

HECTOR

Hydrogen Waste Collection Vehicles in North West Europe

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[@H2Aberdeen](https://twitter.com/H2Aberdeen)



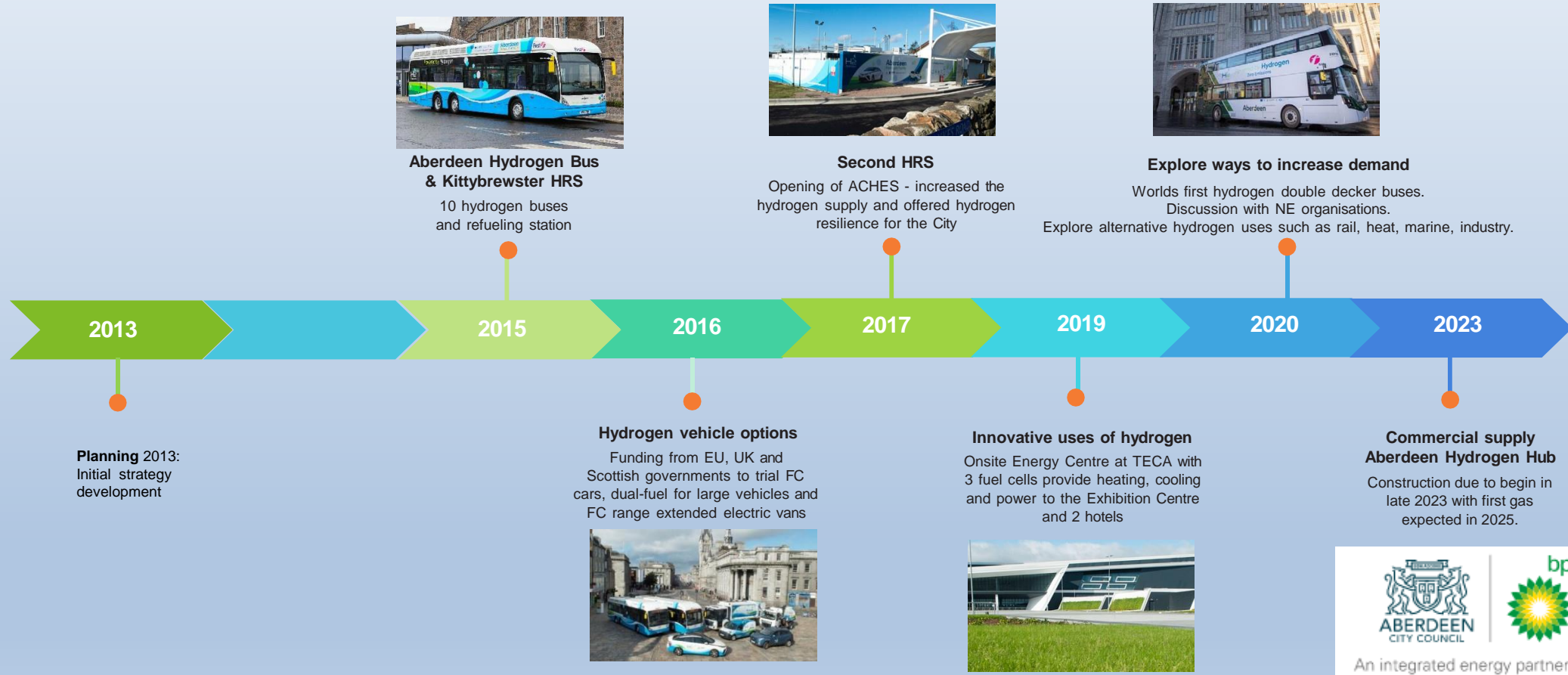
[H2 Aberdeen](https://www.linkedin.com/company/h2-aberdeen)



[H2 Aberdeen](https://www.youtube.com/channel/UC...)



H2 Aberdeen Timeline 2013 - Present



VEHICLES: Fuel Cell Electric & Dual-Fuel



HECTOR: Hydrogen Waste Collection Vehicles in North West Europe

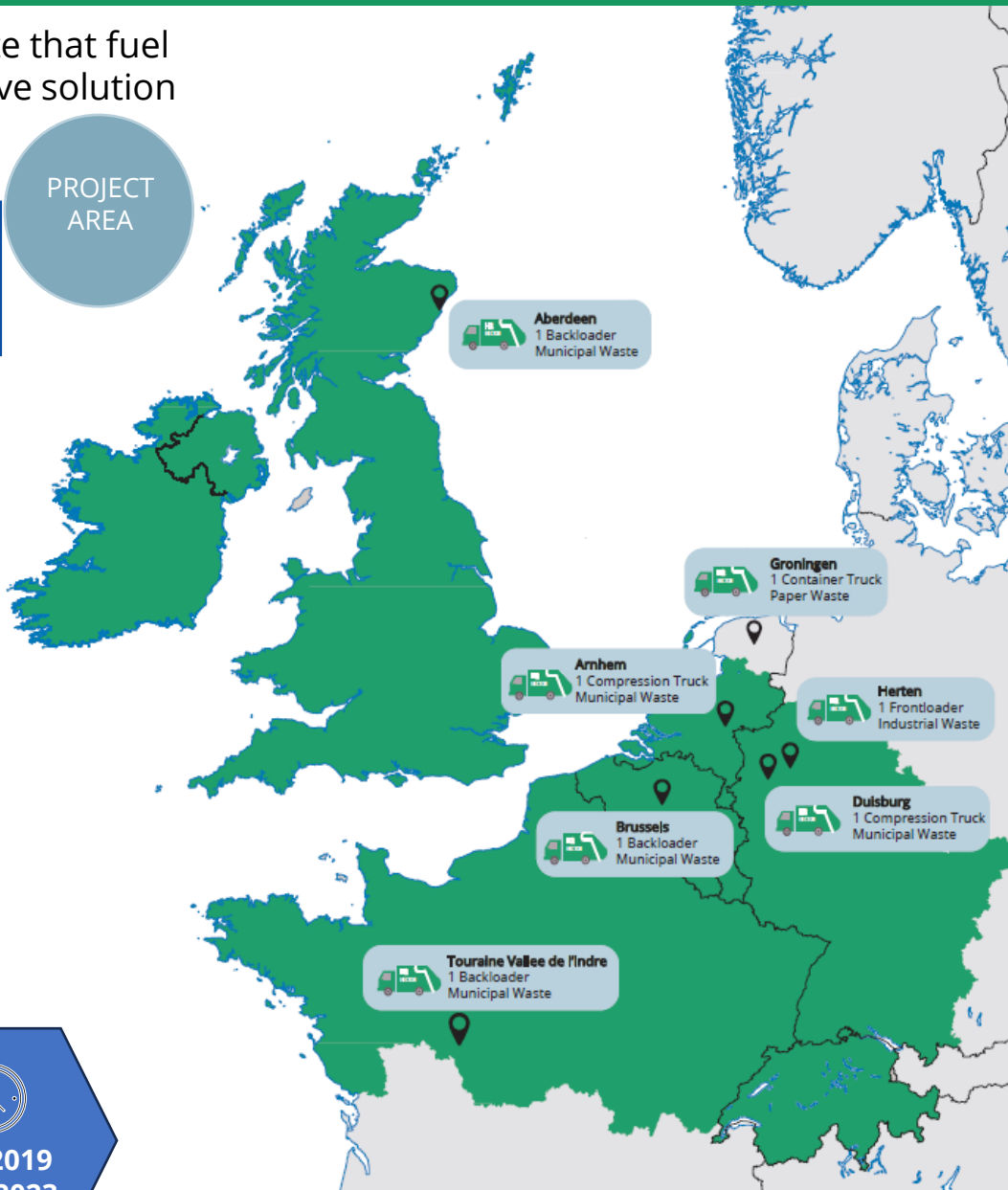
The Hector project aims to demonstrate that fuel cell waste trucks can provide an effective solution to reduce road transport emissions.

Deploy 7 fuel cell waste trucks in 5 countries

Project Outputs

- Operational Handbook
a handbook for organisations that want to trial hydrogen waste trucks, taken from HECTOR Project Partner experiences
- Data Analysis Report
technical analysis of vehicle data and driver societal impact assessment.

PROJECT AREA



www.nweurope.eu/hector

Interreg 
EUROPEAN UNION
North-West Europe
HECTOR
European Regional Development Fund

PARTNERS



European Union
European Regional Development Fund



THEMATIC PRIORITY




€
5.57 M
ERDF


Jan 2019
Nov 2023

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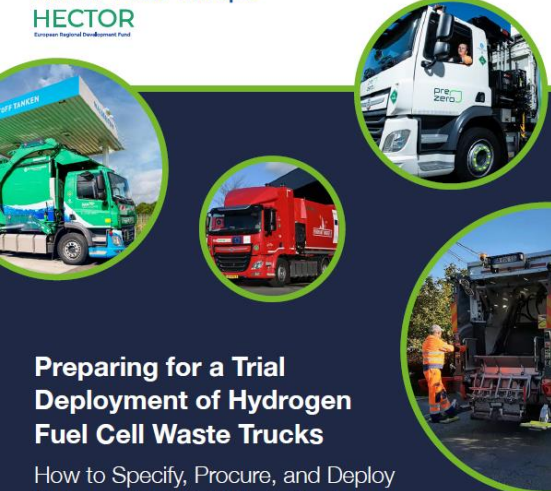
Interreg EUROPEAN UNION
North-West Europe
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European Regional Development Fund
THEMATIC PRIORITY
LOW CARBON



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Preparing for a Trial Deployment of Hydrogen Fuel Cell Waste Trucks

How to Specify, Procure, and Deploy Hydrogen Fuel Cell Waste Trucks



European Union
European Regional Development Fund

Hydrogen truck performing its mission very quietly so as not to disturb nearby residents

PILOT LOCATIONS

Pilot Site	Operator	Backloader	Waste Collected
Aberdeen	Aberdeen City Council	Back loader, right hand drive	Municipal waste
Groningen	Municipality of Groningen	Container truck	Paper waste
Arnhem	Prezero	Compression truck	Municipal waste
Duisburg	Municipality of Duisburg	Compression truck	Municipal waste
Herten	Abfallentsorgungs-Gesellschaft Ruhrgebiet mbH	Frontloader	Industrial waste from private customers
Brussels	ARP-GAN	Container truck	Municipal waste
Touraine Vallee de l'Indre	Touraine Vallee de l'Indre (group of municipalities)	Backloader	Municipal waste – rural area



MANUFACTURERS

- 3 Manufacturers involved (not direct partners in the project)

Manufacturers	Partner	Specification
E-Trucks	Municipality of Groningen (Groningen, NL) AGR (Herten, DE) PreZero (Arnhem, NL)	350 bar
Faun / SEMAT	WBD (Duisburg, DE) ARP-GAN (Brussels, BE) CCTVI (Touraine, FR)	700 bar
Geesinknorba / Hyzon	Aberdeen City Council (UK)	350 bar



OPERATIONAL EXPERIENCES



- Trial of FC RCV
- Driver training
- Positive feedback from drivers, interest from public
- Long delivery times
- Duisburg
 - Pre-procurement supplier engagement
 - Over 35,000 km;
 - 90% availability; 900 bins emptied daily
- ACC
 - Technician training
 - Improved reliability and maintenance
 - Purchase of diagnostic laptop

OPERATIONAL EXPERIENCES



- Arnhem
 - Driver and staff engagement
 - Low availability due to technical issues
- Brussels:
 - 3 modus to drive the truck (Electrical – Economic – Dynamic)
- Groningen: infrastructure development
- Herten
 - Post-deployment manufacturer support
 - Problems with electric motor, fuel cell
- Touraine
 - Regulations and Compliance

OPERATIONAL HANDBOOK

- Practical handbook based on Hector partner experiences
 - Early Market Engagement Procurement Template
 - Vehicle Trial Planning Checklist

Phase	Task and approximate timescale
Planning	3-6 months
Procurement	Varies significantly
Preparation	3-6 months depot 6-12 months temporary HRS 24 months new HRS 9-24 months vehicle build, homologation, delivery
Deployment	Min. 3 months
Testing	3-12 months
Operation	Standard lease / rental period for FC RCV (5 years) Expected operational lifespan for a FC RCV (10 years)



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Hydrogen Fuel Cell Waste Trucks



DATA ANALYSIS

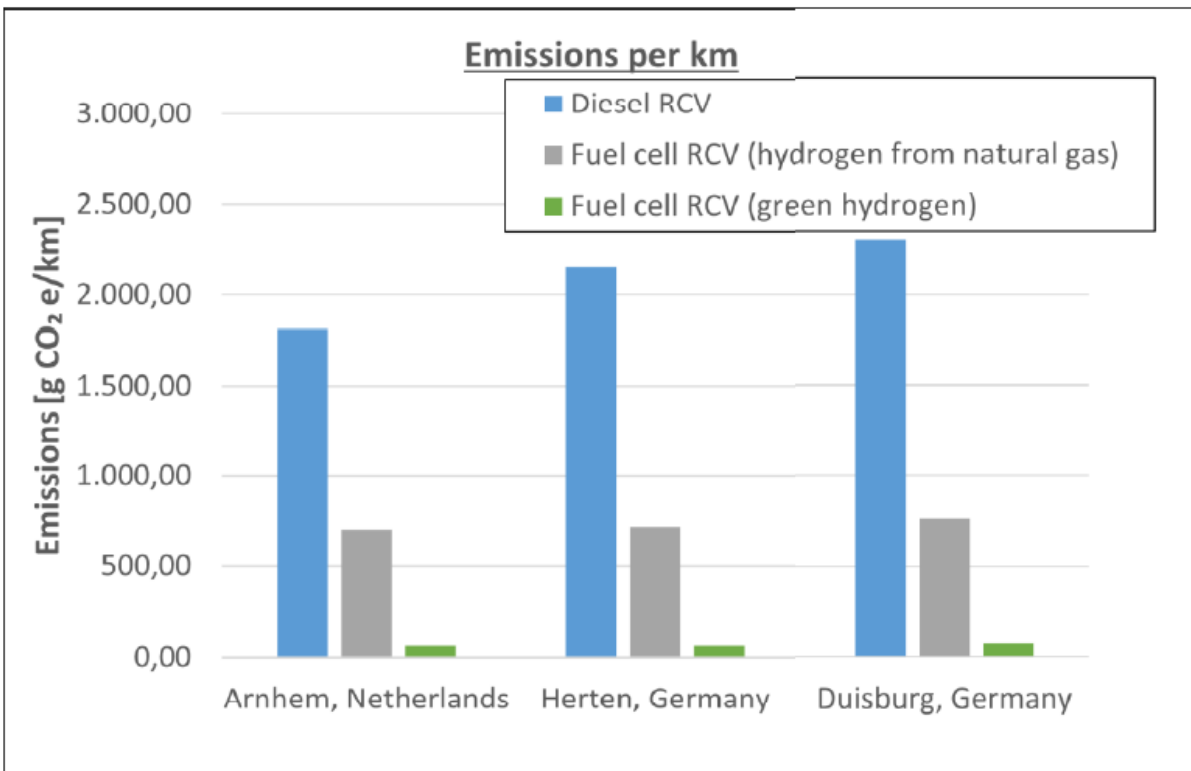


Figure 39: Emissions produced by the diesel RCV in comparison to fuel cell RCVs

Work Package 5 Report of analysis

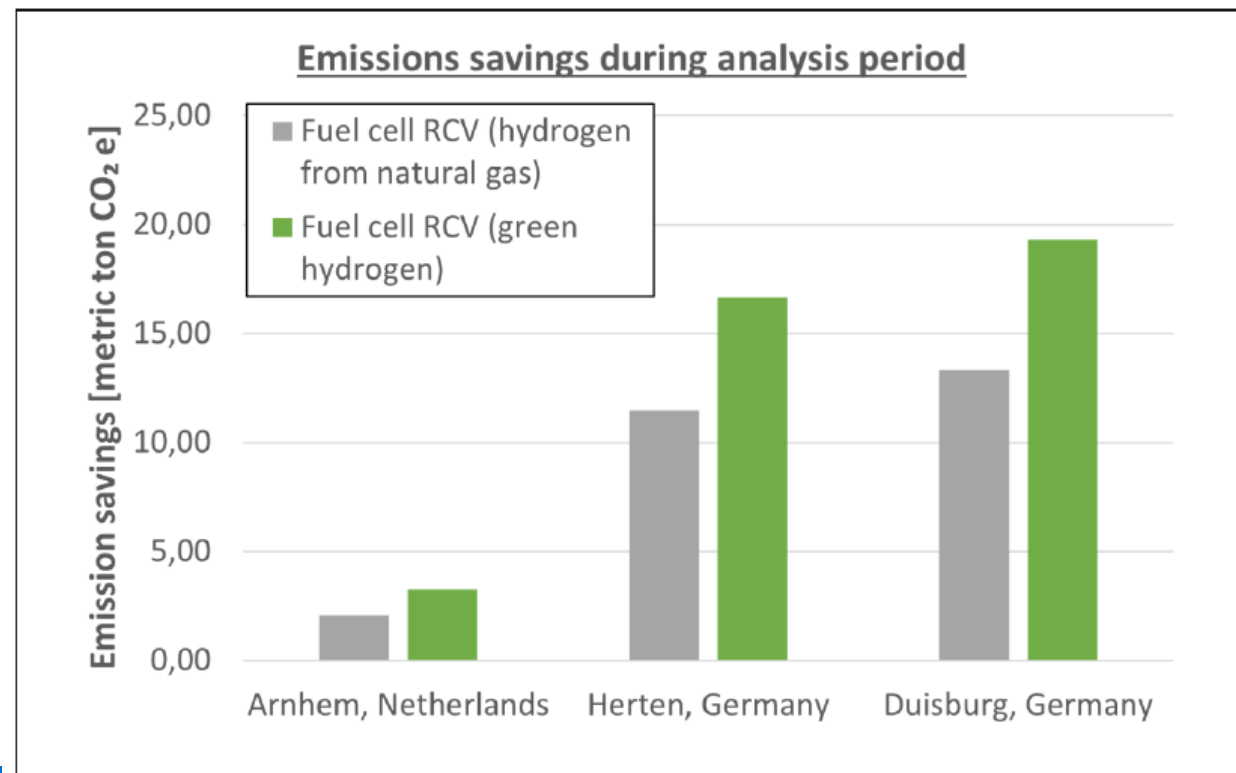
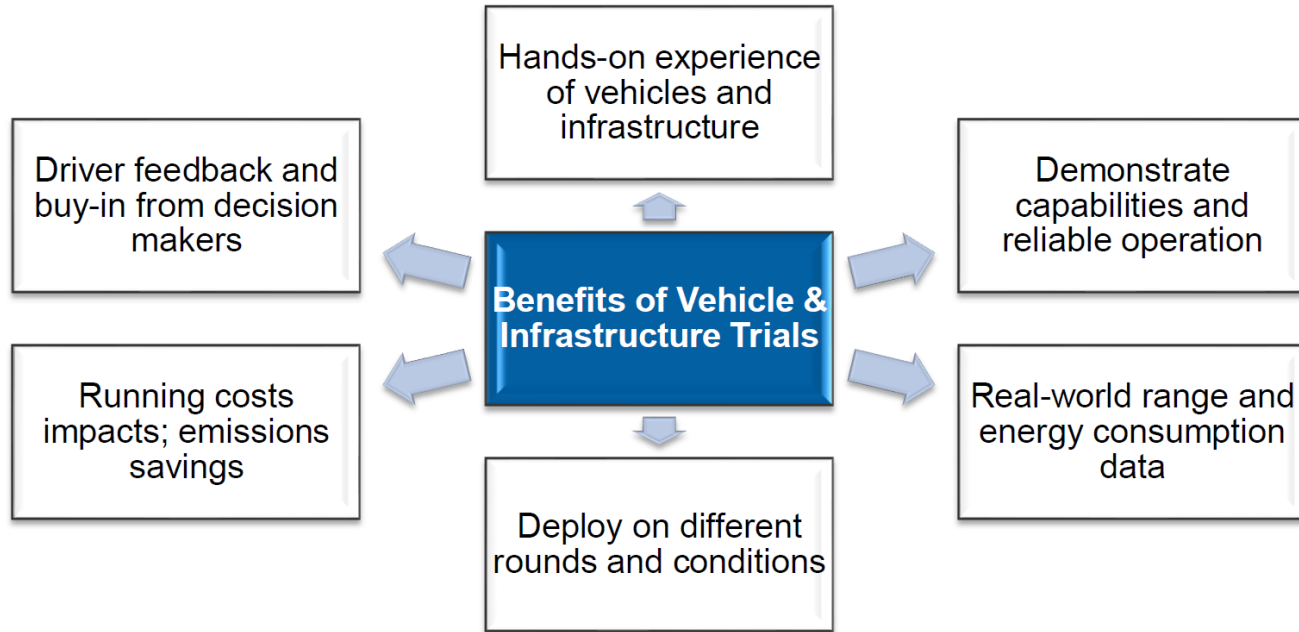


Figure 40: Emissions savings of HECTOR fuel cell RCVs during the analysis period

CONCLUSIONS

Benefits of Trials and Testing



Challenges / Barriers


- Various H2 development issues
- Technical issues with trucks - design and construction, defective parts etc.
- Data collection ownership
- Technology immaturity
- Fuel availability / Station availability
- Local technician non-access

Hydrogen RCVs can provide a zero-emission option for the industry however current financial pressures and market availability makes the business case challenging.




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