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European Regional Development Fund

Greener NWE
20 MAY 2021

Breakout sessions

Highway to Green Hydrogen

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How the topic is currently addressed (2014-2020)

*"Hydrogen is a **key instrument** for meeting the Green Deal objectives and Europe is leading on its industry development."* - Kadri Simson EU Energy Commissioner Jan 2020

*"Hydrogen rocks…But we will only get to 6 gigawatts in four years, and 40 gigawatts by 2030, if we can finance the **right projects** quickly."*

- Frans Timmermans, VP European Commission, July 2020

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Cooperation

REVIVE

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Life 'N Grab Hy
clean cities, clean air with hydrogen

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Overview of NWE projects in the field

4 projects implementing low carbon solutions in transportation

- **H2SHIPS –** hydrogen fuelled water transport
- **H2-SHARE-** hydrogen heavy-duty vehicles
- **FCCP –** fuel cell cargo pedelecs
- **HECTOR-** hydrogen waste collection vehicles

2 projects facilitating uptake of low carbon technologies

- **ITEG** - hydrogen storage from tidal energy
- **GenComm** - smart hydrogen-based energy matrixes

€49.3 Million:
Total ERDF committed to hydrogen 2014-2020
(13% of programme budget)

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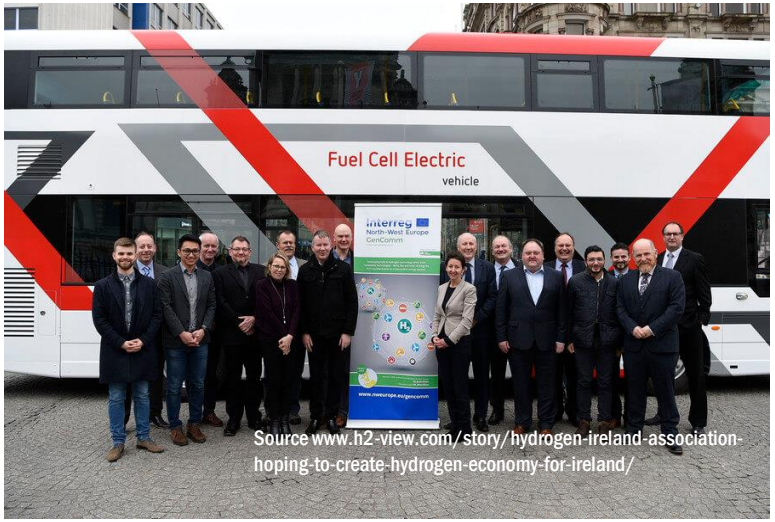
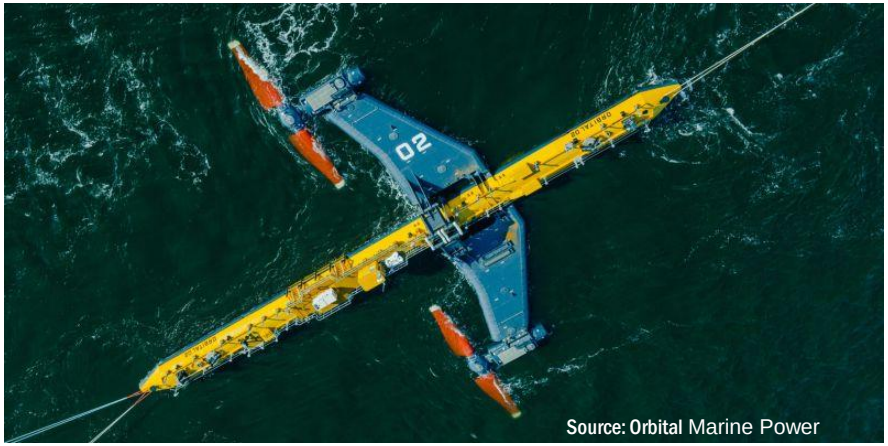
Results of cooperation

Source : https://twitter.com/project_hector



Source www.h2-view.com/story/hydrogen-ireland-association-hoping-to-create-hydrogen-economy-for-ireland/


Source: Orbital Marine Power

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Reducing GHG cooperation

Priority 2: Low Carbon

- **SO2:** low carbon, energy, and climate protection strategies to reduce
- **SO3:** uptake of low carbon technologies, products, processes and services with high energy potential saving potential
- **SO4** : implementation of transnational low-carbon solutions in transport systems

EU framework

- Roadmap for Moving to a Competitive Low Carbon Economy in 2050
- The European Strategic Energy Technology Plan
- RED II
- Transport Roadmap

Contributions to other Frameworks

- **SDG 7:** Ensure access to affordable, reliable, sustainable and modern energy for all
- **SDG13**: Take urgent action to combat climate change and its impacts

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policy influence through cooperation

- Participating in COP 26 and contributing to H2 mapping study
- 2018 H2 strategy papers to the Irish Government; lobbying through Hydrogen Ireland and Hydrogen Mobility Ireland.
- Report to Department of the Economy on HE in N. Ireland
- Green H2 webinar (2020/2021) series to inform and position H2 across EU with avg 150 global attendees.

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Market influence through cooperation

"Joint call for the deployment of hydrogen fuel cell trucks" March 2020

- *To make large-scale deployments of fuel cell trucks a reality soon, with pre-commercial series ready by 2025 (5000-10 000 vehicles) and full commercialisation by 2030 (95 000 vehicles).*

- *To deliver low-carbon, renewable hydrogen at a competitive cost at the nozzle.*

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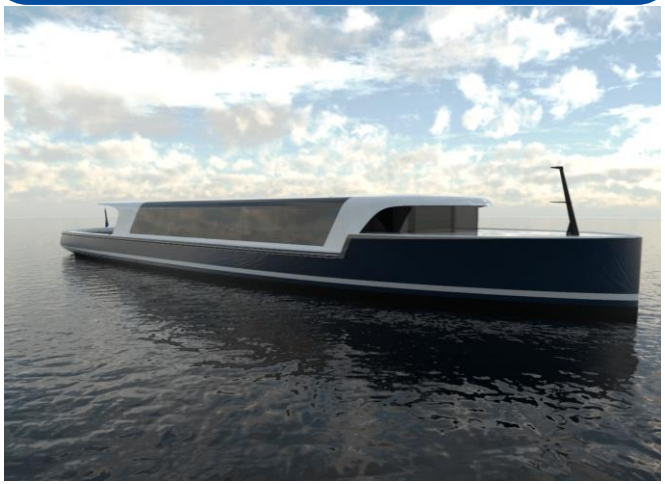
Facilitating uptake

HECTOR

Low carbon transport solutions



H2SHIPS

Breakout sessions

H2SHIPS

Christian-Frédéric Berthon

http://nweurope.eu/H2SHIPS

A video of the project (no longer than 2 minutes) can also be shared at the beginning or during the presentation.

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Challenge

- Water transport: energy efficient but 99% diesel-based.
  - Need to trigger creation of H2 ecosystems for shipping : fuel availability and fleet transformation in parallel

- NWE region: dense inland network + big ports.
  Dense population -> need for clean air!

Objective

Fostering the creation of a low-carbon Hydrogen value chain for shipping in NWE, consisting in dedicated production, distribution and application (ship propulsion and power supply)

- *Implement low-carbon transport solution: Hydrogen ship and dedicated bunkering infrastructure*
- *Support the industry by analyzing business scenarios, bringing stakeholders together, demonstrating dedicated technical solutions*

Results

Achieved:

- Launch the building of a first H2 vessel in Amsterdam with innovative H2 storage mode (metal hydrides)

End of project

- One ship sailing on H2 in Amsterdam
- Floating bunkering station in Ostend
- Dedicated action plan for 1st H2-ship ecosystem Paris
- NWE-wide roadmap and 25 pilot ports identified

- Unforeseen benefits or challenges:
  Many other initiatives going on with similar objectives

Pushing results one step further

- Transition of fleet in Amsterdam, Ostend, Paris and more
- Further applications of new H2 storage mode

- Key challenge for the development of H2 for ZE-shipping: clear signal on price of CO2 / fossil fuels

Partnership

- Sharing momentum, and return of experiences from different contexts
- Ideas for further collaboration emerged from the preparation of the Capitalisation Call application.

Anecdote/ picture

Any anecdote/ picture to share about your project?

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Hydrogen Waste Collection Vehicles in North West Europe (HECTOR)

Amy Perry

www.nweurope.eu/hector

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HECTOR Project

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HECTOR Project will deploy 7 different types of fuel cell garbage trucks in 7 different cities in 5 countries:

- **Aberdeen (UK)**
- **Groningen (NL)**
- **Arnhem (NL)**
- **Duisburg (DE)**
- **Herten (DE)**
- **Brussels (BE)**
- **Touraine (FR)**

The aim of the project is to demonstrate that fuel cell garbage trucks provide an effective solution to reduce emissions from road transport in the North West

ABERDEEN CITY COUNCIL · Gemeente Groningen · suez · Wirtschaftsbetriebe Duisburg · Bruxelles-Propreté propreté.brussels · Touraine Vallée de l'Indre · Metropole Ruhr AGR Gruppe · HAN Automotive Research

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ABERDEEN HYDROGEN BUS PROJECT

- Largest bus trial in Europe
- 10 fuel cell buses
- £1.2m per bus
- Rehomed for training

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Results

BUS ACHIEVEMENTS

More than
MILES DRIVEN 1.1 million

2.03 million
Passengers

>98%
AVAILABILITY OF STATION

>87%
BUS AVAILABILITY

206,775 Kg Hydrogen Dispensed

10-12 mins refuelling time

260 miles
on a full tank

Around
TONNES OF CO2 SAVED* 100

*COMPARED TO EURO VI VEHICLES

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Pushing results one step further

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EUROPEAN UNION

FUEL CELL ELECTRIC VEHICLES

TRANSPORT SCOTLAND
Office for Low Emission Vehicles

Toyota Mirai

Hyundai Nexo

Hyundai ix35

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Partnerships

- HyTransit
- HighVloCity
- HyTrEc
- HyTrEc 2
- JIVE
- JIVE2
- HECTOR
- FCCP
- Smart Hyaware

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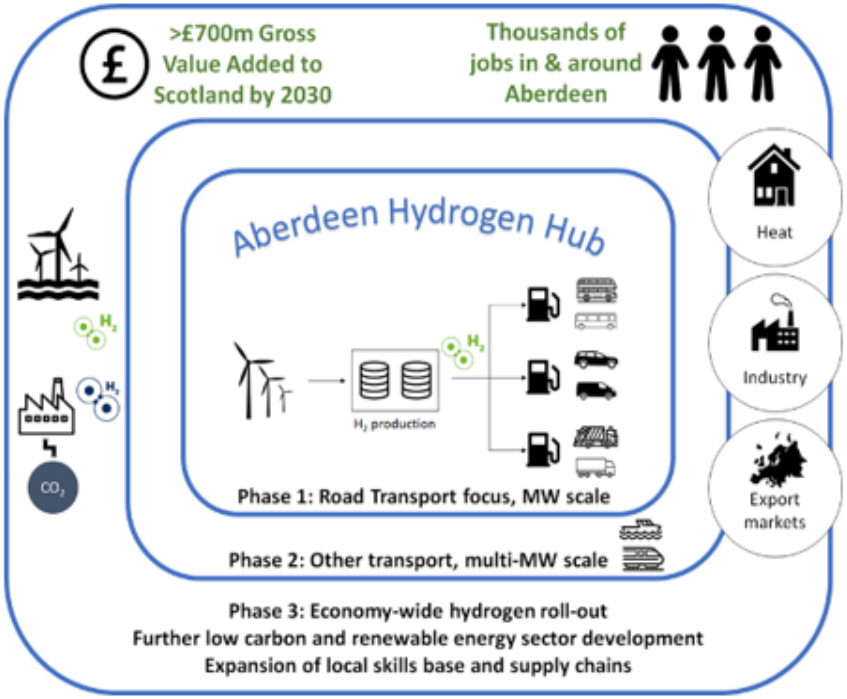
ABERDEEN HYDROGEN HUB

Phase 1 – provision of a resilient, cost effective supply of green hydrogen on a commercial basis to the market to support the existing and proposed transport projects.

Phase 2 – Expansion in the short to medium term to connect to larger volume utilisation of hydrogen – trains, trucks and marine.

Phase 3 – Whole system approach to supply and demand. Innovation, skills and transition hub to support expansion of the local supply chain. Pursue the ambition for Aberdeen to be the centre of a brand new Energy production business, exporting H2 to the world.



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H2 ABERDEEN TIMELINE

2013- 2021

Aberdeen Hydrogen Bus & Kittybrewster HRS
2015: 10 hydrogen buses and refuelling station

Hydrogen Vehicle Options
Funding from EU, UK and Scottish governments to trial FC cars, dual-fuel for large vehicles and FC range extended electric vans

Second HRS
2017: opening of ACHES - increased the hydrogen supply and offered hydrogen resilence for the City

Innovative Uses of Hydrogen
2019: Onsite Energy Centre at TECA with 3 fuel cells provide heating, cooling and power to the Exhibition Centre and 2 hotels

Explore Ways to Increase Demand
2020: World's First hydrogen double decker buses

Discussions with NE organisations

Explore alternative hydrogen uses such as rail, heat, marine, industry

Commercial Supply Aberdeen Hydrogen Hub
Business case for commercial supply of green hydrogen

Discussions with market

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How green H2 will be covered in 2021-2027

"Hydrogen is a key instrument for meeting the Green Deal objectives and Europe is leading on its industry development"

-EU Energy Commissioner Kadri Simson Jan 2020

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NWE territorial challenges

NWE one of the **highest energy-consuming regions** in EU

unexploited potential for improving RE production and consumption mix

- Still fossil-based dependency in regions
- Still high potential for increasing energy production from RES and techniques (e.g. **hydrogen**)

But **deployment of RES is limited** by:

- lack of certainty regarding future investments
- persistence of legal barriers

How to exploit the potential of green H2 in NWE? How to make it more competitive and widely available?

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What can transnational cooperation do?

Enhance the **coherence and alignment of international policies** and actions undertaken by the different member states.

Coordinate regional roadmaps, in particular for hydrogen; work on the articulation of infrastructures and operating methods

Joint European efforts are needed **to create synergies between islands of innovation** trying to develop an infrastructure and to connect them

Stimulate decentralised renewable energy production

A transition to use of green hydrogen is essential to meet GHG reduction targets (e.g. 55% by 2030), especially for heavy goods vehicles and public transport.

The challenges are similar! [...] Further NET 0 solutions have to be implemented worldwide, INTERREG is the perfect collaboration enabler

Smart system integration is the way forward, but this is a **complex set of challenges [...], too large for a single country, or company.**

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Priority 2

Smart and just energy transition

Promoting energy efficiency and reducing greenhouse gas emissions

Promoting renewable energy

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Types of activities (examples)

Joint strategies or action plans elaborated and implemented

Pilot actions for testing tools and/or solutions taken up or up-scaled

Capacity building and awareness raising

Involve different stakeholders through multi-level governance models (between businesses, regulators, local authorities, investors and local communities)

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Expected impact by projects

Increased capacity of communities to exploit the potential to improve renewable energy production and consumption mix

Energy transition embedded into territorial strategies and local initiatives

Innovative technologies, solutions, products and services taken up ensuring coherence between the proposed approaches and local/regional needs

Citizens, consumers and local communities and businesses more interested, better empowered and engaged in green energy transition

Timeline

- Programme is still being drafted
- Approval envisaged end 2021
- First call expected in spring 2022 (tbc)