Item 8a

Manchester Fuel Cell Innovation Centre

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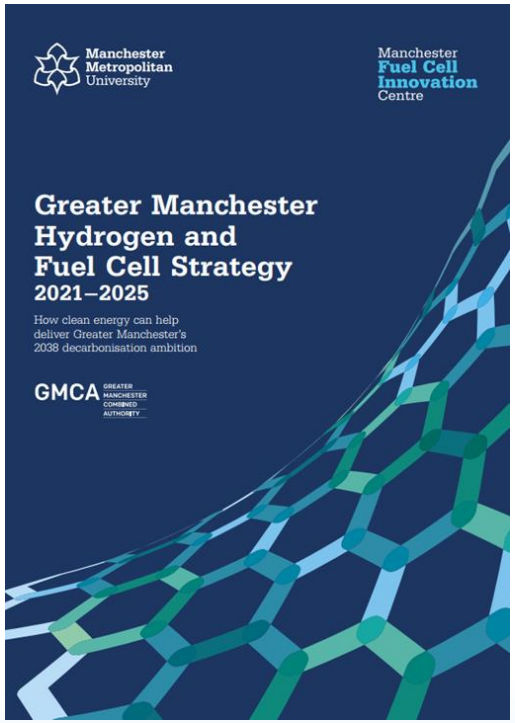
The Greater Manchester Hydrogen and Fuel Cell Strategy

Amer Gaffar

Director



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Who we are

£4.1m Research & Innovation Centre based at Manchester Metropolitan University, Officially opened in September 2018

- **In 2013 we launched the Greater Manchester Hydrogen Partnership with GMCA**
- **Supported 80 SME's on an ERDF funded programme**
- **There are over 30 Research Staff supported in the centre**
- **Developed HySchools project – EU's first targeted programme of Hydrogen Education**
- **Leading the development of GM Hydrogen & Fuel Cell Strategy**
- **Member of the GM Energy Innovation Agency**
- **Leading the skills pathway for NetZero NW**
- **Working with BEIS on development of UK Hydrogen Strategy**
- **Provide evidence to the Science & Technology Committee**

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10 point plan – Hydrogen

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- UK Prime Minister Boris Johnson unveiled his £12bn 10-point plan for a green industrial revolution
  - Boost hydrogen production
  - Promise of a town heated entirely by hydrogen by the end of the decade
    - **Hydrogen neighbourhood by 2023**
    - **Hydrogen village by 2025**
  - Support up to 250,000 new jobs, whilst making strides towards net zero by 2050
  - Generate 5GW of low carbon hydrogen production capacity by 2030 – enough to power about 1.5 million homes – for industry, transport, power and homes
- £240m will go into new hydrogen production facilities
- Ban on new petrol and diesel cars by ten years to 2030.
  - This means that only zero emission vehicles, like hydrogen-powered fuel cell electric vehicles (FCEVs), will be sold in the UK after that year.

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Our Commitment

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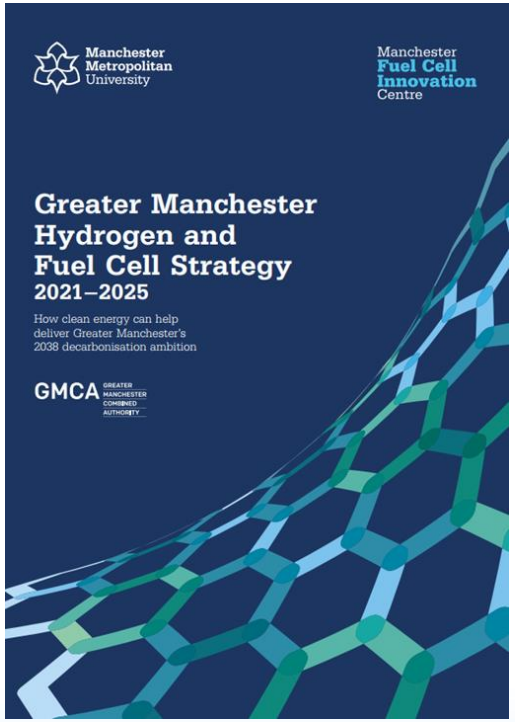
Green Summit 2019 we made a commitment alongside Greater Manchester Combined Authority and partners to deliver a Greater Manchester Hydrogen and Fuel Cell Strategy



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UK Context

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Context

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- Global focus on Hydrogen now
  - Hydrogen Council $300 billion pipeline ($80 billion mature)
  - German Hydrogen strategy €9 billion
- The UK is following suit with the following;
  - National Grid – Future Energy Scenarios
  - Economic Impact Assessment and the work of the **Hydrogen task force**
  - Pathways to Net Zero report
  - Hydrogen Strategy – Spring 2021

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Demand has to be the catalyst and any national strategies and this needs to be underpinned by regional strategies

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Local Context

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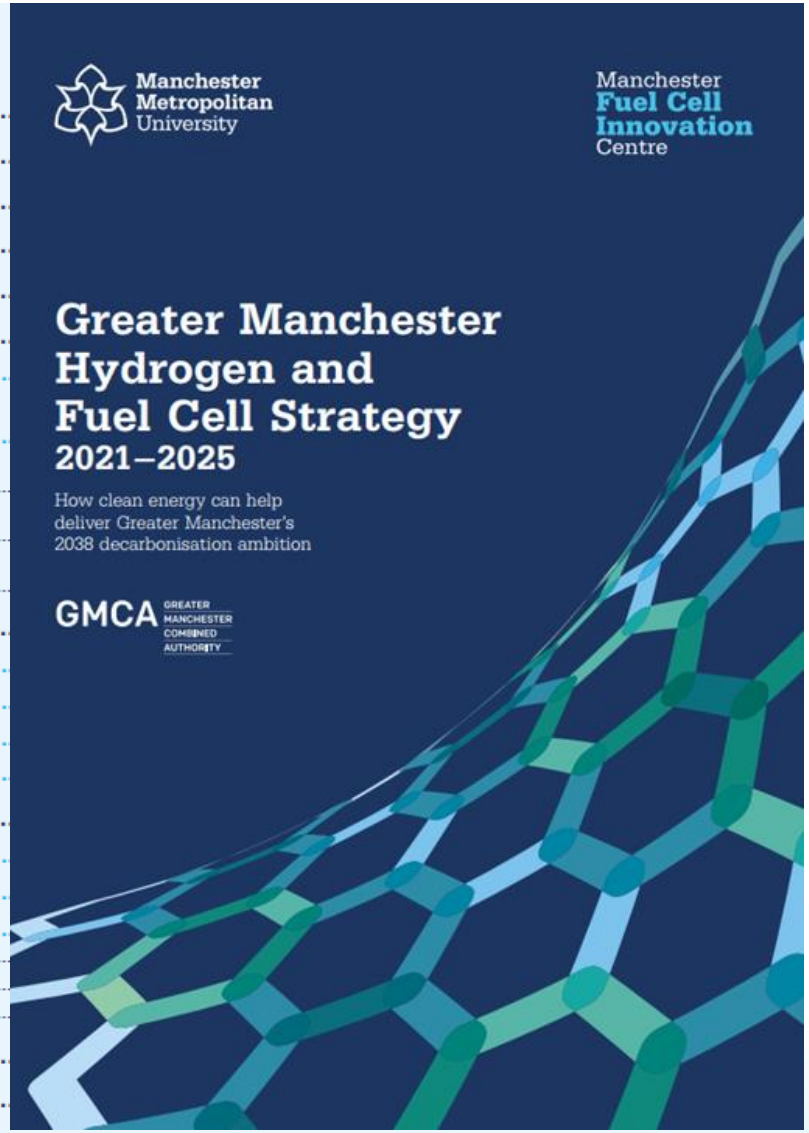
Contents



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Phased approach 2021 -2025

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- **Phase 1 2020–2025: Establish Transport Supply Chain and Build Confidence in Wider Hydrogen**
  - Use public sector HGV vehicle to lead FCEV switch
  - Utilise air quality policy to drive uptake by HGVs and Buses
  - Planning for wider hydrogen refuelling station deployment
  - Evaluate hydrogen as replacement for diesel rail
  - Support innovation and demonstration of hydrogen for heat
  - Utilise academic expertise and facilities to support innovation
  - Support educational institutions to develop course that deliver skills for the hydrogen economy

Phase 2 2026–2030: Prepare for the availability of large volume hydrogen supply

- Prepare for the availability of large volume hydrogen supply
- Support reskilling of those already in the labour market

Phase 3 2031–2038: Establishment of a CO2-free hydrogen supply system

- This phase will focus on wide scale deployment to support the move to a hydrogen economy

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Industry action

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Cadent
Your Gas Network

electricity north west
Bringing energy to your door

NAVIGANT
A Guidehouse Company

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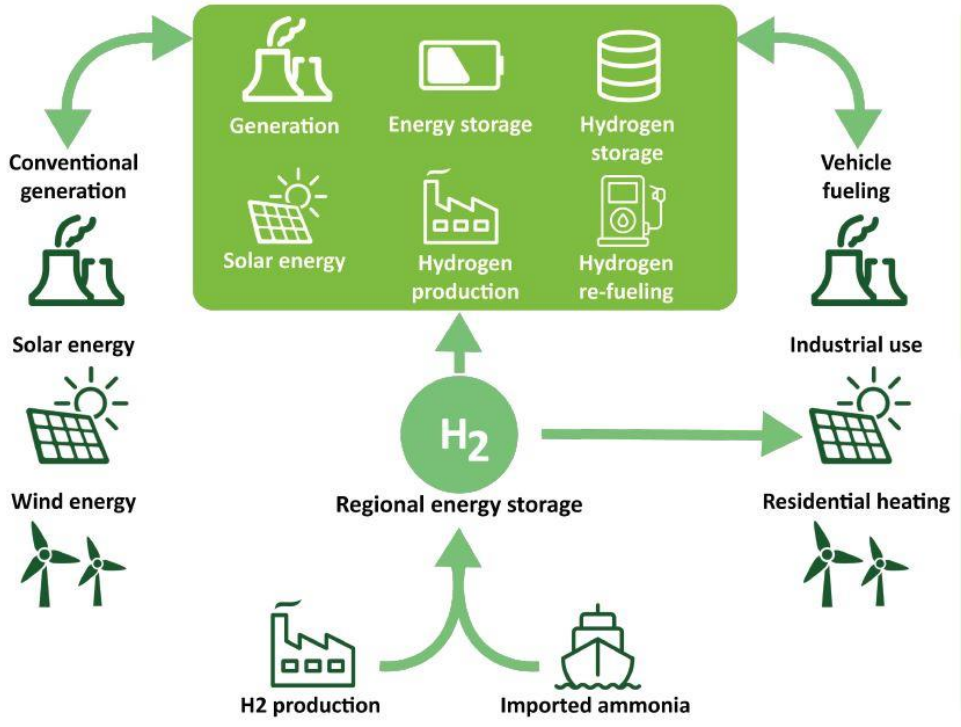
Trafford Multi Vector Micro Industrial Cluster

Cadent – Your Gas Network | Carlton Power | Greater Manchester | Manchester Metropolitan University | electricity north west



Contributing towards the **2038 Net Zero Carbon target**.

Key components of project include:

Research and skills development

Supply chain eco-system

In developing the cluster, we need **SMEs**, **industry**, **researchers**, **education makers** and **policy makers** to all work together.

The Cluster will aid the development of supply chains and technologies, alongside a market place with visibility for SMEs and larger organisations,

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Our recommendations

- *To realise the Prime Minister's vision for the UK's hydrogen economy, investment over the next decade is critical*
- **To review the capacity of the UK's electrical grid to support the installation of electrolysers for the production of clean and green hydrogen for the transportation sector**
- **To install hydrogen-refuelling infrastructure in strategically identified locations for fleets of local travel vehicles including emergency services vehicles, public buses, refuge collection trucks, local delivery HGVs and forklift trucks in warehouses**
- **Develop a hydrogen policy that focuses on the air quality and rapid re-fuelling for HGVs and buses**
- **Introduce incentives for investment in infrastructure to encourage the use of dual-fuelled hydrogen and internal combustion engine-powered vehicles for long distance vehicles**
- **Provide support for investors in hydrogen-powered trains where electrification is not possible within revised rail franchising agreements**
- **Support industrial investments in either bulk 'blue' hydrogen production facilities at multiple locations where carbon capture storage and utilisation is feasible, or 'green' hydrogen**
- **Identify and address the skills gap and challenges facing green technology and industry in the UK at all education levels to facilitate sustained growth of hydrogen economy and aid economic recovery from COVID-19**
- **Establish funded government programmes that support joint industrial-academic partnerships focused on delivering clean hydrogen**

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Where does it fit ?

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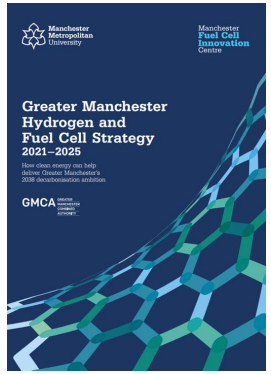
GM 5 year Environment plan – 2019 -2024

- **Challenge 1:** Mitigating climate change
- **Challenge 2:** Air quality
- **Challenge 3:** Production and consumption of resources
- **Challenge 4:** Natural environment
- **Challenge 5:** Resilience and adaptation to the impacts of climate change

GM Hydrogen & Fuel Cell Strategy 2020



GM Smart Energy Plan 2019 – 2024 - This whole system Smart Energy Plan developed for GM provides a targeted focus for the GMCA and local partners, through defining a roadmap and several initial projects and activities over a 5-year timeframe.

North West Projects

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PUBLIC/PRIVATE SECTOR FUNDING

£2.9m

PROJECT FUNDED BY BEIS

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HOME TO THE LARGEST ENERGY RECOVERY FACILITY IN EUROPE GENERATING

564 GWh

HOURS PER YEAR

UNIVERSITY OF CHESTER, FACULTY OF SCIENCE & ENGINEERING KNOWLEDGE TRANSFER FUNDING IN PLACE

HYNET WILL ULTIMATELY PROVIDE AN EXTRA

£17billion

GVA TO THE UK ECONOMY BY 2050 AND CREATE NEARLY

6000 jobs

BY THE MID-2020s

CENTURION

100MW POWER-TO-GAS (P2G)

ENERGY STORAGE FEASIBILITY STUDY IN RUNCORN, CHESHIRE

25

HYDROGEN-POWERED BUSES ON THE STREETS OF THE LIVERPOOL CITY REGION BY 2020

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It's Happening

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U-BATTERY COULD CONTRIBUTE SIGNIFICANTLY TO THE ECONOMY WITH MACROECONOMIC BENEFITS OF

£2.8billion

DIRECT GVA

7000 GWh

OF ENERGY STORAGE AVAILABLE IN THE REGION

INVESTMENTS MADE

£170m

AT PROTOS (£1.5BN PLANNED) IN 50MW WINDFARM AND 22MW BIOMASS

NORTH WEST BUSINESS LEADERSHIP TEAM

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Why ?

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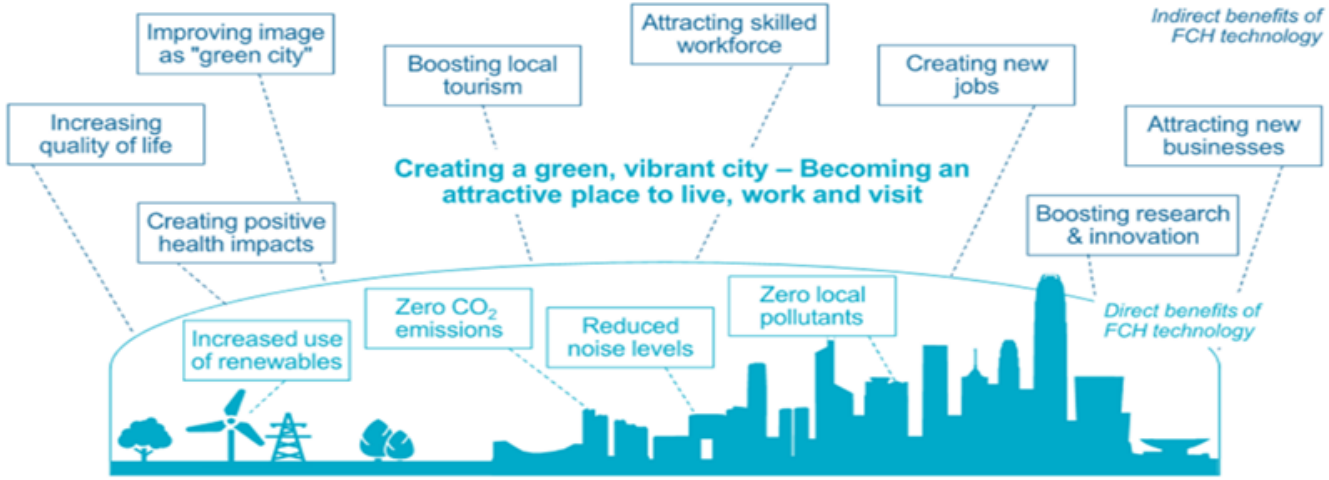

Figure 1 Local Benefits of hydrogen and fuel cells for cities and regions

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7 **state-of-the-art** laboratories and spaces

£4.1m investment from the **European Regional Development Fund** and **Manchester Metropolitan University**

A team of **researchers**, **developers** and **business advisors**

Get in touch

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