



Driving towards a cleaner energy future



Cork import / export and liquefaction facility

25,000 extraordinary projects in **160** countries on all **7** continents

Energy

Infrastructure

Manufacturing &
Technology

Mining & Metals

Nuclear, Security &
Environmental

- Engineering, construction & project management
- Trusted partner to industry & government
- Delivering for our customers for 125 years Global presence

23,000+

Employees

10,000+

Professional licenses and certifications

Chemicals & Fuels

New Energies

LNG

Water | Pipelines | Tanks

Delivering Net Zero with Bechtel:

Decarbonisation of existing assets
Diversifying portfolio through new markets

Advanced Fuels

- H²-derivatives: e-methanol, e-Fuels
- Waste / Bio to Fuels incl. Sustainable Aviation Fuels

Carbon Capture

including HP Compression.

- Pre / Post Combustion
- Direct Air Capture
- CO₂ Gathering Networks & Terminals.

Hydrogen / Ammonia

Blue / Green / Pink pathways

- Compression, H₂ / NH₃ Storage, Export
- Water including Desalination
- Renewables and clean energy storage

Working hand-in-hand with customers to deliver tailored capture solutions

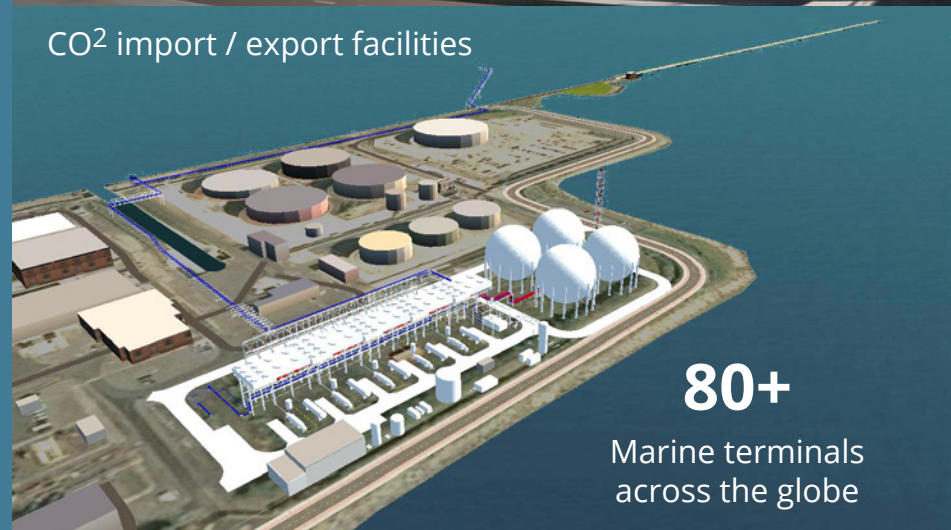


- ✓ **Technology agnostic design**
Working with main licensors and technology providers
- ✓ **Proven capability**
Performing conceptual studies through to start-up
- ✓ **Experienced**
Designing and building in the chemical and power industry for over a century
- ✓ **Brownfield Integration**
Integrating new plants with existing facilities

Supporting our customers with carbon capture solutions to produce cleaner energy



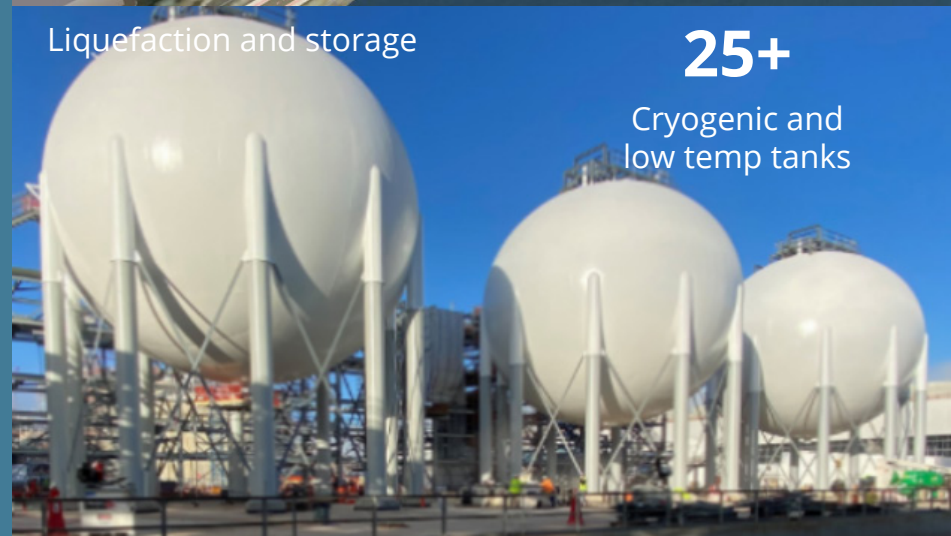
CO₂ import / export facilities



80+

Marine terminals
across the globe

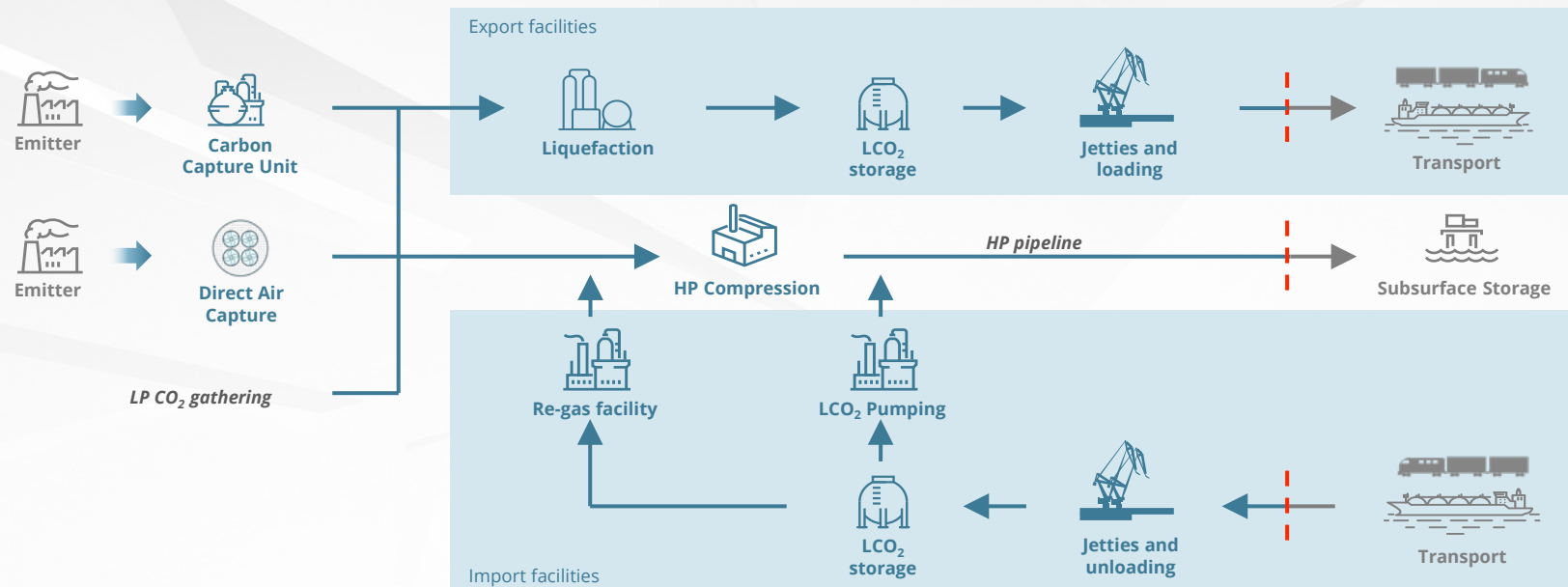
Liquefaction and storage



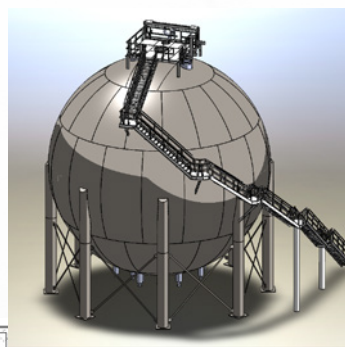
25+

Cryogenic and
low temp tanks

Bechtel | Carbon Capture Offerings

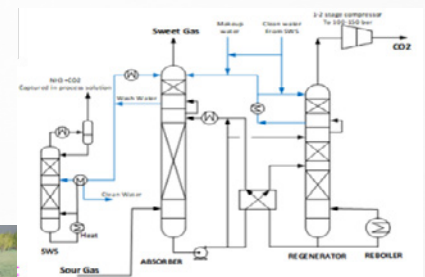


Import / Export terminal design



Designed storage solutions, incl cryogenic

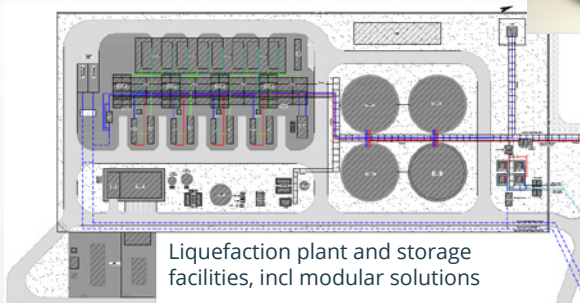
Open Art SmartPlant 3D modelling for Post combustion Carbon Capture



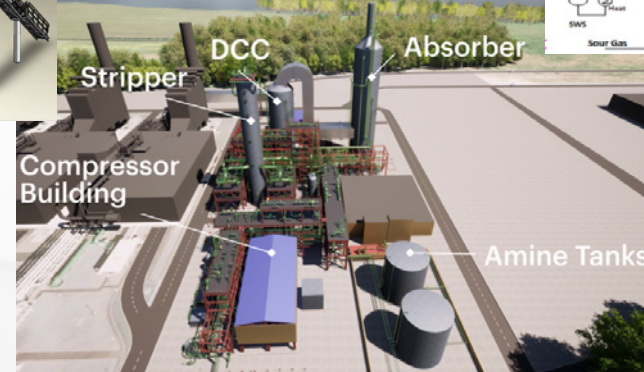
Technology assessment, incl Direct Air Capture



Transport and logistics solutions, incl conditioning



Liquefaction plant and storage facilities, incl modular solutions



Open Art Template

Design Basis

- 1MTPA of carbon capture, generic MEA 35%

Flexibility in plant specification

- Air cooling or water cooling
- Number of absorbers
- Compression and pumping of CO₂

How does this help?

- Quick reference guide for identification of suitable plot area
- More confidence in order of magnitude costs
- Shorter Pre-FEED / FEED durations
- Early assessment of utility requirements
- Adaptable to different sources of flue gas



Experience



Customer	Project, Location	Completion	Source/Type	Scope	Tons p/day CO2
Uniper	Carbon Capture engineering and design studies for Killingholme New build CCGT power plant in the UK	Ongoing	CCGT	Pre-FEED	4,450
EPRI	Cane Run in Louisville Kentucky US. Carbon Capture on a Natural Gas-powered combined cycle power plant.	Ongoing	CCGT	Pre-FEED, FEED	5,400
Confidential	Major Carbon Capture and Storage (CCS) network, including a CO2 trunkline linking oil sands facilities in the Fort McMurray region to a shared carbon sequestration hub near Cold Lake, Alberta, Canada	Ongoing	CO2 Capture Hub	Pre-FEED	27,000 – 32,500
Confidential	Evaluating post-combustion carbon capture from six Once Through Steam Generators at the facility. Bechtel are delivering DBM, with major process studies in progress. The process simulation is based on the open art Bechtel template. Canada	Ongoing	OTSG	Pre-FEED	Confidential
Confidential	Supporting Direct Air Capture (DAC), scaling customer technology for a compact demonstration plant in the Middle East.	Ongoing	DAC	Feasibility	-
Velocys	Bayou Sustainable Aviation Fuels Project, pioneering negative-emission transport fuels using biogenic feedstocks green power and carbon capture.	Ongoing	Biomass	Pre-FEED, FEED	3,800
Navigator Terminals	Transport and Storage study for UK's first 'train to zero' carbon capture rail link connecting to Teesside Industrial terminal, creating a future CO2 import/export terminal.	2024	CO2 Capture Hub	Pre-FEED	3,800
Confidential	Post combustion capture retrofit to a gas fired power plant, for a UK customer.	2023	CCGT	FEED Verification	-
RWE	Carbon Capture engineering and design studies for Stallingborough New build CCGT power plant in the UK	2023	CCGT	Pre-FEED	6000
Confidential	Developing a CO2 export hub in South East UK that will support various power facilities with a central liquefaction facility and loading facility. The LCO2 will be shipped to other clusters in the UK for sequestration.	2023	CCGT	Feasibility	14,000
Confidential	A parametric study in India, for the capture and transportation of CO2, reviewing onshore and offshore sequestration for various capacities and distances.	2023	Various	Feasibility	28,000
Confidential	Carbon Capture retrofit to 2no. Biomass power plants in Europe (BECCS)	2023	Biomass	Feasibility	11,000 & 27,000
Shell	Study for the addition of Carbon Capture installed to a co-generation power plant that powers a Bechtel built mega-scale petrochemical manufacturing facility. USA	2022	GT	Feasibility	-
Ecolog	Template Import and Export terminals with liquefaction and storage for long-distance, Low-pressure shipping. USA / Europe / Asia	2022	Import/Export Terminal	Feasibility	14,000 & 28,000
Ervia	CO2 pipeline, liquefaction, and shipping project (Medium Pressure shipping), Ireland UK	2022	Import/Export Terminal	Pre-FEED	3,400 & 4,800
NextDecade	Rio Grande LNG CCUS, MHI solvent., USA	2022	GT	FEED, EPC	2,700
Drax	Drax New Build BECCS, United Kingdom, USA, and Italy	2021	Biomass	Pre-FEED	5,500
EPRI	Coal Creek, MHI Solvent on a 600MW Coal-fired Unit, North Dakota, USA	2021	Coal	Pre-FEED	12,000
Confidential	Carbon Capture design package for a UK customer on Waste to energy flue gases	2021	Waste Biomass	Pre-FEED	100
Confidential	Carbon capture design package for a UK customer on CCGT power plant	2021	CCGT	Pre-FEED	3100
Confidential	Carbon capture design package for a UK customer on refinery flue gases	2021	FCC	Pre-FEED	1500
DOE	Department of Energy FEED Study, Sherman, Texas, USA	2020	CCGT	FEED	3,100
EPRI	East Bend Station Unit 2 Initial Engineering Design of Post-Combustion CO2 Capture Using Membrane-Based Technology, Boone County, KY, USA	2020	Coal	Pre-FEED	6,000
CO2CRC	Retrofit of a Brown Coal Power Station with Post-Combustion Capture, Conceptual Study, Loy Yang, Australia	2018	Coal	Pre-FEED	40,000
World Bank/SENER	MX TF Carbon Capture, Utilisation, and Storage Development in Mexico, Pre-Feasibility Study, Poza Rica, Mexico	2016	CCGT	Pre-FEED	1,500
Shell	Peterhead Post-Combustion Capture FEED Study Review and Critique, Peterhead, Scotland, UK	2015	CCGT	FEED	2,700
EPRI	Assessment of Post-Combustion CO2 Capture for Pulverised Coal Power Plant Application, (Plant Barry Generation Station), Bucks, AL, USA	2015	Coal	Pre-FEED	8,000
EPRI	Chilled Ammonia Process Design Applied to an 1100oF Ultra-Supercritical Pulverised Coal Power Plant, Mountaineer Plant, WVA, USA.	2013	Coal	Pre-FEED	15,300
EPRI	Assessment of Post-Combustion CO2 Capture for Pulverised Coal Power Plant Application, (Coal Creek Generation Station), Underwood, ND, USA	2011	Coal	Pre-FEED	27,000
EPRI	Assessment of Post-Combustion CO2 Capture for Circulating Fluidised Bed Coke-Fired Power Plant Application, (Bay Shore Generation Station), Oregon, OH, USA	2011	Coal	Pre-FEED	4,300
EPRI	Assessment of Post-Combustion CO2 Capture for Pulverised Coal Power Plant Application, (Lingan Generation Station), Lingao, Nova Scotia, Canada	2011	Coal	Pre-FEED	14,300
EPRI	Assessment of Post-Combustion CO2 Capture for Pulverised Coal Power Plant Application, (Intermountain Generation Station), Delta, UT, USA	2011	Coal	Pre-FEED	37,700
EPRI	Assessment of Post-Combustion CO2 Capture for Pulverised Coal Power Plant Application, (Powerton Station), EPRI/Nexant, Pekin, IL, USA	2010	Coal	Pre-FEED	36,500
EPRI	Post-Combustion CO2 Capture for Supercritical Pulverised Coal Power Plant Applications, Task 3, EPRI/Nexant, Market Application	2009	Coal	Pre-FEED	various
Gassnova	CO2 Capture Facility Front-End Engineering and Design (FEED) Study Report, Karsto, Norway.	2009	CCGT	FEED	3,100
StatoilHydro ASA	Front End Engineering Design (FEED) Study Report for the European CO2 Test Centre Mongstad - Amine Process, Mongstad, Norway	2008	CCGT	FEED	275
EPRI	Post-Combustion CO2 Capture for Supercritical Pulverised Coal Power Plants, Tasks 1 & 2, Market Application	2007	Coal	Pre-FEED	various
Norwegian Govt	Conceptual Design Study CO2 Capture Plant, Norwegian Water Resources and Energy Directorate, Karsto, Norway.	2006	CCGT	Pre-FEED	3,100

Public Domain Projects



National Petroleum Council (NPC): Meeting the Dual Challenge

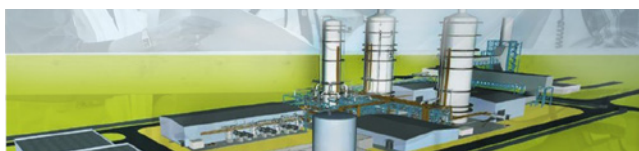
Role: Masterplanning

The National Petroleum Council is a federal advisory committee to the Secretary of Energy, with a sole purpose to advise, inform, and make recommendations to the Secretary of Energy on any matter relating to the oil and gas industries. The delivered works collaborated on the production of a roadmap to at-scale deployment of Carbon Capture Utilization and Storage.

Carbon Capture, Use, and Storage (CCUS) Report: [View Here](#)

Topic paper #2: An open-technology and open-access post-combustion capture initiative for power plants in USA:

Jon Gibbins, Professor, UK CCS Research Centre, University of Sheffield; William R. Elliott, Operations Manager, Infrastructure and Power, Bechtel Global Corporation: [View Here](#)



Kårstø, Norway

Role: FEED

Prepared for Gassnova (state owned by the Norwegian Ministry of Petroleum and Energy), the study addressed the facility's design basis; process; equipment; physical design; environmental, safety, and health factors; construction; and startup. The study results included a cost estimate and identified potential technology improvements and life-cycle cost savings.

The Kårstø facility was designed to capture 85% of the CO₂ emissions (over 1 MTPA) from an adjacent 420 MW gas-fired power plant in southwest Norway. Kårstø was to be the largest CO₂ separation facility ever constructed for treatment of gas turbine exhaust gas.

[View Here](#)



Loy Yang A, Australia

Role: Pre-FEED

Retrofit of an Australian Brown Coal Power Station with Post-Combustion Capture, Conceptual Study

[View Here](#)



Sherman Carbon Capture, Texas

Role: FEED

Bechtel is conducting a FEED study for a retrofit carbon capture and compression plant for Panda Energy Fund's existing natural gas-fired gas turbine combined cycle power plant in Texas.

[View Here](#)



Ervia, CO₂ Gathering Networks

Role: Pre-FEED

The Ervia Cork CCUS Project involves the gathering & conditioning of CO₂ captured from various sources in Cork and/or Dublin and the evacuation of conditioned CO₂ either to indigenous storage in the depleted Kinsale Gas Field (Cork) or to international export by ship (Cork and Dublin).

The project involved a detailed assessment of the key infrastructure necessary to further condition, compress, transport and store CO₂ at Cork and Dublin harbours.

[View Here](#)

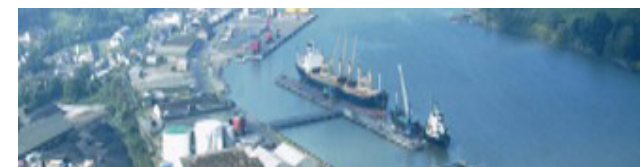


World Bank / SENER

Role: Pre-Feasibility

Supporting World Bank make a technology selection and develop a concept design for a scaled post combustion carbon capture plant on the 250MW Poza Rica Natural Gas Combined Cycle Power Generation Plant. Bechtel developed a simulation model on the NGCC plant. MHI, Shell Cansolv, Fluor, HTC, Alstom and BASF / Linde were evaluated for comparison, levelised to 85% capture rate.

[View Here](#)



Shannon Foynes Port, Green NH₃ Networks

Role: Pre-FEED

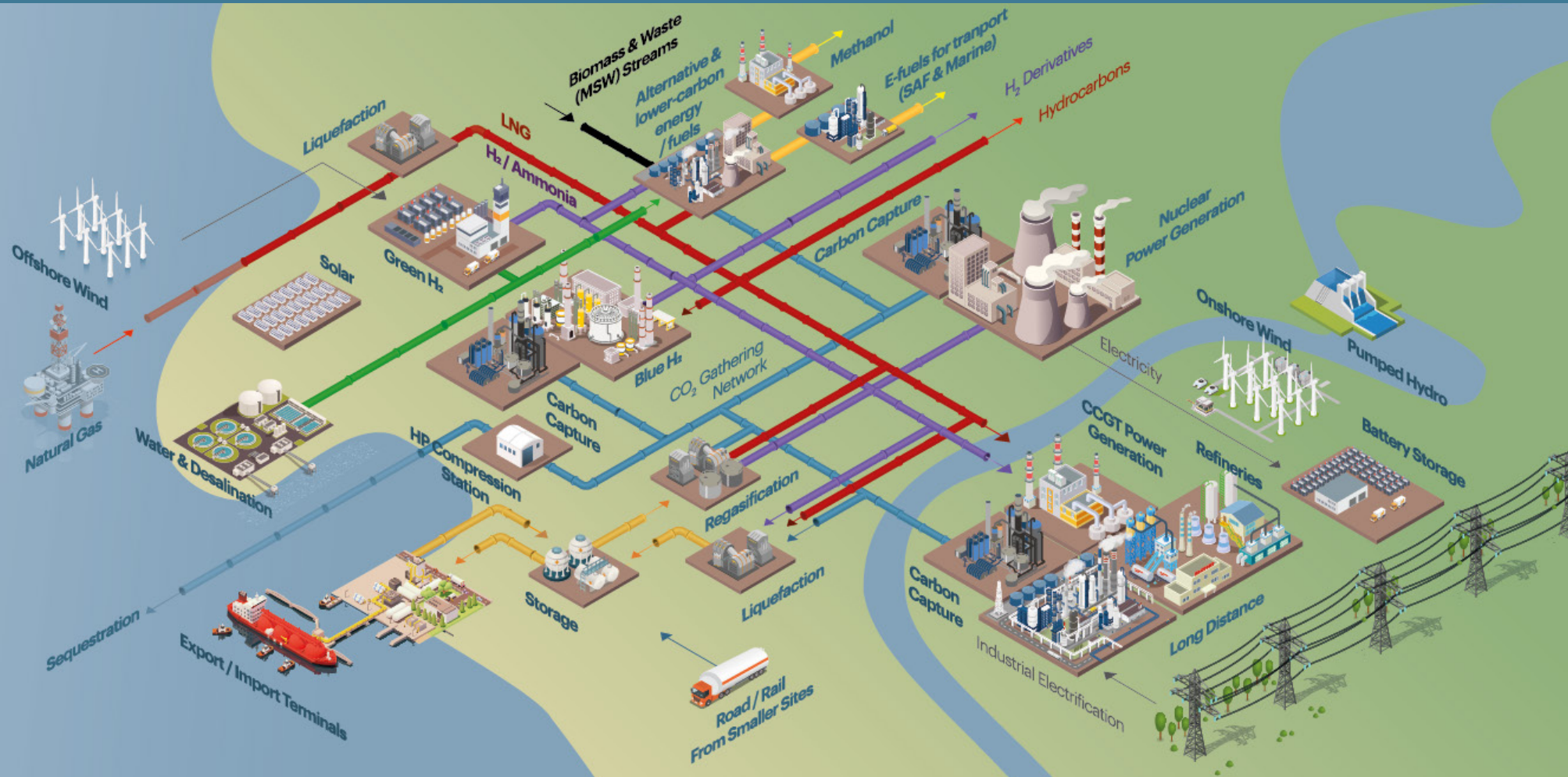
Bechtel delivered Masterplanning for Shannon Foynes Port in Ireland that included green ammonia. Bechtel have updated the customers 'Vision 2041 masterplan' to accommodate offshore and onshore investment within and adjacent to its harbour.

[View Here](#)

MTPA post combustion CO₂ capture projects

Amine based CO₂ / H₂S removal systems

Years refining carbon capture solutions



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