlor data were of good quality and will be considered. The official benchmark and date of publication were unknown at the time of publishing.

The Energy TF also addressed the Carbon Border Adjustment Mechanism (CBAM) and other key elements of the EC's Fit for 55 package launched in July 2021.

Regulatory affairs topics prioritised, and new communications activities launched

Euro Chlor's Regulatory Affairs Committee (RAC) examined the possible regulatory actions related to the EU's Green Deal ambitions. These actions were subsequently prioritised based on the anticipated impact on the chlor-alkali sector and Euro Chlor's ability to influence the decision-making process. The RAC also examined the best placed Euro Chlor groups to deal with these topics. Specific discussions took place on the Chemical Strategy for Sustainability (CSS). The RAC concluded that additional KPIs might be needed in future, as part of Euro Chlor's third Sustainability Programme.

Euro Chlor members have also been supporting a Cefic activity to regularly update authorities on the availability of active chlorine disinfectants, as well as following an EC activity assessing options to 'restrict' access to chemicals that could be used by terrorists.

Meanwhile, Euro Chlor launched the **first two 17 Chlor-Alkali Careers videos** (<https://www.eurochlor.org/17careers>), a new video showing how **energy efficiency is a Chlorine Thing** and **new chlorine, caustic soda and caustic potash trees**.



Read more details at:

<https://chlorineindustryreview.com/competitiveness>

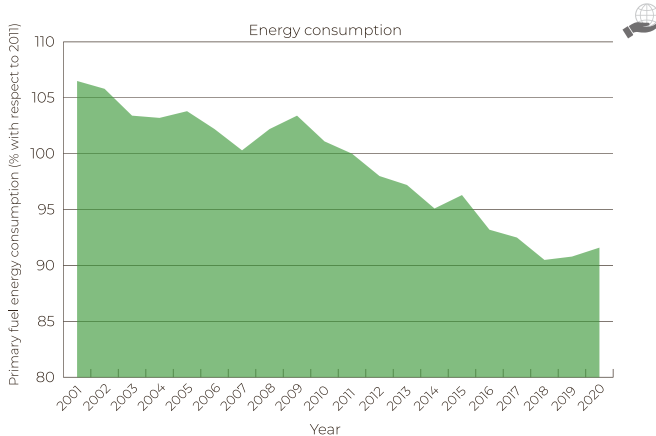


Energy consumption



Slight increase in energy consumption

Energy consumption increased slightly in 2020 to 91.6% (from the 2019 level of 90.8%), taking 2011 as the reference year.

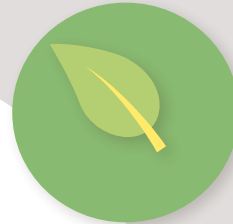


From 2011 to mid-2018, energy consumption declined mainly due to the phase-out of mercury technology. The recent small rise may be partly explained by a slight increase in the electricity usage of the electrolyzers. This in turn is due to the aging of membranes and electrodes, or higher steam consumption as an effect of the lower operating rates. It is expected that energy use will stabilise in the coming years as there are no new large developments foreseen. This will be impacted by the effect of aging, renewal of membranes and electrodes and conversion of older technologies to more modern zero-gap technologies.

Fit for 55 topics and potential consequences

Euro Chlor's Energy Task Force (TF) has been investigating the potential consequences and challenges for our sector from the 'Fit for 55' package. This includes the European Commission's Energy Efficiency Directive (EED), Renewable Energy Directive (RED), Environmental protection and Energy Aid Guidelines (EEAG) and Energy Taxation Directive (ETD). All are under review and were also discussed at earlier Euro Chlor Energy TF meetings.

The new Fit for 55 package addresses climate challenges and impacts our industry, but we will play a role in helping Europe meet its goals.



Kristof May

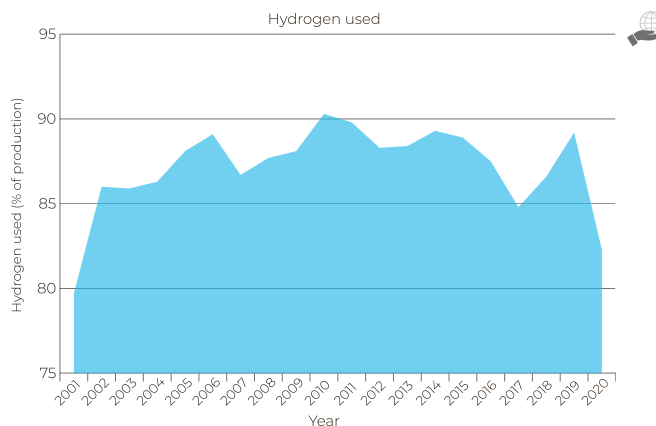
Regulatory Affairs
Manager

Hydrogen use



6.8% decrease in hydrogen use versus last year.

Euro Chlor produces some 270,000 tonnes/year of hydrogen on average. Even though it is our ambition for 2030 to use 100% of this, currently we do not. This year, hydrogen utilisation even decreased from 89.1% in 2019 to 82.3% in 2020, which is the lowest figure in 19 years. This may be explained by less stable production levels, making it more difficult to utilise the hydrogen outlet.



Euro Chlor launches its own Hydrogen Task Force, and hydrogen infographic

Mid-2020, Euro Chlor launched a Hydrogen Task Force on behalf of Cefic, which served as a platform for discussion and data collection on hydrogen across the whole chemical industry. The overarching activities of this group were taken over by a new Cefic Hydrogen Network of Experts. Meanwhile, Euro Chlor continued hydrogen-related activities in its own new Euro Chlor Hydrogen Task Force. Our members have been discussing the first results of the data collection on the production and utilisation of hydrogen in our sector and are in the process of mapping out the barriers, difficulties, and opportunities for reaching 100% hydrogen utilisation.

Importantly, Euro Chlor also developed a new infographic showing how low carbon our hydrogen is as a by-product.



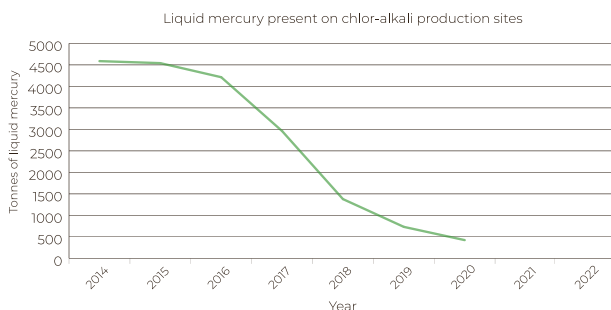
Read more details at:

<https://chlorineindustryreview.com/climateneutrality>

Euro Chlor members approaching end of mercury conversion

Following the phase-out of mercury technology by the end of 2017, any remaining liquid mercury must be converted to mercury sulfide and stored in a salt-mine by the end of 2022. This process is expected to be completed well before the regulatory deadline. In the last year, 499 tonnes of mercury were converted with approximately 384* tonnes of mercury still present at those sites which formerly operated chlor-alkali mercury technology.

*Mercury for alcoholate production is not included in these figures.



We also kicked off a new "cradle to gate" Eco-Profile study, which on completion will be valuable for our downstream stakeholders and help provide a data-rich baseline for our Mid-Century Strategy and sustainability activities.

Work has continued on reporting and studying the use of PFAS by the chlor-alkali industry. This has been given a new priority given the European activities on a PFAS restriction under REACH, launched in 2021.



Read more details at:

<https://chlorineindustryreview.com/circularity>



Euro Chlor has started to find more innovative ways to increase recycling and minimise the waste from our production processes.



Richard Malchow

Chairman of the
General Technical Committee



Euro Chlor is one of 10 Sector Groups in the Cefic Halogens Industry Sector, which has now launched its own Board.



Marleen Pauwels
Executive Director

Euro Chlor Chair forms part of Halogens Industry Sector Board

Euro Chlor is one of 10 Sector Groups operating within the Halogens Industry Sector in Cefic. This brings together a group of inorganic basic chemicals that are essential building blocks in a multitude of products. Euro Chlor Management Committee Chair Wouter Bleuwx represents Euro Chlor in the new Halogens Industry Sector Board that has been set up to help integrate the Sector Groups within Cefic. Jacques Sturm of Vynova was unanimously elected as the first Chair of this Board.

European Chlorinated Solvents Association (ECSA) update

Over the past year, ECSA nominated Thorsten Schulz of Nobian as its new Management Committee Chair, updated its two PER in a Nutshell and Recommendations for Cleaning Machines documents and focused on the following key regulatory and technical topics:

- Submitting consolidated comments to the EC Ozone Depleting Substances (ODS) Regulation;
- Advocating for a risk-based approach related to the PMT (persistent, mobile and toxic) criteria set by Germany's Umweltbundesamt (UBA) and;
- Contributing to the ESAD chlorinated solvents questionnaire revision along with the Cefic SQAS team.

Highlights from other Halogens Sector Groups in our Online Industry Review

Highlights from the other eight Halogens Sector Groups – Chloro Alkanes Sector Group, Chloroformates Sector Group, European FluoroCarbons Technical Committee (EFCTC), Eurofluor (CTEF, Comité Technique Européen du Fluor), European Sulphuric Acid Association (ESA), Fluorinated Products and PFAS for Europe (FPP4EU - a new Sector Group set up in 2021 to address PFAS), Potassium Sector Group and Sodium Chlorate Sector Group – can be found at <https://chlorineindustryreview.com/halogens>.

Over the past year, as across most of the world, Europe continued to be impacted by the COVID-19 crisis. We all continued to adapt accordingly, combining working from home with a gradual return to the office and adopting a 'new kind of normal' with all our stakeholders. In 2021, Euro Chlor held a series of **'online roadshow' meetings** with members to discuss Euro Chlor and the Mid-Century Strategy, as well as the individual company priorities, to ensure collaboration continued. The Euro Chlor Working Groups and Committees also continued to meet virtually to progress and endorse our key activities.

Technology Conference postponed

Following the onset of the COVID-19 crisis, Euro Chlor postponed our **11th International Chlorine Technology Conference and Exhibition** in Warsaw, Poland by one year to 4-6 May 2021. Unfortunately, as the crisis continued, this event was postponed again to 3-5 May 2022. In its place, 85 Euro Chlor members and partners attended a two-day virtual **interim Technical Sessions** on 4-5 May 2021 to get updates on our Mid-Century Strategy and related topics.

Connecting with our downstream and global stakeholders

This past year, we also kept developing our connections with our downstream stakeholders, most notably the European Council of Vinyl Manufacturers (ECVM) and the European Diisocyanate & Polyol Producers Association (ISOPA).

Euro Chlor also managed the World Chlorine Council® secretariat for the third year. Work included organising a successful online safety seminar and a strategic Spring meeting.

Catherine Potter

Communications Manager



We presented our Mid-Century Strategy to members and key downstream user associations and this outreach is already having promising results.



Read more details at:

<https://chlorineindustryreview.com/collaboration>



Members

Altair Chimica SpA
<http://www.altairchimica.com>

Anwil SA
<http://www.anwil.pl>

Arkema S.A.
<https://www.arkema.com/en>

BASF SE
<http://www.BASF.com>

Biomca Química SL
<http://www.biomcaquimica.com>

Bondalti Chemicals SA
<http://www.bondalti.com>

Borregaard AS
<http://www.borregaard.com>

BorsodChem Zrt.
<http://www.borsodchem-group.com>

Brenntag UK Ltd
<http://www.brenntag.co.uk>

CABB AG
<http://www.cabb-chemicals.com>

CABB GmbH
<http://www.cabb-chemicals.com>

Chimcomplex SA
<http://www.chimcomplex.ro>

Covestro AG
<http://www.covestro.com>

Donau Chemie AG
<http://www.donau-chemie.com>

Dow Deutschland Anlagengesellschaft mbH
<http://www.dow.de>

Electroquímica de Hernani
<http://www.ehersa.com/es>

Electroquímica Onubense, S.L.
<http://www.electroquimicaonubense.es>

Ercros SA
<http://www.ercros.es>

Evonik Performance Materials GmbH
<http://www.evonik.com>

Fater S.p.A.
<http://www.fater.it>

Industrial Chemicals Limited (ICL)
<http://www.icgl.co.uk>

INOVYN ChlorVinyls Limited
<http://www.inovyn.com>

Kapachim SA
<http://www.kapachim.com>

Kemira Oyj
<http://www.kemira.com>

KEM ONE
<http://www.kemone.com>

Kuhlmann Europe
<http://www.kuhlmann-europe.com/en>

Micro Bio (Irl.) Ltd.
<http://www.microbio.ie>

MSSA SAS
<http://www.metauxspeciaux.fr>

Nobian
<http://www.nobian.com>

PCC Rokita SA
<https://www.pcc.rokita.pl>

Química del Cinca SLU
<http://www.qcinca.es>

Società Chimica Bussi S.p.A.
<http://www.chimicabussi.it>

Spolek pro chemickou a hutni výrobu, a.s. (Spolchemie)
<http://www.spolchemie.cz>

Vencorex
<http://www.vencorex.com>

VESTOLIT GmbH (Orbia)
<http://www.vestolit.de>

Vinnolit GmbH & Co. KG
<http://www.vinnolit.com>

Vynova Group
<https://www.vynova-group.com>

Adama Makhtshim Ltd
<http://www.adama.com/en>

AGC Chemicals Europe Ltd.
<http://www.agcce.com>

Ak-Kim Kimya Sanayi ve Tic. A.S.
<http://www.akkim.com/tr/en>

Al Kout Industrial Project Co
<https://alkoutprojects.com>

Al-Baha Company for Caustic and Chlorine Industry LLC
<https://bccj-jo.com>

ANE - asociación nacional de electroquímica
<https://www.cloro.info/en/>

Angelini A.C.R.A.F. S.p.A.
<http://www.angelini.it>

Applitek NV/SA
<http://www.applitek.com>

AQUAGROUP AG
<http://www.aquagroup.com>

Asahi Kasei Europe GmbH
<https://www.asahi-kasei.eu>

Axiall, LLC - Westlake Chemical
<https://www.westlake.com>

Banner Chemicals Limited
<https://www.bannerchemicals.com>

BARCHEMICALS SRL
<https://www.barchemicalsgroup.com>

BATREC INDUSTRIE AG
<https://www.batrec.ch>

BELL-O-SEAL VALVES P. LIMITED
<http://bellowseal.co.in>

Blackhall Engineering Limited
<https://www.shawvalves.co.uk>

Bluestar (Beijing) Chemical Machinery Co., Ltd.
<http://www.bcmc.chemchina.com>

BOCHEMIE a.s.
<https://www.bochemie.cz/en>

Caffaro Brescia S.r.l.
<http://www.caffarobrescia.com>

CARBUROS METALICOS SA
<http://www.carburos.com>

CBee Europe Ltd - The Clorox Company
<https://www.clorox.com>

Chemieanlagenbau Chemnitz GmbH (C.A.C.)
<http://www.cac-chem.de>

Chemoform AG
<http://www.chemoform.com>

Chemtec UK Ltd - Armstrong Chemtec Group
<http://www.rmarmstrong.com>

CIA - Chemicals Industries Association Ltd
<http://www.cia.org.uk>

Coogee Chlor Alkali Pty Ltd
<http://www.coogee.com.au>

De Nora Deutschland GmbH
<http://www.denora.com>

Descote
<http://www.descote.com>

DSD Chemtech Projects & Services GmbH
<http://www.dsd-chemtech.com>

DUPONT ASTURIAS, S.L.
<http://www.dupont.com>

Econ Industries Services GmbH
<http://www.econindustries.com>

ERAMET SANDOUILLE SAS
<https://www.eramet.com/en>

Essencia ASBL
<https://www.essencia.be>

Eu Salt aisbl (European Salt Producers' Association)
<https://eusalts.com>

Eynard Robin
<http://www.groupe.eynardrobin.com>

Fariman Petrochemical Industries
<https://farimanpetrochemical.en.ec21.com>

FEDERCHIMICA - Federazione Nazionale dell' Industria Chimica
<http://www.federchimica.it>

Garlock GmbH, an EnPro Industries company
<https://www.garlock.com/en>

Gazechim
<http://www.gazechim.com>

GEMÜ
https://www.gemu-group.com/en_EN

GHC Gerling, Holz & Co Handels GmbH
<http://www.ghc.com>

Haixing Eno Chemical Co., Ltd. (Eno Chem) - ENOCHLOR
<https://www.enochem.com.cn>

HELM AG
<http://www.helmag.com>

Hexion B.V.
<https://www.hexion.com>

Hunt & Mitton Valve Company
<https://www.huntandmitton.com>

Huntsman (Europe) BVBA
<https://www.huntsman.com>

Partners

Partners

Hydrus Hygiene Ltd

<https://hydrus-hygiene.com>

IKEM - Innovation and Chemical Industries in Sweden

<http://www.ikem.se>

INQUIDE S.A.

<https://www.fluidra.com>

IXOM

<https://www.ixom.com>

Jiangsu Ancan Technology Co., Ltd.

<https://www.ancan-cn.com>

Jordan Bromine Company Limited - JBC

<https://www.jordanbromine.com>

Kronos Worldwide, Inc.

<https://www.kronostio2.com/en>

Kurotec-KTS Kunststofftechnik Stade GmbH

<http://www.en.kurotec-kts.de>

LOMBARDA H Srl

<https://www.lombardah.com>

Lonza Group Ltd

<https://www.lonza.com>

Lubrizol Deutschland GmbH

<https://www.lubrizol.com>

Mersen Pgy SAS

<https://www.mersen.com>

META Régénération

<https://meta-regeneration.fr>

Nankai Chemical Co., Ltd.

<https://www.nankai-chem.co.jp/top/nankai-chemical-top/>

Neeltran, Inc.

<https://www.neeltran.com>

Nippon Soda - Nisso

<https://www.nippon-soda.co.jp/e/>

Nirou Chlor Co.

<https://www.nirouchlor.com>

Nuberg Engineering Limited

<https://www.nubergetpc.com>

Olin - BC Switzerland GmbH

<https://www.olin.com>

Permascand AB

<https://www.permascand.com>

Pfeiffer Chemie-Armaturenbau GmbH

<https://www.pfeiffer-armaturen.com>

Phönix Armaturen-Werke Bregel GmbH (Curtiss-Wright)

<https://www.cw-valvegroup.com>

Powell Fabrication & Manufacturing LLC.

<https://www.powellsolutions.com>

Prince Rubber & Plastics Co., Inc.

<https://www.princerp.com>

Qatar Vinyl Company (QVC) Q.P.J.S.C.

<https://qapco.com/qvc/>

Recherche 2000 Inc. - R2

<https://r2.ca>

Richter Chemie-Technik GmbH

<https://www.richter-ct.com>

Salco Products, Inc.

<https://www.salcoproducts.com>

SALINEN AUSTRIA AG

<https://www.salinen.com/en>

Sasol Limited

<https://www.sasol.com>

SAVINO BARBERA Srl

<https://www.savinobarbera.com>

SCHP - Association of Chemical Industry of the Czech Republic

<https://www.schp.cz>

Scienceindustries

<https://www.scienceindustries.ch>

Senior Aerospace Ermeto

<https://www.senior-aerospace-ermeto.com>

SEQENS Acids & Derivatives

<https://www.seqens.com/en>

SGL Carbon GmbH

<https://www.sglcarbon.com>

SIEM Supranite

<https://siem.fr>

Sigura - Innovative Water Care Europe SAS

<https://www.sigurawater.com>

Sinopec Europa GmbH

<http://www.sinopecgroup.com/group/en>

Sojitz Europe plc

<https://www.europe.sojitz.com>

SPOLANA s.r.o

<https://www.spolana.cz/En>

STEULER-KCH GmbH

<https://www.steuler-kch.de>

Syngenta Crop Protection Monthey SA

<https://www.syngenta.ch>

Technip Energies

<https://www.technipenergies.com>

Teijin Aramid BV

<https://www.teijinaramid.com>

thyssenkrupp Uhde Chlorine Engineers GmbH

<https://www.thyssenkrupp-uhde-chlorine-engineers.com/en>

Partners



Partners

Tosoh Corporation

<https://www.tosoh.com>

Tronox Pigments (Holland) B.V.

<https://www.tronox.com>

Unilever Innovation Centre Wageningen B.V.

<https://www.unilever.com>

Van den Heuvel Watertechnologie bv

<http://www.vdhwater.com>

Vantage Leuna GmbH

<https://www.vantage-leuna.de>

VCI - Verband der Chemischen Industrie e.V.

<https://www.vci.de>

Veltek Associates, Inc. - VAI®

<https://sterile.com/>

VNCI - Vereniging van de Nederlandse Chemische Industrie

<https://www.vnci.nl>

Wood Italiana S.r.l.

<https://www.woodplc.com>

**Xomox International GmbH & Co. OHG - Crane ChemPharma
& Energy**

<https://cranecpe.com>

The full version of this report is available from:

<https://chlorineindustryreview.com>.

Euro Chlor supports a safe, competitive and green chlor-alkali industry for Europe.

Chlor-alkali is an essential building block for the manufacture of numerous products that we rely on every day. Across Europe, millions of jobs are dependent on the availability of competitively priced chlor-alkali supplies.

Chlor-alkali chemistry is also vital for the development of the innovative materials we will need in the future.

Euro Chlor's 37 producing members operate 62 manufacturing locations in 19 European countries, representing 97% of all European production capacity.

Euro Chlor represents the interests of chlor-alkali producers in Europe; encourages best practices in safety, health and environmental protection and promotes the economic and social benefits of chlor-alkali and the many industries that rely on them.

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, a global network of regional organisations that represents producers accounting for more than 85% of worldwide chlor-alkali production capacity.



<https://linkedin.com/company/eurochlor>



<https://twitter.com/eurochlor>



<https://facebook.com/eurochlor>

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A sector group of Cefic

European Chemical Industry Council - Cefic aisbl
EU Transparency Register n° 64879142323-90

Rue Belliard 40
1040 Brussels, Belgium
Tel. +32 476 76 02 27
eurochlor@cefic.be
<https://www.eurochlor.org>