



Hydrogen is a by-product of the chlor-alkali process. It is co-produced with chlorine and caustic soda/ potash and can be used to make chemicals and steel, to store energy/ as an energy source in (e.g.) production of heat or for transportation.

This hydrogen is very pure and has a low carbon footprint. It can even be renewable when renewable energy is used.

Around 270,000 tonnes H<sub>2</sub>/ year are available from chlor-alkali production across Europe; ready to help kick-start the continent's hydrogen economy. The figures below show where and how much is available.

At present though there are barriers to making such hydrogen ready for Europe...

## ● Recognition and Certification

There is a role for our low carbon, high-purity hydrogen in Europe that is often not considered. The current availability of certification schemes is further limiting roll out of this hydrogen.

## ● Infrastructure and Access

Due to unfavourable financial conditions, investment is lacking in filling stations, pipelines and infrastructure to support the full use of hydrogen across Europe. The existing infrastructure needs to be accessible (e.g. via third party access rights) but should not impact the quality.

## ● Renewable energy

In order to become a producer of renewable hydrogen, abundant renewable electricity is needed that carries the correct 'profile'. Access to Power Purchase Agreements is needed for everyone at competitive prices

## ● Flexibility

Demand response and storage options are needed so that people can match renewable electricity output with the production of energy intensive processes like ours.

Hydrogen from chlor-alkali is ready, today, across Europe to help kick-start Europe's hydrogen economy!

## ● Available today

European chlor-alkali has a hydrogen production capacity of **270,000 tonnes/year**, meaning that around 3.5% of the total hydrogen made in Europe is available today from chlor-alkali production sites. This amount is equal to a 2GW water electrolyser.

## ● Very low carbon or even renewable

Hydrogen from the chlor-alkali process has a **low carbon footprint of 0.2 - 3.16 kg CO<sub>2</sub> eq/kg H<sub>2</sub>**, depending on the electricity type (renewable or conventional electricity). This footprint is over 90% lower than hydrogen from fossil fuel-based processes.

## ● Ready to kick-start the European Hydrogen Economy

Currently, 87,000 tonnes/year of our hydrogen is used as a chemical building block, 110,000 tonnes/year as fuel and 31,000 tonnes/year remains unused. The last two are **available for new 'carbon neutral' applications**. They could help to kick-start Europe's low carbon and green Hydrogen Economy.

### Installed hydrogen production capacities (kt H<sub>2</sub>/year)

1<sup>st</sup> January 2023

- < 2 kt/year
- < 2 - 5 kt/year >
- < 5 - 10 kt/year >
- < 10 - 17 kt/year >
- > 17 kt/year

