

## A Proposition for an Industrial Carbon Capture & Storage (CCS) Pilot

February 2017

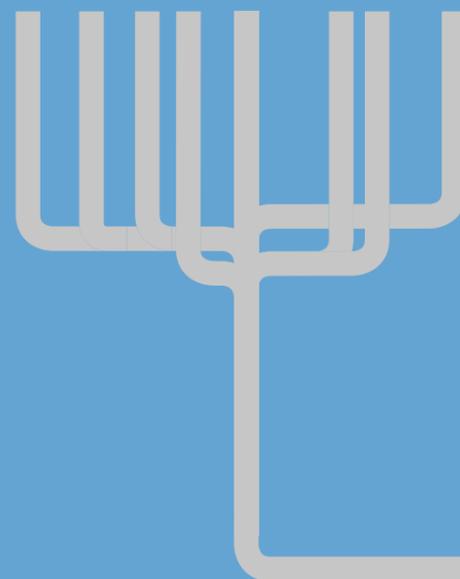
- INDUSTRIAL GROWTH
- COST-COMPETITIVE
- EMISSION REDUCTION
- VIABLE TECHNOLOGY
- IDEAL LOCATION
- THE RIGHT TIME

## Teesside Collective is a ready-made, cost-effective opportunity for Britain to start removing damaging carbon dioxide from its vital process and chemical industries.

With one of the highest concentrations of industry in the country, and located close to North Sea carbon storage sites, a Carbon Capture and Storage network in Teesside will be as significant as offshore wind and new nuclear power in accelerating the UK's journey towards a competitive, low carbon economy.

Experience from other projects and our engineering studies underscore that the project is technically feasible. Our work on financing shows it can be done cost-effectively. And, if we can get it under way now, it will vastly increase the chances of the UK meeting its 2050 emission reduction goals.

We are now looking to the UK Government to work with us to bring to reality a **Teesside Collective** pilot, to place Teesside at the forefront of a new, clean industrial future for the UK.



### How can we kick-start Industrial CCS in the UK?

- Teesside proposes to start CCS in the UK cost-effectively, with a pilot project capturing and storing 11m tCO<sub>2</sub> over 15 years. Once the network is proven, this would expand to capture and store 10m tCO<sub>2</sub> per year as power stations and more industrial companies join the network.
- The pilot would cost £110m to construct and £29m per year to operate, including a transport and storage fee
- The pilot could repay up to £31 million per year to the Government in carbon savings
- Teesside will establish a CCS Development Company to bring the project to fruition
- The pilot could be capturing and storing CO<sub>2</sub> in six years

### What are we asking from the Government?

- Allocate £15m in FEED funding for the pilot
- Support investment in a suitable store for Teesside

**This is a cost-effective, no-regrets approach that is attractive for Government and industry alike. The time is now to make Industrial CCS a reality.**

## ✓ INDUSTRIAL GROWTH

Investment in **Teesside Collective** would:

- Build a national strategic asset for the UK
- Increase the competitiveness of UK industry
- Grow a productive, high wage sector
- Enhance the UK's low carbon economy
- Attract inward investment from international firms
- Support the long-term sustainability of UK industry

Tees Valley chemical and process industries contribute



to the UK economy each year

GVA per head in the Tees Valley chemical sector is

2x

higher than the UK national average

Average wages in the Tees Valley chemical sector are

30%

higher than the UK national average



Tees Valley chemical and process industries

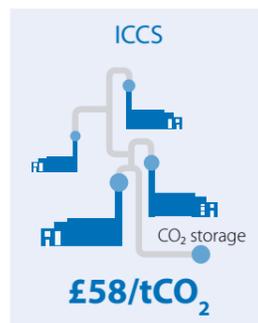
support a workforce of 12,000

## ✓ COST-COMPETITIVE

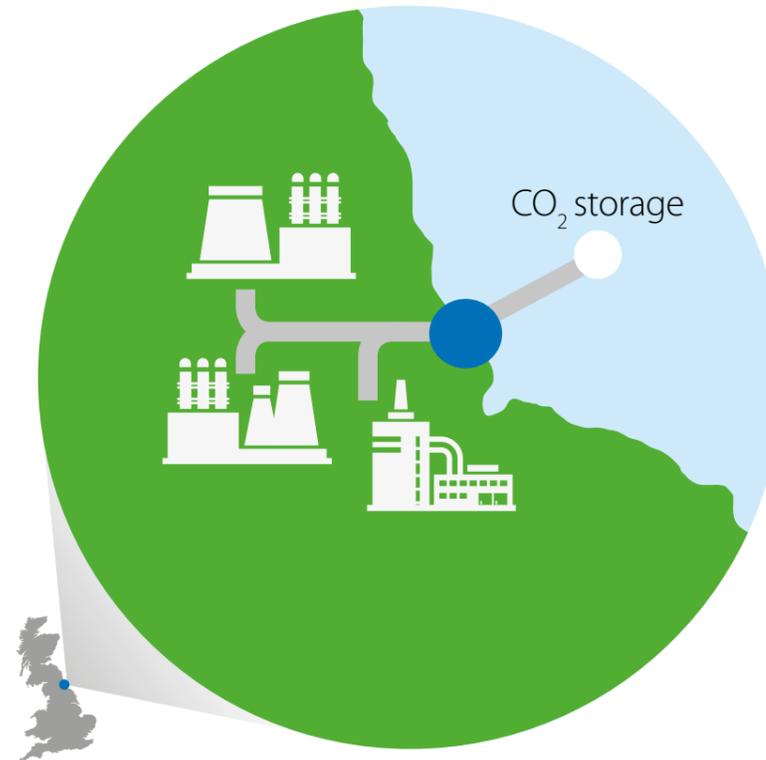
Investment in **Teesside Collective** would:

- Enable the UK to take advantage of some of the cheapest available carbon abatement in the economy
- Cost £58/tCO<sub>2</sub> in total, including access to a transportation and storage network
- Return up to £41/tCO<sub>2</sub> to Government in carbon saving income
- Start a small and cost-effective pilot project which would cost £110m to build and £29m per year to operate, including a transport and storage fee
- Allow even further cost reduction during FEED stage by choosing one of the two well-characterised UK competition stores, using best available technology and maximising sharing infrastructure

Cost comparison with other low carbon options:



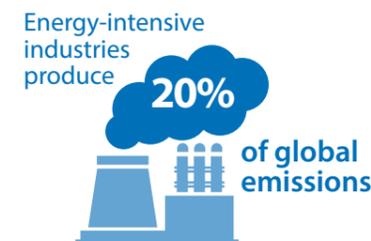
## Teesside in Tees Valley



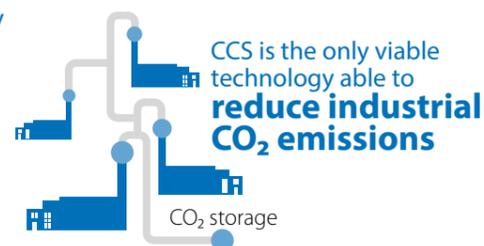
## ✓ EMISSION REDUCTION

Investment in **Teesside Collective** would:

- Be a cost-effective method of reducing the UK's CO<sub>2</sub> emissions
- Help meet UK, EU and global targets for carbon reduction
- Create a competitive industry, reducing risk of carbon leakage
- Capture and store 11m tonnes over 15 years in the pilot stage. Once the network is proven, we could capture and store 10m tCO<sub>2</sub> per year as power stations and more industrial companies join the network.



Some industries inherently produce as part of their industrial processes



## ✓ VIABLE TECHNOLOGY

- CCS is a proven technology, already successfully capturing nearly 4m tCO<sub>2</sub> per year from industrial sites in the US, Canada and United Arab Emirates
- Government-funded work has proved Teesside Collective is technically and economically viable
- Supportive infrastructure and skills already in place

## ✓ IDEAL LOCATION

Teesside in Tees Valley is the ideal location to pilot a CCS network:

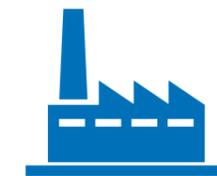
- Home to nearly 60% of the UK's energy-intensive industry
- The most integrated industrial cluster in the UK, creating economies of scale that make CCS a low cost option
- CO<sub>2</sub> is already captured by some plants in Teesside and exported for commercial use
- On the coastline, with close proximity to storage sites in the North Sea
- Local industry is already on board and scoping work has been completed
- Teesside Collective would be the template for similar networks in other regions of the UK
- Good expansion options – ideal location for power plants and hydrogen production technologies:

### Hydrogen

H<sub>2</sub>

Tees Valley already produces ½ UK's hydrogen, which can be used for heating and transport fuel

### Power plants



Planning permission in process for a 850MW gas-fired power plant in Teesside

### Industrial symbiosis



Carbon can be captured from industry and sold to companies to use in commercial products

## ✓ THE RIGHT TIME

We have a window of opportunity to invest in Industrial CCS, and **Teesside Collective** is ready:

- The Committee on Climate Change believes Industrial CCS will be needed from the mid-2020s onward if the UK is to stay on track for its 2050 emission reduction goals
- Strong support from local industry – 5 industrial partners have already committed, with more companies in the pipeline
- If we don't start now, we'll lose inward investment to other EU countries
  - Norway is pushing ahead with CCS FEED studies on 3 industrial plants and the government is taking the CO<sub>2</sub> leakage liabilities
  - Rotterdam and Antwerp are moving forward with CCS projects