Our decarbonisation vision

Our decarbonisation vision & renewable energy investment

As one of the world's leading suppliers of renewables, RWE is committed to becoming carbon neutral by 2040. To support our 'Growing Green' strategy, we're investing €8 billion net in new clean technologies and infrastructure in the UK between 2024 and 2030.

Our presence in the UK is expanding, bringing in new investment, job opportunities, and economic growth.

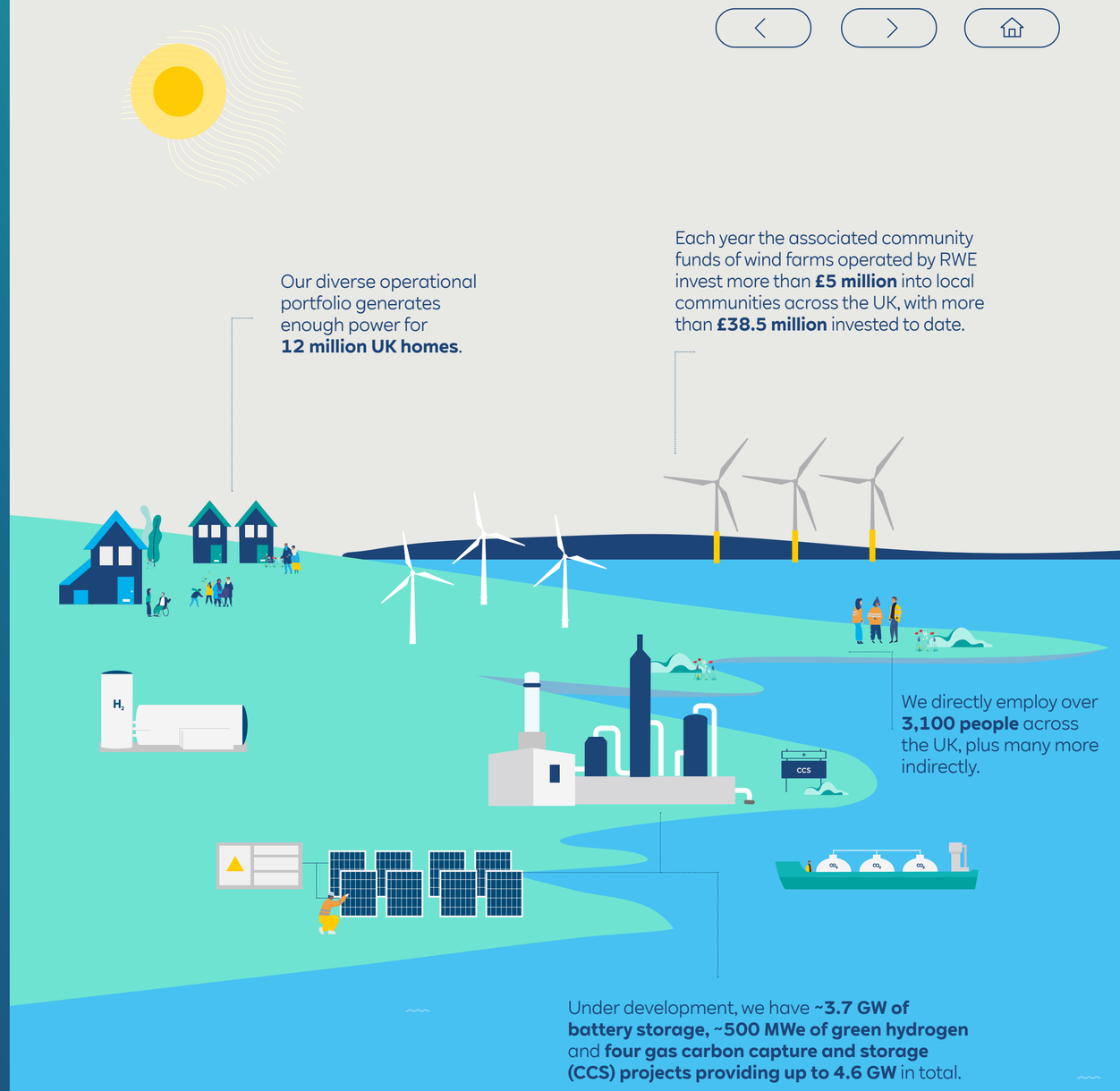
We have over 17 gigawatts (GW) of renewables at various stages of development and construction, including ten new offshore wind farms totalling over 11 GW, approximately 2 GW of onshore wind, and 4.4 GW of solar capacity. In addition to our renewables pipeline, we are developing over 3.7 GW of battery storage and around 500 megawatts electric (MWe) of green hydrogen. Overall, we are the UK's leading power generator, supplying enough energy to power 12 million households each year.

We understand the importance of decarbonising our gas fleet and have reduced the carbon intensity of our UK energy generation by 50% since 2012. We are dedicated to ensuring that our UK gas fleet operations support the country's decarbonisation targets while maintaining supply security.

Why is gas essential to the transition to net zero?

Gas remains a key part of our decarbonisation journey and is crucial for filling the gap when there is insufficient wind or solar energy to meet demand.

The UK government is committed to achieving clean power by 2030. To ensure security of supply, the role of gas will evolve into a 'backup' role, with renewables such as wind and solar providing the majority of generation.



Our flexible power generation ambitions

RWE is decarbonising its operations by investing in low carbon technologies like Carbon Capture and Storage (CCS) and hydrogen combustion.

These technologies are essential for providing decarbonised and reliable energy. By integrating CCS technology and hydrogen combustion into RWE's operations, we contribute to energy security while supporting the UK's transition to low carbon power.

CCS works by capturing carbon dioxide (CO_2) from processes like power generation, preventing it from entering the atmosphere. Hydrogen combustion, on the other hand, burns hydrogen gas (H_2) with oxygen (O_2) to produce clean, low carbon energy.

What are the benefits of CCS and hydrogen combustion?

Environmental

- Lowers greenhouse gas emissions from industries and power stations, helping fight global warming and climate change.
- Acts as a bridge to renewables, allowing us to gradually shift to cleaner energy while still using existing infrastructure.
- CCS can also help reduce ocean acidification.

Economic

- Using domestic fuel sources more cleanly boosts energy security and reduces reliance on energy imports.
- These technologies are scalable, flexible, and provide high-energy density, making them valuable across various industries.

People

- Building and operating new facilities creates jobs in engineering, construction, and maintenance, as well as generating indirect jobs throughout the supply chain.
- Creates training opportunities for employees to upskill their capability and knowledge, enabling adaptation to evolving low carbon technologies.

How does CCS work?

Excess CO_2 in the atmosphere poses a significant challenge as it traps heat, leading to increased global temperatures and contributing to climate change. To mitigate this, we are developing CCS methods to capture CO_2 before it can enter the atmosphere.

1

CO_2 Production

Coal and gas-fired power stations emit gases containing CO_2.

2

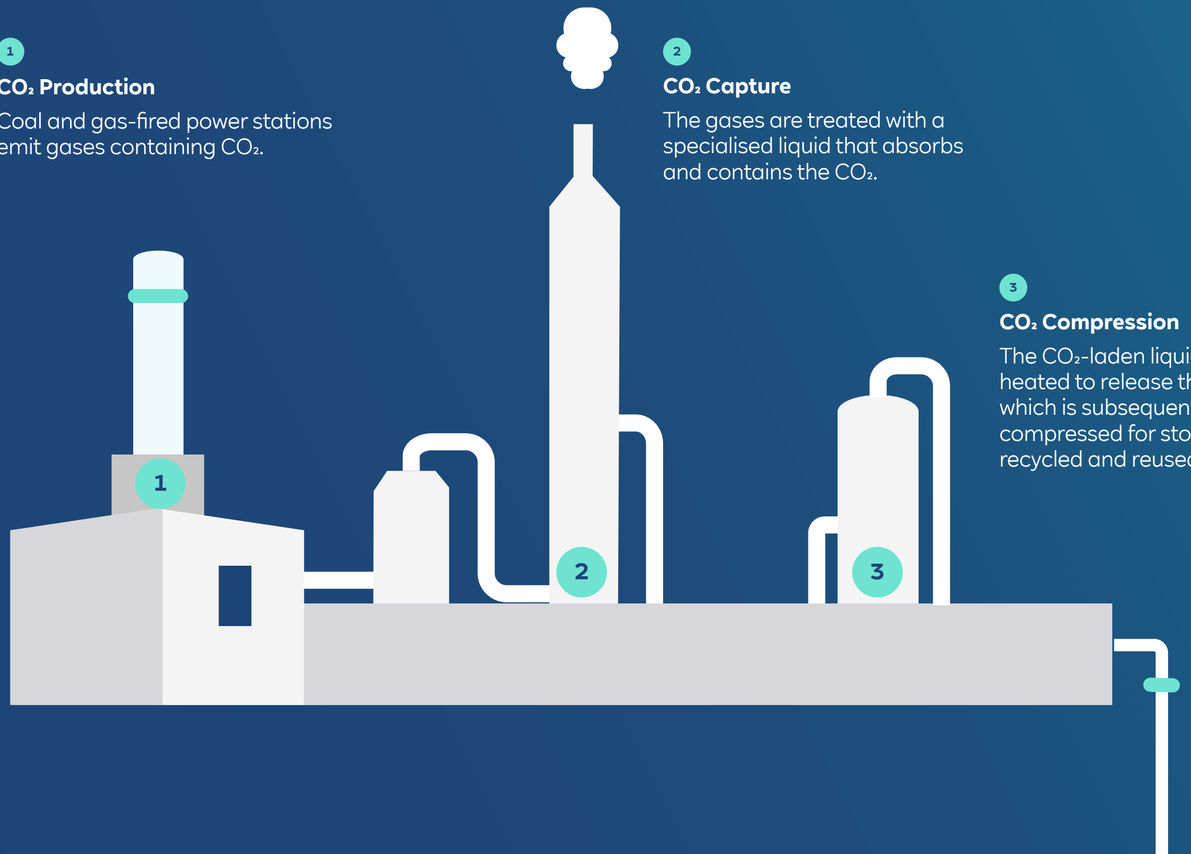
CO_2 Capture

The gases are treated with a specialised liquid that absorbs and contains the CO_2.

3

CO_2 Compression

The CO_2-laden liquid is then heated to release the CO_2 gas, which is subsequently purified and compressed for storage. The liquid is recycled and reused in the process.



Once captured, the CO_2 is transported for utilisation or storage using various methods.

Transportation

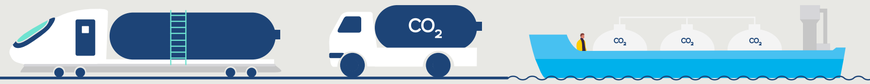
Captured CO_2 is typically transported to storage sites through pipelines, much like oil and gas. When storage sites are distant, trains, trucks or ships may be used.

Storage

The captured CO_2 is injected deep underground into rock formations, where it is securely stored and cannot escape into the atmosphere, preventing it from contributing to climate change.

Utilisation

Where possible, captured CO_2 can be utilised in other industrial and manufacturing processes.



Our decarbonisation technology plan

We are developing several decarbonisation projects across the UK.

As the largest operator of gas-fired power stations in the country, we are exploring carbon capture technology and hydrogen combustion as viable methods to decarbonise our Combined Cycle Gas Turbine (CCGT) power stations. Currently, we are developing CCS at four of our sites, which have a total capacity of 4.6 GW.

RWE is making significant strides in early development work and preparing the necessary documentation for these projects. The environmental studies and surveys required to support the consenting process are already well underway. We are also in the early stages of assessing decarbonisation options at four other sites.

Together, these projects will...

Flexible energy

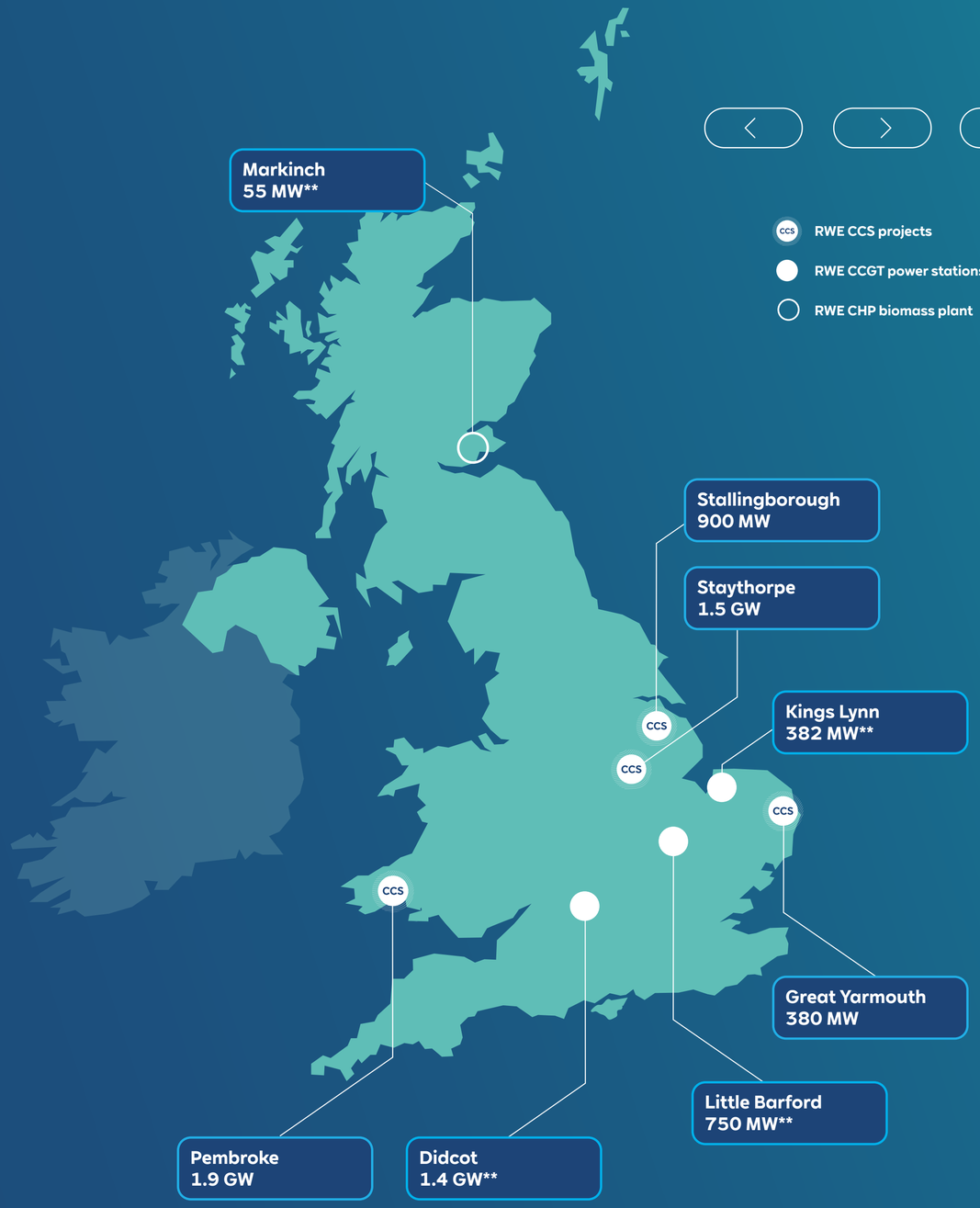
Provide flexible energy to support the renewable transition while maintaining energy security and grid stability.

Emissions reduction

Help our economy transition to low carbon energy by enabling cleaner energy production.

Job creation

Support and create high-quality, long-term operational jobs, as well as thousands of jobs during construction and in the supply chain.



* Combined Cycle Gas Turbine (CCGT) power stations
** Estimated GW/MW output based on current operational capacity. The figures for Pembroke, Staythorpe, Stallingborough, and Great Yarmouth are based on expected output with CCS. This information may be subject to change; all projects are currently being assessed to determine the most appropriate decarbonisation options.

Our decarbonisation projects

Projects in development:

Stallingborough

We plan to build a new CCS-enabled, state-of-the-art CCGT power station with a capacity of up to 900 MW in Stallingborough. This station will provide enough low carbon power for up to 1.8 million homes and will strengthen our role in the Humber's low carbon future, as it is located near wind farms and RWE's Grimsby Hub.

Pembroke

We are working to integrate CCS technology into the existing Pembroke CCGT power station as part of the wider Pembroke Net Zero Centre (PNZC) and the South Wales Industrial Cluster. This project aims to generate up to 1.9 GW of low carbon electricity, enough to power around 4 million homes.

Staythorpe

We are integrating CCS at the existing Staythorpe CCGT power station, which will deliver up to 1.5 GW of decarbonised electricity, enough to power around 3.2 million homes. The site intends to connect to the Viking CCS network for CO_2 transportation and storage.

Great Yarmouth

We are exploring the feasibility of adding CCS technology to the existing Great Yarmouth CCGT power station. Once fitted, it could produce enough low carbon electricity to power up to 820,000 homes. With its connection to regional gas infrastructure, the station is ideally located for future CCS developments.

Projects under assessement:

Kings Lynn

The Kings Lynn CCGT power station has a capacity of 382 MW and can provide energy to around 400,000 homes. It's highly flexible, operating at 57% efficiency, with space available for a potential carbon capture plant. We are also exploring the possibilities of hydrogen combustion at the site.

Little Barford

The Little Barford CCGT power station has a capacity of up to 750 MW, generating enough electricity to meet the demands of over half a million households. We are currently assessing the most suitable decarbonisation options to effectively reduce the sites environmental impact.

Didcot

The Didcot B power station has a net capacity of 1.4 GW, generating enough electricity to power around one million households. We have identified hydrogen combustion as the most suitable decarbonisation solution and are conducting ongoing research in this area.

Markinch

The Markinch Combined Heat and Power (CHP) biomass plant has a capacity of 55 MW and is the largest plant of its kind in the UK. We are assessing various decarbonisation options to identify the most suitable strategy for the site.

Our pledge
delivering projects responsibly

We are committed to delivering projects that benefit both the local community and the natural environment. As we expand our low carbon projects in the UK, we will...

Invest in local communities

- Commit to regular and meaningful engagement with the local community throughout the development process. We will listen to the community's input to refine and improve project proposals.

Work with integrity

- Prioritise using local labour and contractors during the construction and operation of our sites to stimulate growth and investment in the local economy. Additionally, we will support local businesses through supply chain spending and business rates.

Respect the environment

- Ensure sustainable waste management and recycling practices throughout the construction, operation, and decommissioning of our projects.
- Drive the highest traceability and environmental sustainability standards across all our supply chains in partnership with our suppliers and partners in the UK.

Find out more

To learn more about our projects and wider decarbonisation ambitions, please visit our website:

www.rwe.com