

PORT DECARBONISATION AND ENVIRONMENTAL SUSTAINABILITY

10:15 – 11:45

Port Eco Systems, Current Status and Future Directions



Green Shipping Corridors

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In association with **Redshift Associates**

Irish sea Green shipping corridor

IUK Pulse Programme

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About CPC

The **Catapult Network** brings together **9** leading technology and innovation centres spanning over **40** locations across the UK.

We are independent not-for-profit private organisations transforming the UK's capability for innovation in sectors of strength.

The **Connected Places Catapult** is leading in fields such as:

Mobility

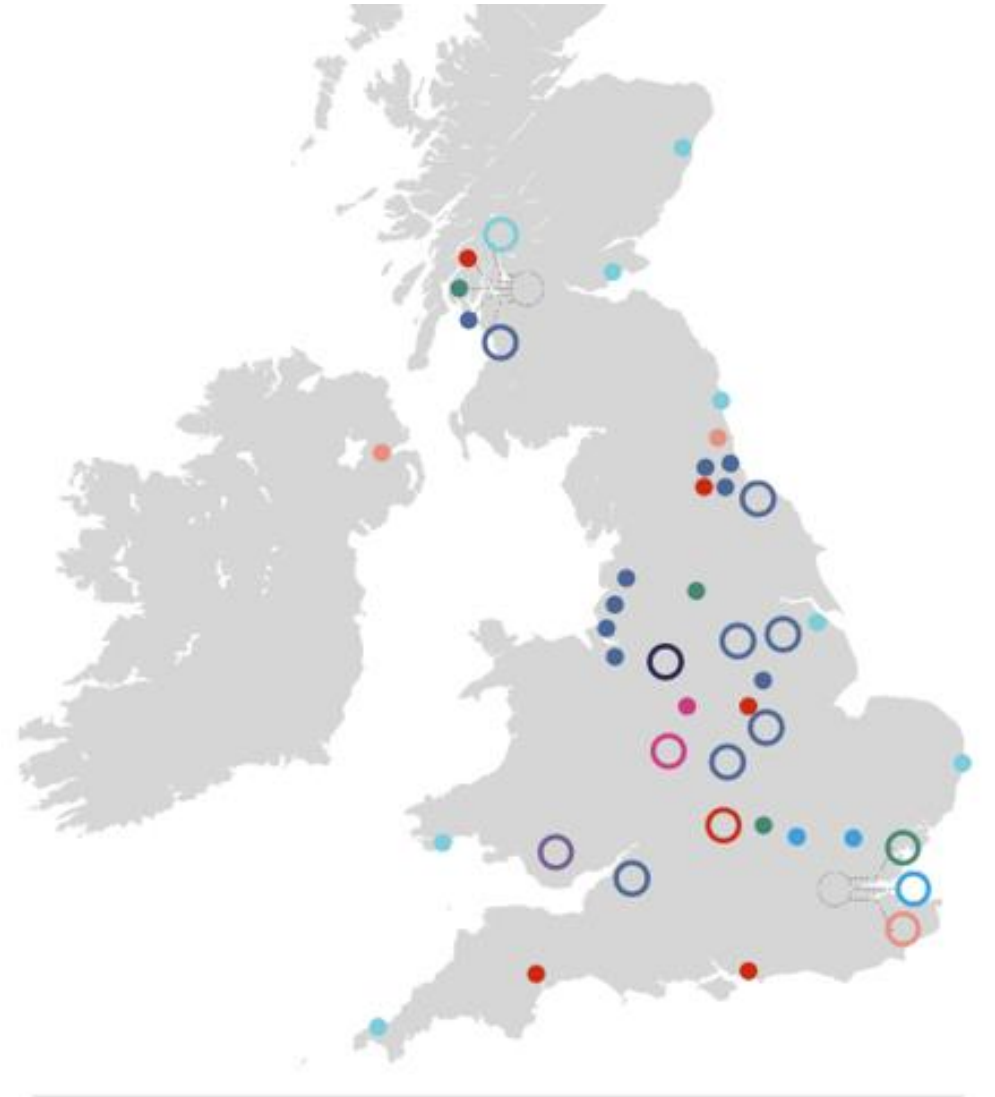
Built Environment

Critical Infrastructure

Health & Wellbeing

Public Places

Decision Making



THE UK'S INNOVATION ACCELERATOR FOR CITIES, TRANSPORT, & PLACE LEADERSHIP



Maritime
& Ports



Airmobility
& Airports



Rail &
Stations



Integrated
Infrastructure



Place
Leadership



Homes
& Housing



Ecosystem
Incubation



Climate action



People's experience



Connected Intelligence

Connect the market | Spark innovative technology | Accelerate commercialisation

Ports and Maritime @ CPC

Decarbonise Digitalise

Market Making Cluster Development

Logistics Productivity



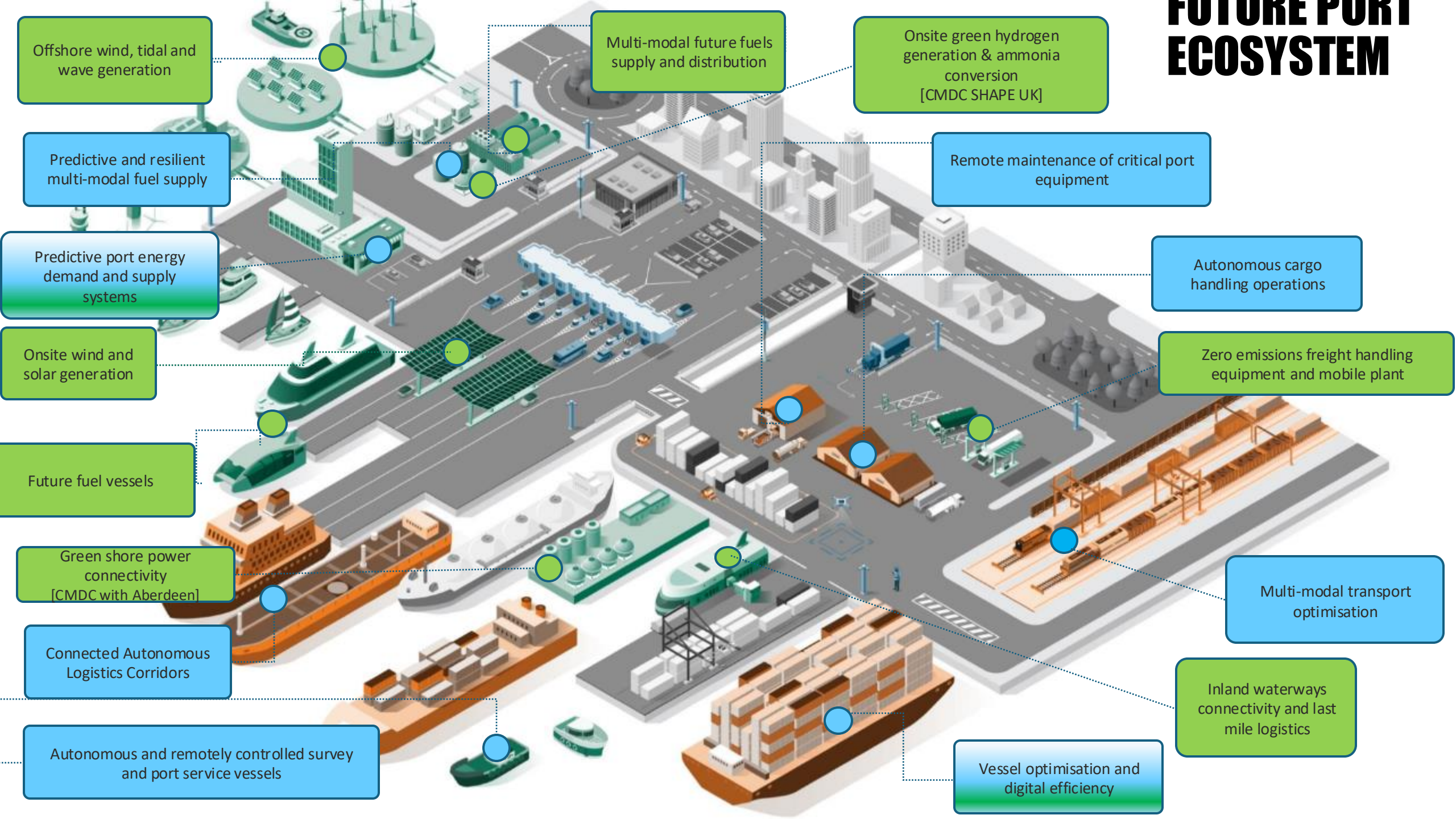
2022:

- Multi-modal port energy hubs
- Freeport innovation hubs
- TradeTech and frictionless borders
- Renewable microgrids
- Future maritime fuels
- Modal shift to waterways

2023:

- Shore power port systems
- Hydrogen fuelled mobility

FUTURE PORT ECOSYSTEM



Offshore wind, tidal and wave generation

Predictive and resilient multi-modal fuel supply

Predictive port energy demand and supply systems

Onsite wind and solar generation

Future fuel vessels

Green shore power connectivity [CMDC with Aberdeen]

Connected Autonomous Logistics Corridors

Autonomous and remotely controlled survey and port service vessels

Multi-modal future fuels supply and distribution

Onsite green hydrogen generation & ammonia conversion [CMDC SHAPE UK]

Remote maintenance of critical port equipment

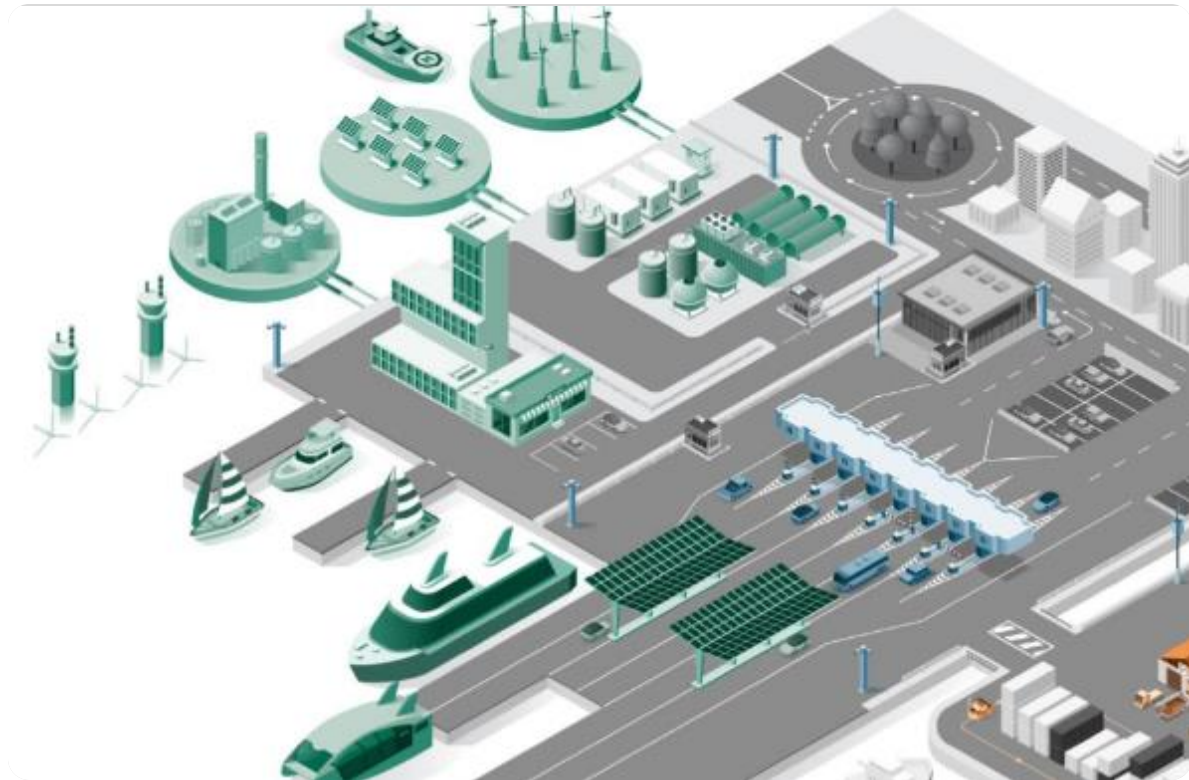
Autonomous cargo handling operations

Zero emissions freight handling equipment and mobile plant

Multi-modal transport optimisation

Inland waterways connectivity and last mile logistics

Vessel optimisation and digital efficiency



Green Shipping Corridors

What is a green shipping corridor



COP 26 & Clydebank Declaration

Green corridors are defined as zero emission maritime routes between two or more ports, with the aim of having at least six corridors in place by 2026 – **HMG (Nov 2021)**

They are vital to encouraging the development of vessel and shoreside technology in clean maritime - **UK SHORE**

Each project is likely to take several years to come into service, given the scale of infrastructure enhancements needed and the retrofit or build time of the vessels. - **CPC**

Suggested Definition Conditions

Timescale – meet IMO ambition by 2030 to have 5-10% of international shipping at near to zero (>90%) or zero emission.

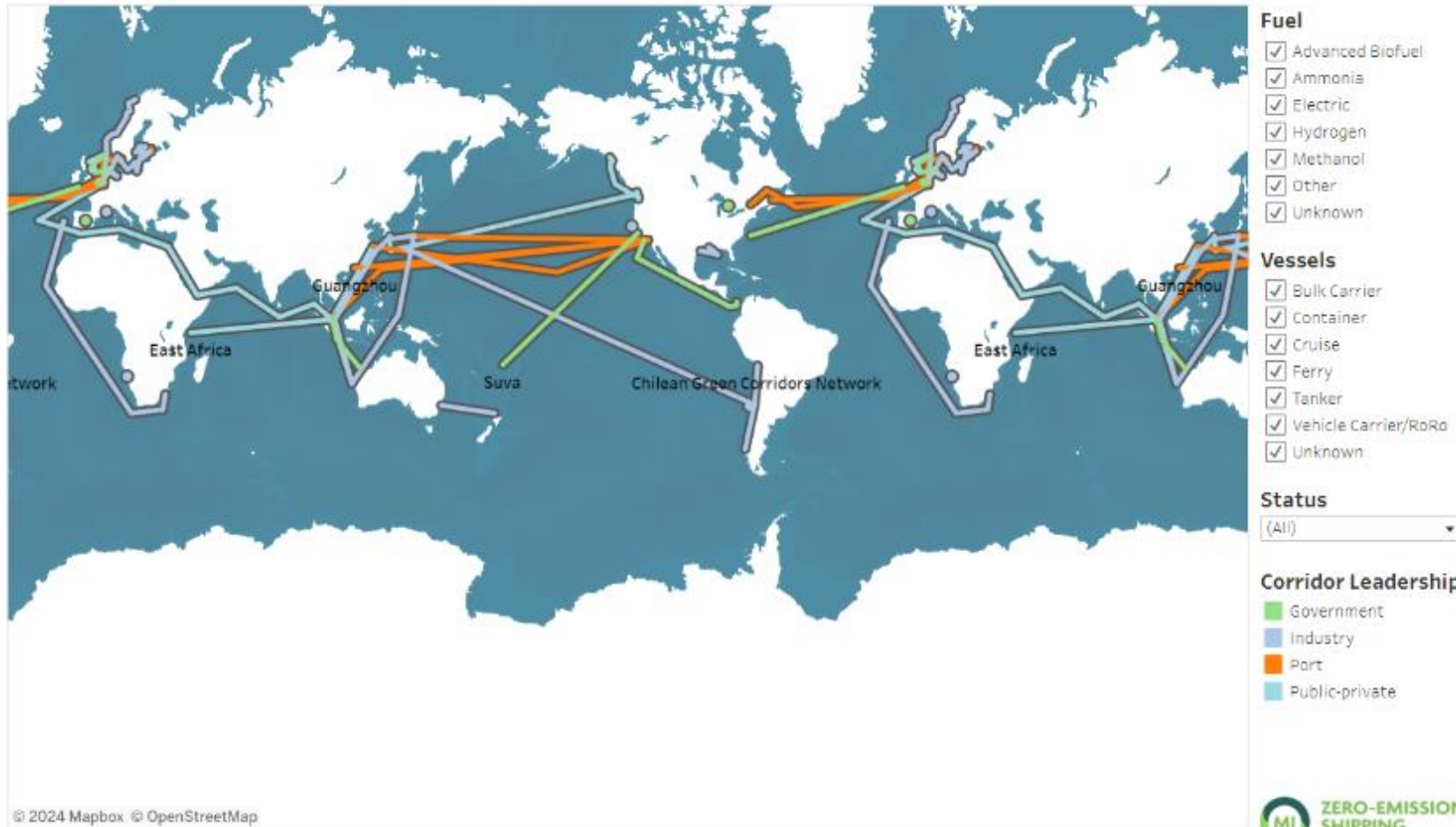
Boundary – *seaside*; between two ports or in-out of same port, working within the port, international whilst in UK waters.

- *landside*; ship operations, port operations, transfer operations

Mission Innovation



Zero Emission Shipping Mission – Green Shipping Corridor Tracking

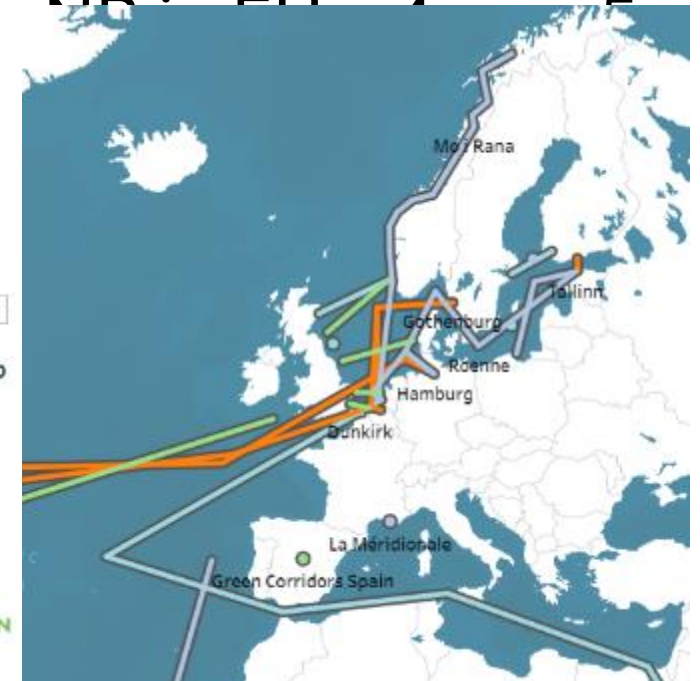


© 2024 Mapbox © OpenStreetMap

All routes displayed are approximate. Visualization produced by the Pacific Northwest National Lab. Source data compiled by the Global Maritime Forum.



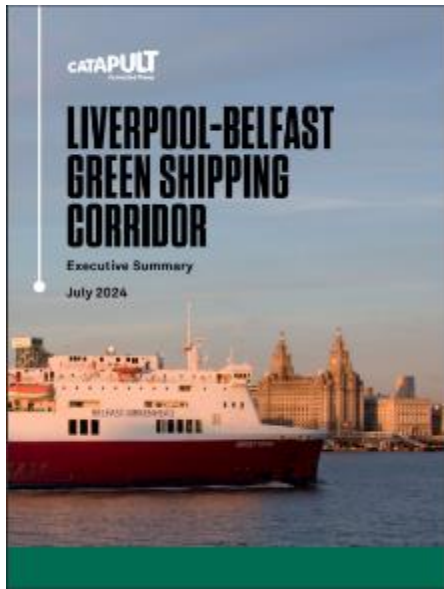
Feasibility study done, moving to implement



Irish sea Green Shipping Corridor



A concept study exploring means to provide clean energy to berthed vessels & propulsion solutions



Thank you to all of our contributors and stakeholders who attended industry, project and civic leader workshops

- B9 Energy
- Belfast City Council
- Belfast Harbour
- BG Freight
- Cammell Laird
- Department for Transport
- Innovate UK
- Invest NI
- Isle of Man Maritime
- Isle of Man Steam Packet
- JG Maritime Solutions
- Liverpool City Council
- Liverpool City Region Combined Authority

- Liverpool John Moores University
- Mersey Maritime
- NI Maritime & Offshore Cluster
- Peel Ports
- Queens University, Belfast
- Royal HaskoningDHV
- Stanlow Terminals
- Stena Line
- Strategic Investment Board (NI)
- Svitzer
- University of Liverpool
- Wirral MBC
- World Kinect Corporation

Green shipping corridors: a holistic approach to decarbonising maritime - Connected Places Catapult

Irish sea Green Shipping Corridor



Key findings



Existing infrastructure is capable of but needs adapting to take methanol and low carbon fuels.



Significant investment is needed in national grid.



Design and deliver new terminal infrastructure

Collaboration is essential.

No single solution will solve the complexities of decarbonising the corridor.

A combination of e-methanol and shore power are the most promising solutions for decarbonising vessels and owners are already preparing.

Innovation is expensive and risky, yet scaling is needed for financial viability.

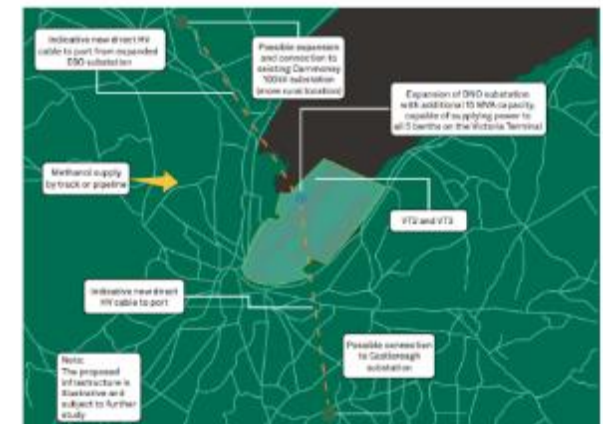
Port of Liverpool

The figure below provides an overview of the potential future changes within the Port of Liverpool to support the green shipping corridor development.



Belfast Harbour – VT2 and VT3

The figure below provides an overview of the potential future changes to support the green shipping corridor development in VT2 and VT3 in Belfast Harbour.



enabling ecosystem

digital systems



Port & Traffic Management

The ports have a range of traffic monitoring information management systems. This allows them to monitor in real time movements on water and road.



Monitoring

Air quality and impact monitoring systems, in particular in managing flows of traffic on land to dovetail with operations.



Training & guidance systems

Static and portable simulators and information systems to assist operators.



Asset Management

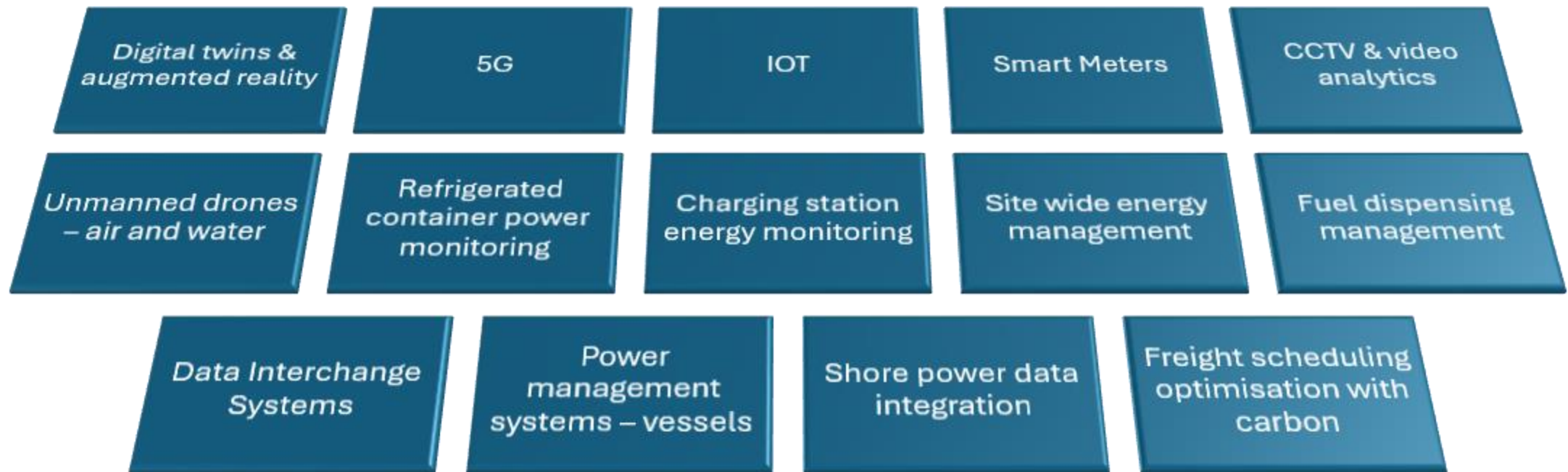
Systems to track, manage, maintain and plan use of equipment, physical assets and consumables.

enabling solutions - digital



A range of **solutions** have been identified that can be harnessed for added value, management and monitoring of the corridor.

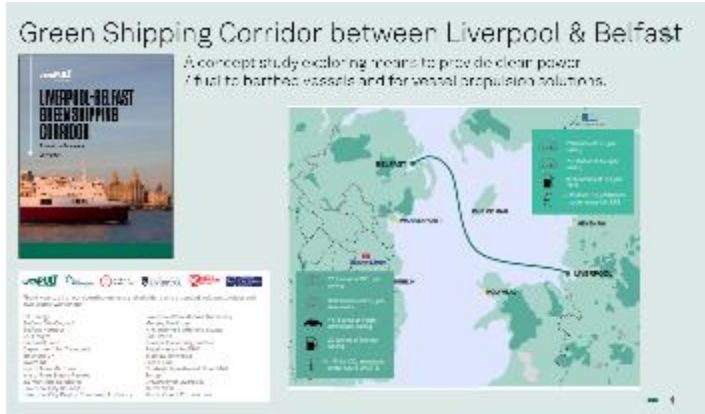
Data capture to validate success and impact of green shipping corridors is vital to provide evidence to policy makers and investors.



Evolution strategy



Belfast – Liverpool Green Shipping corridor



Consortium led project with 29 follow on projects to drive a Green shipping corridor and support the UK deliver its obligations for Clydebank Green shipping corridors by 2030

Irish Sea Rim Concept Investment and Innovation Zone



Inviting the globe to invest and innovate within the Irish Sea Rim recognising Ports as Places that drive decarbonisation digital and data innovations supporting the maritime sector to grow – a sector that has higher average wages and productivity levels

UK Sea Region Innovation Concept



Building on the lessons from the Irish Sea Rim Invite the Globe to invest and innovate across all Seas placing the UK at the forefront of Investment and Innovation recognising that the UK is an Island and that Maritime is a global sector

Thank you

A hand is shown interacting with a futuristic, glowing green and blue interface. The interface consists of various geometric shapes, including a large, curved, glowing green bar and several smaller, glowing blue and orange rectangular elements. The background is a dark, teal color with a subtle grid pattern.

Mark Wray

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