HyNet North West is an exciting new hydrogen and carbon capture project in North West England and North Wales. It is paving the way for a more sustainable future that will contribute significantly to regional and national 'net zero' targets, while creating and protecting local jobs. The first step of this journey is to store carbon dioxide that is currently being released into the atmosphere securely under the seabed.

Carbon Capture and Storage

A critical element of HyNet North West

Carbon dioxide (CO_2) released into the atmosphere is a major cause of climate change. Reducing CO_2 emissions is an essential part of managing our climate emergency. The UK Government has therefore established a net zero emissions target. This means that by 2050, any CO_2 emissions to the atmosphere must be offset by equivalent emissions removal.

Nearly 70% of the UK's local authorities have set even stronger targets, including the Greater Manchester Combined Authority, Liverpool City Region, Cheshire West and Chester Council and Flintshire County Council, which are aiming for net zero carbon emissions by 2040 or earlier.

Industrial processes produce a huge amount of CO_2 that is released to the atmosphere. To meet our targets, we need to significantly reduce these emissions. This can be achieved by switching to low carbon fuel types, such as hydrogen, or by directly capturing the emissions via a process known as Carbon Capture and Storage (CCS).

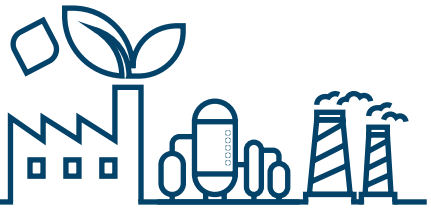
How are we capturing and storing carbon as part of HyNet North West?

CCS is an important part of the HyNet North West low carbon cluster.

We will be capturing CO_2 from existing industrial premises in the Ince and Stanlow area, as well as CO_2 that is produced from the new low-carbon hydrogen production plant at Stanlow. The CO_2 will then be transported safely by underground pipeline to the depleted gas reservoirs in Liverpool Bay.

Natural gas has been safely extracted through production wells for over 25 years in Liverpool Bay. Extraction of the gas has progressively left space within the sandstone reservoir that can be used for CO_2 storage.

The capacity in the reservoirs is large but finite, and will not be exceeded.



How does Carbon Capture and Storage (CCS) work?

CCS is a proven technology that can capture up to 95% of CO_2 emissions produced in industrial processes.

1. The first step involves installing technology that will capture CO_2 emissions. For HyNet, these will be installed on existing industrial premises to capture the CO_2 that is currently generated from burning natural gas as a fuel or as part of the manufacturing process.

2. The CO_2 is then compressed so that it can be transported via a pipeline. For HyNet, we are currently consulting on our early proposals for the CO_2 pipeline which will connect industry sites to CO_2 storage facilities in Liverpool Bay.

3. The CO_2 is subsequently stored underground in carefully selected offshore sites. The HyNet CO_2 storage site is a depleted natural gas field beneath Liverpool Bay, which has previously securely held natural gas for millions of years.

How can we ensure safe CCS?

Oil and gas operators are used to ensuring the highest safety standards in their operations. The transition to CCS will be approached in the same way.

Any CCS project, its infrastructure and operation will be strictly regulated by the UK Government's Oil and Gas Authority (OGA) and Offshore Petroleum Regulator for Environment and Decommissioning (OPRED).

Throughout all the phases of operation, CO_2 transportation, injection and its safe containment within the reservoir will be carefully monitored using state of the art techniques (including but not limited to geophysical surveys, pressure sensors, seabed surveys and dedicated monitoring wells).

Can we be sure the CO_2 won't escape?

Gas has remained safely trapped in geological structures such as sandstone reservoirs, like the ones in Liverpool Bay, for millions of years. These reservoirs are deep below the surface of the seabed. The Liverpool Bay CO_2 store will be 1km below the seabed and approximately 20 miles offshore. Hundreds of metres of shale lie over the top of these sandstone reservoirs, making an impermeable layer which traps the gas in place.

The CO_2 will be stored in the same way as the original natural gas. It will remain safely contained in the sandstone reservoirs.