



Scotland's Green Hydrogen Opportunity

SPREEE | November 18, 2025

WHO WE ARE

The voice of Scotland's renewable energy industry.

We work to grow Scotland's renewable energy sector and sustain its position at the forefront of the global clean energy industry.

Our policy work is separated into 11 Forums:



Grid & Systems



Hydrogen



Onshore Wind



**Economics
& Markets**



Offshore Wind



**Planning
& Consents**



Hydro



Low-Carbon Heat



Solar



Supply Chain

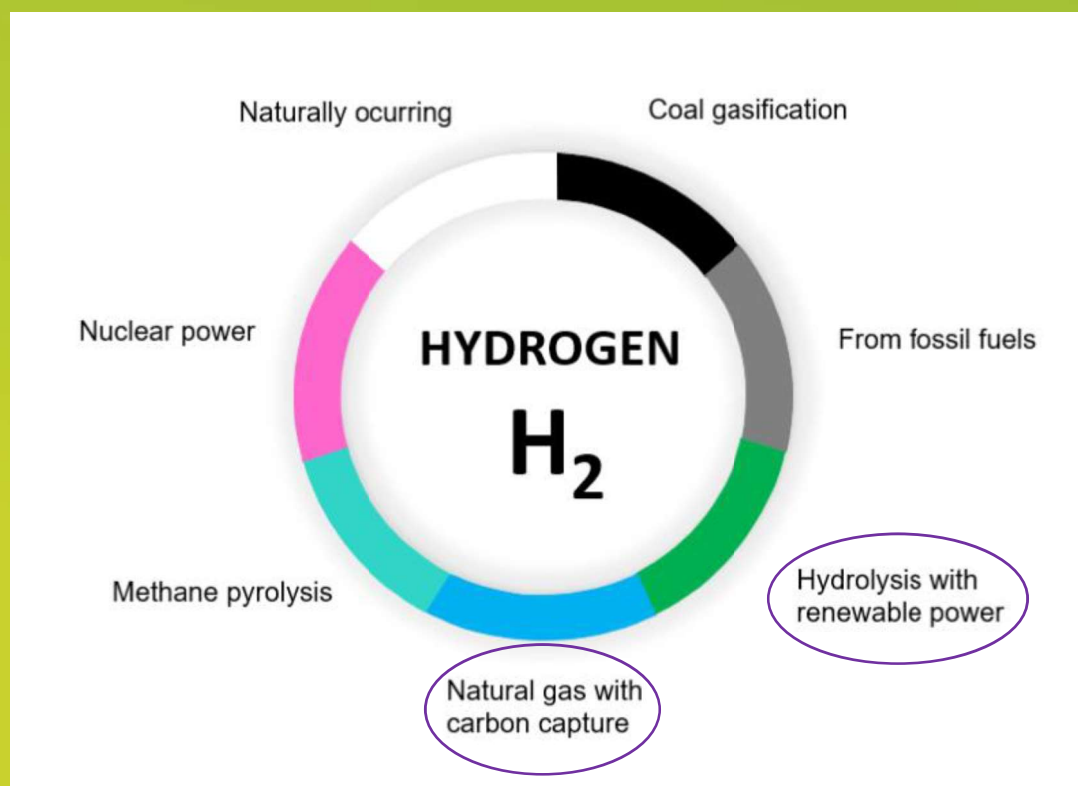


Wave & Tidal



Visit our website
to find out more.

The Hydrogen Rainbow



Source: The Way Ahead, [The Color Palette of the Colorless Hydrogen](#), June 14, 2022.

Ambitions

Scottish Government Hydrogen Policy Statement

- 5GW of low-carbon & renewable hydrogen by 2030
- 25GW of low-carbon & renewable hydrogen by 2045

UK Government Hydrogen Strategy

- 10GW of low-carbon & renewable hydrogen by 2030
 - 5GW of renewable, or 'green,' hydrogen

Hydrogen Projects in Scotland

Hydrogen Production in Scotland - Project Pipeline

H2 Production Scale (MW)
<10 MW

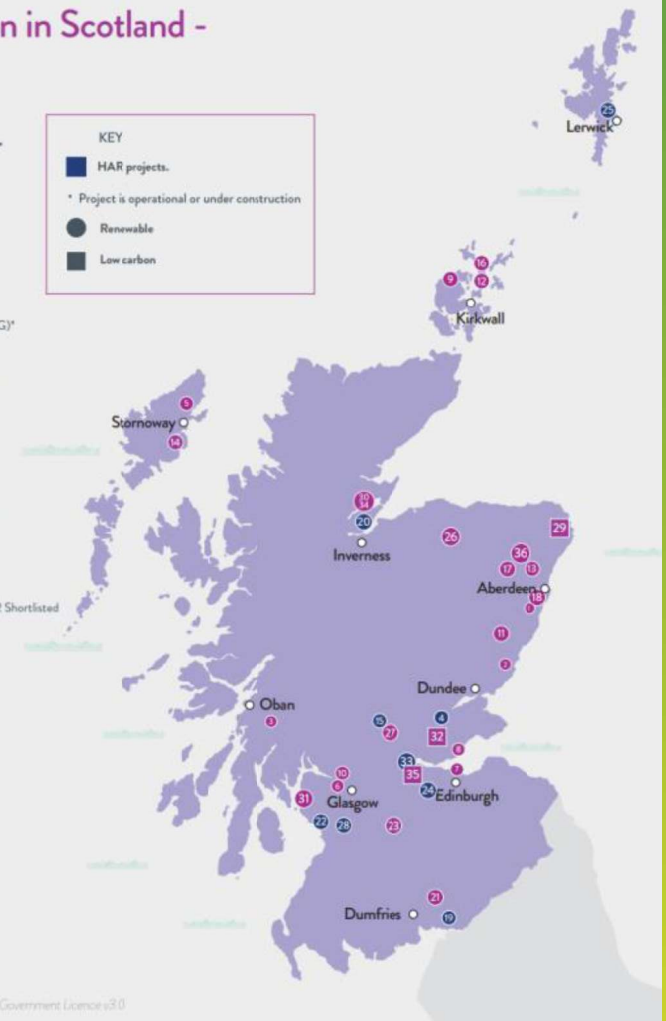
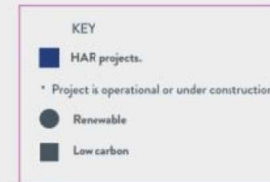
1. ACHES (Aberdeen City Hydrogen Energy Storage)*
2. Arbikie Distillery*
3. Argyll Hydrogen Hub
4. Binn Eco Park Hydrogen - HAR2 Shortlisted
5. Creed Hydrogen Skills and Innovation Centre*
6. Glasgow Airport Hydrogen Innovation Hub
7. Green Hydrogen Shore Power Trial - Port of Leith*
8. H100 Fife*
9. Hammar Hill
10. HyClyde (Auchentoshan Distillery)
11. HydroGlen*
12. Integrated Tidal Energy into the European Grid (ITEG)*
13. Kittybrewster (Aberdeen refuelling station)*
14. Outer Hebrides Local Energy Hub (OHLEH)*
15. Strathallan Hydrogen Facility - HAR2 Shortlisted
16. Surf & Turf/Big Hit*
17. TECA (The Event Complex Aberdeen)*

10-100 MW

18. Aberdeen Hydrogen Hub*
19. Creca Hydrogen Facility - HAR2 Shortlisted
20. Cromarty Hydrogen Hub - HAR1 Project
21. HyLion
22. Irvine Green Hydrogen Project - HAR2 Shortlisted
23. Project Lanark*
24. Selms Muir Hydrogen - HAR2 Shortlisted
25. Shetland Hydrogen Project 1 - HAR2 Shortlisted
26. Speyside Hydrogen Hub
27. Stirling Green Hydrogen
28. Whitelee Green Hydrogen - HAR1 Project & HAR2 Shortlisted

>100 MW

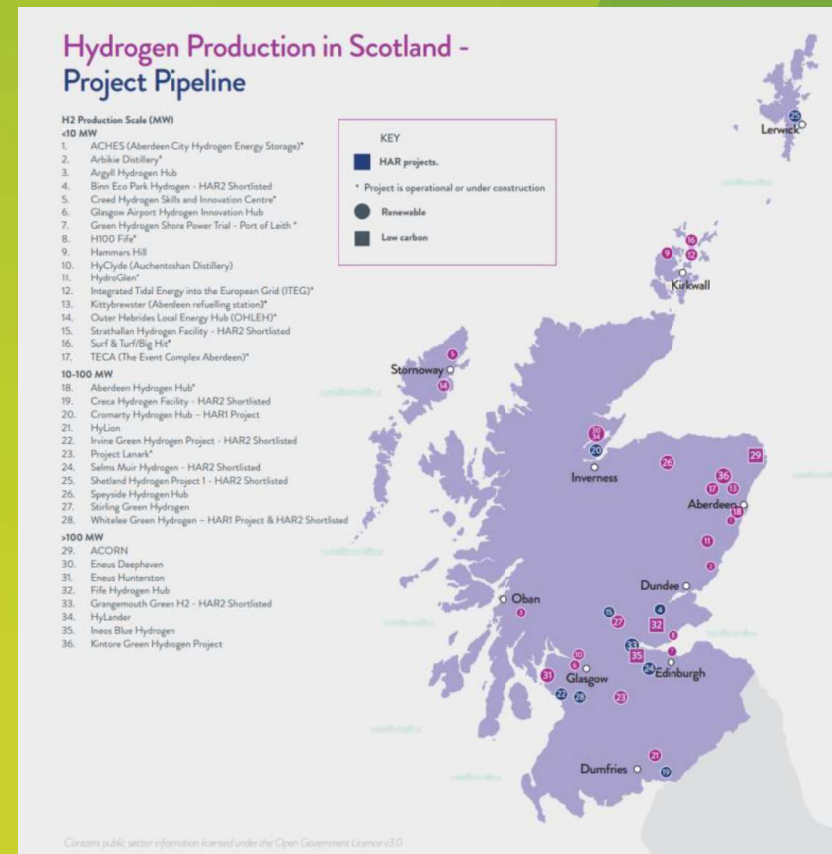
29. ACORN
30. Eneus Deephaven
31. Eneus Hunterston
32. Fife Hydrogen Hub
33. Grangemouth Green H2 - HAR2 Shortlisted
34. HyLander
35. Ineos Blue Hydrogen
36. Kintore Green Hydrogen Project



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Hydrogen Projects in Scotland

- 1.1GW in pipeline
- Largest MW projects:
 - Statera: Kintore Hydrogen – 500MW
 - RWE: Grangemouth Hydrogen Production – 200MW
 - Green Cat Hydrogen: Creca Hydrogen Production – 48MW



Barriers

- 1. Strategic Planning
 - NESO's Strategic Energy Planning – where does green hydrogen fit in?
 - Infrastructure – hydrogen pipelines & storage
- 2. High cost of producing green hydrogen
 - Green hydrogen projects are supported under the DESNZ Hydrogen Allocation Rounds, but costs remain prohibitive
- 3. Lack of certainty of demand for green hydrogen
 - Offtake sectors: heavy industry, alternative fuels, food service

Moving forwards

- 1. Consenting & Planning
 - Continuing support and collaboration with Scottish Government for timely consents for projects
- 2. Strategic Planning
 - Scottish Government's commission of the SSEP and future Strategic Energy Plans – how to enable the growth of a green hydrogen economy
 - Production
 - Demand
 - Infrastructure



Green Cat Hydrogen

Powering a **decarbonised** industrial future.

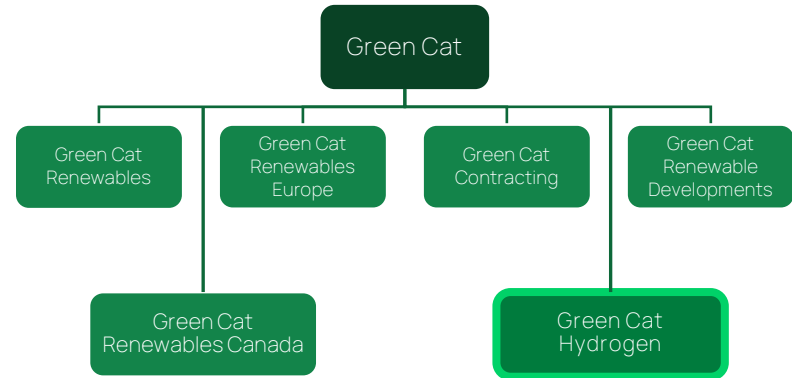
SPREEE

November 2025

About Us

Green Cat Hydrogen is part of the Green Cat group, a group of six companies, with four offices in Scotland, two offices in Canada, one office in the Netherlands, and over 190 employees.

- 20 years of experience: Designing, delivering and operating tailored renewable energy solutions.
- Engineering-led: We are a multi-disciplinary team of engineers, with strong in-house capabilities.
- Vertical integration: Our renewables expertise and integration with the wider Green Cat Group reduces delivery risk.
- Design, build and operate: Our expertise is deployed across the entire hydrogen project lifecycle.
- Investment: Green Cat Hydrogen is backed by RWE Energy Transition Investments, supporting the scaling of the GCH team and providing equity financing for our project pipeline.



Our Approach



GCH believes that hydrogen is part of the solution to decarbonise a range of industries. We offer tailored solutions in sectors where electrification is difficult.

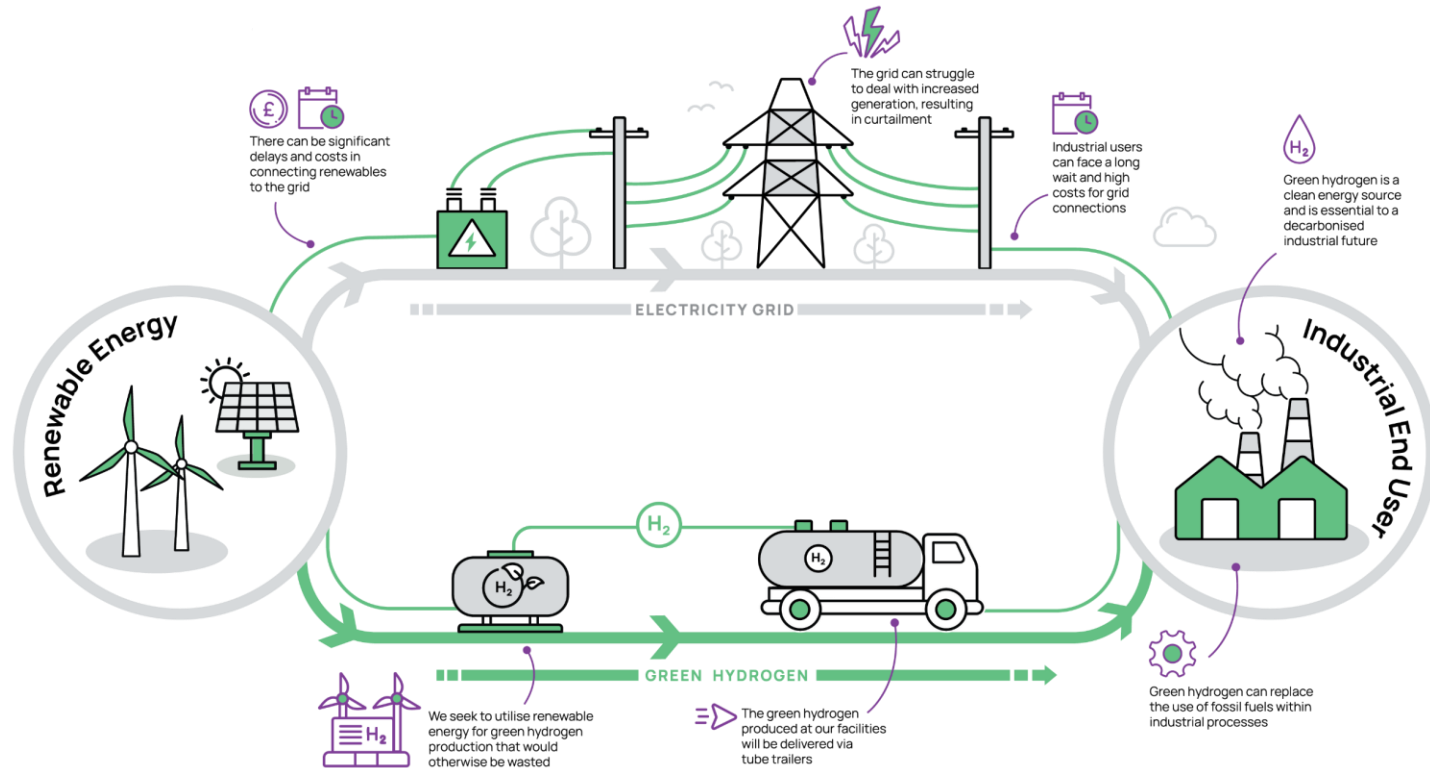


GCH believes in a just transition and seeks to support this philosophy by partnering with communities outside the industrial clusters. By supporting SMEs across the supply chain, we ensure the benefits of renewable power are felt across socio-economic divides.



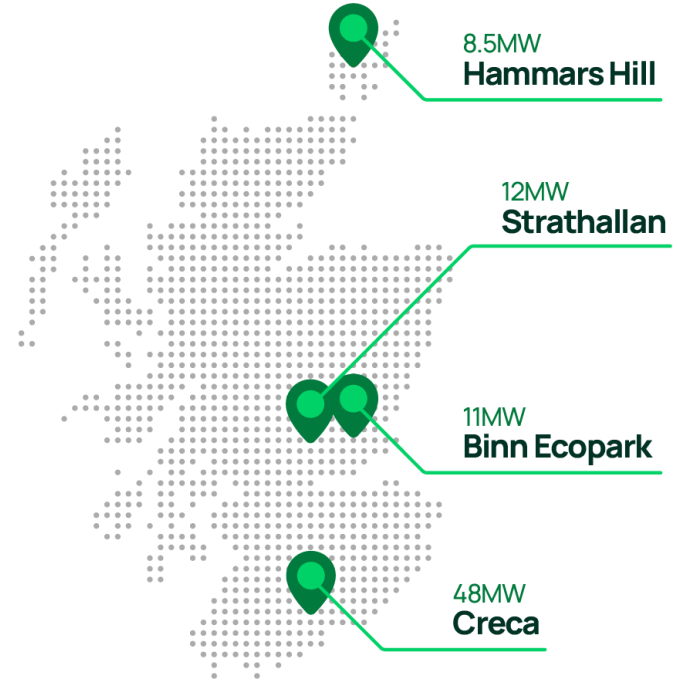
We seek to use curtailed and additional renewable energy resources to produce green, low carbon, hydrogen. We aim to co-locate with renewable energy assets where practicable and are actively enabling the deployment of new renewable energy projects.

The Challenge of Electrification



Our Projects

We currently have four projects in the public domain across Scotland, with several more in development across the UK.



Creca Hydrogen Facility

Overview

Creca Hydrogen Facility, located adjacent to the decommissioned Chapelcross Power Station in Dumfries Galloway, will utilise 48 MW of co-located solar energy to produce green hydrogen.

The facility will support the decarbonisation of local industry and will play a valuable role in establishing the area as a hub of the energy transition.

- 48 MW electrolysis capacity
- Over 4,000 tonnes per annum
- Operational in 2028



Strathallan Hydrogen Facility

Overview

Strathallan Hydrogen Facility, located north-west of Braco, Perth and Kinross, will utilise 20 MW of co-located renewable energy to produce green hydrogen.

The facility will support the decarbonisation of local industry, including food and drink manufacturers.

- 12 MW electrolysis capacity
- Over 1,200 tonnes per annum
- Operational in 2027



Binn Ecopark Hydrogen Facility

Overview

Binn Ecopark Hydrogen Facility in Glenfarg, Perth and Kinross, will utilise 15 MW of co-located wind and solar energy that would otherwise be curtailed to produce green hydrogen.

The facility will support the decarbonisation of local industry and heavy goods fleets.

- 11 MW electrolysis capacity
- Over 1,000 tonnes per annum
- Operational in 2027



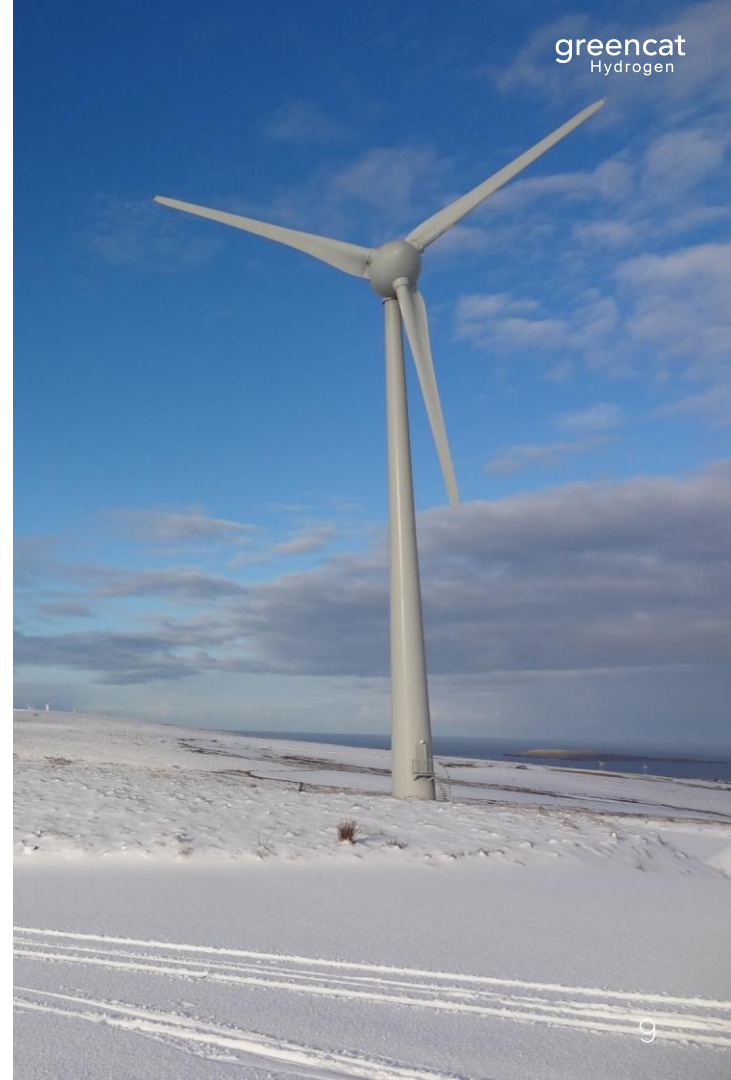
Hammar Hill Hydrogen Facility

Overview

Hammar Hill Hydrogen Facility, located near Evie, Orkney, will utilise 8.4MW of co-located wind energy to produce green hydrogen.

The facility will support the decarbonisation of local industry, including food and drink manufacturers.

- 8.7 MW electrolysis capacity
- Over 800 tonnes per annum

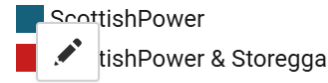


Hydrogen Allocation Rounds (HAR)

Provides ongoing revenue support to close the gap between true hydrogen production costs and the cost of natural gas, for 15 years.

HAR1: Eleven projects awarded in Dec 2023 (including Cromarty and Whitelee in Scotland), with first projects due online from late 2025.

HAR1 Projects - Scotland



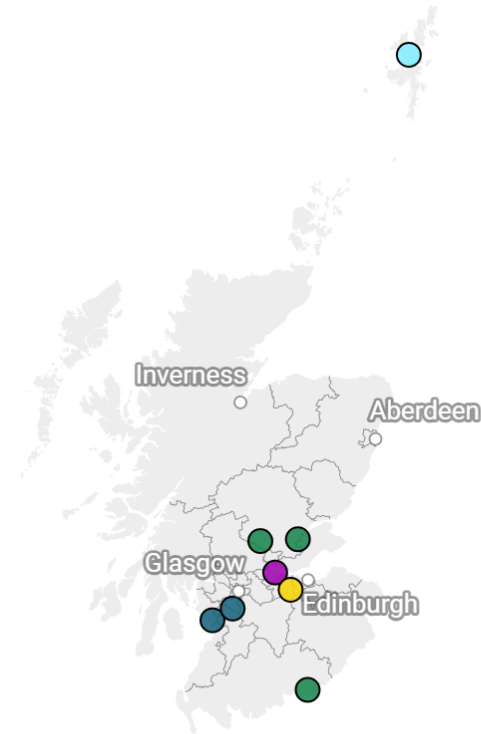
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HAR2: Shortlisting announced April 2025 – 27 projects selected, including 7 in Scotland (3 led by GCH).

HAR2 Projects - Scotland



Hydrogen Allocation Rounds (HAR)

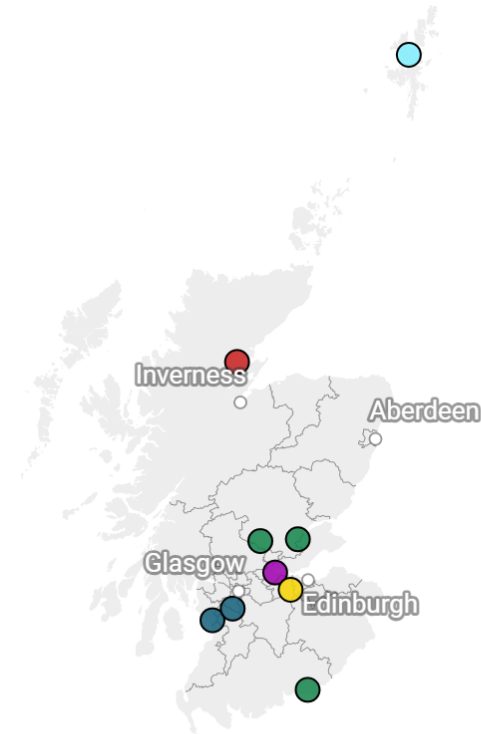
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HAR1 and HAR2 Projects - Scotland

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- RWE
- European Energy
- ScottishPower
- Statkraft
- ScottishPower & Storegga



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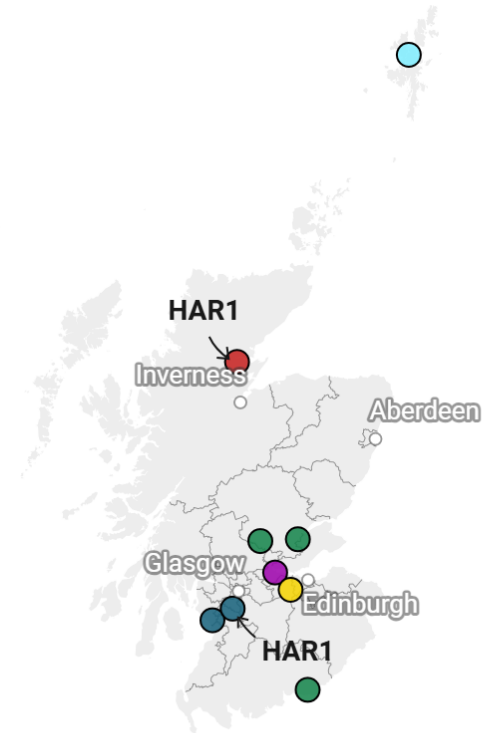
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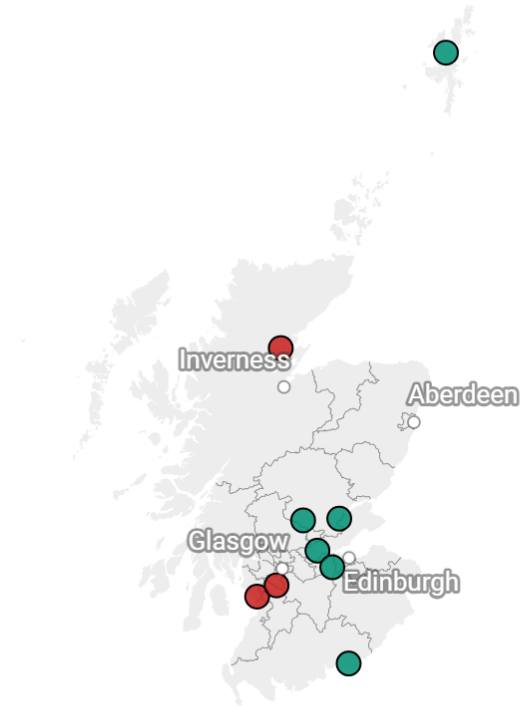
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However, as of October 2025, three Scottish projects have been paused, reflecting the challenges in the sector. These projects include the Cromarty project, both phases of the Whitelee project, and the Irvine project.

Live Pause All HAR



Challenges in the Sector

Cost



- Very high CAPEX for electrolyzers, grid connections and renewables
- Very high OPEX due to electricity prices
- Support mechanisms (e.g. HAR) are essential for commercial- scale projects to be cost-competitive with fossil fuels

Risk Profile



- Electrolyzers still relatively new at scale, with uncertainty over durability and performance
- Policy and regulatory frameworks still evolving
- Bankability challenges due to high cost of capital and limited track record in the market

Offtake



- Lack of liquid, established market
- Lack awareness and capability among potential offtakers
- Lack of financial support for offtakers to cover conversion costs (e.g. equipment upgrades, process changes)

Infrastructure



- No established pipeline or storage network
- High distribution costs for dispersed offtakers
- Delivery costs not fully included in HAR support
- Hydrogen delivery costs are ~3x current use-of-system gas network charges

Required Support

How to unlock Scottish hydrogen projects

- Sustained Development Support
 - Continued backing from Scottish Enterprise and the Scottish Government is vital to move projects from early-stage development through to FID.
- Support for Offtakers
 - Securing long-term offtake from industrial users is the single most important enabler of investment – a strong offtake profile underpins bankability by providing predictable revenues, lowering financing costs, and giving investors confidence to reach Final Investment Decision (FID)
 - Support for offtakers can include:
 - Feasibility studies and engineering design costs at offtaker sites
 - Financial support for onsite infrastructure and equipment upgrades required to switch to hydrogen
 - Delivery costs are a major OPEX barrier – we encourage the Scottish Government to raise with UK Government the lack of support for distributed offtakers



Contact Us

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greencat

Hydrogen

Green Cat Hydrogen
Powering a **decarbonised** industrial future.



HydroGlen – Pioneering Green Hydrogen-Powered Farming in Rural Scotland

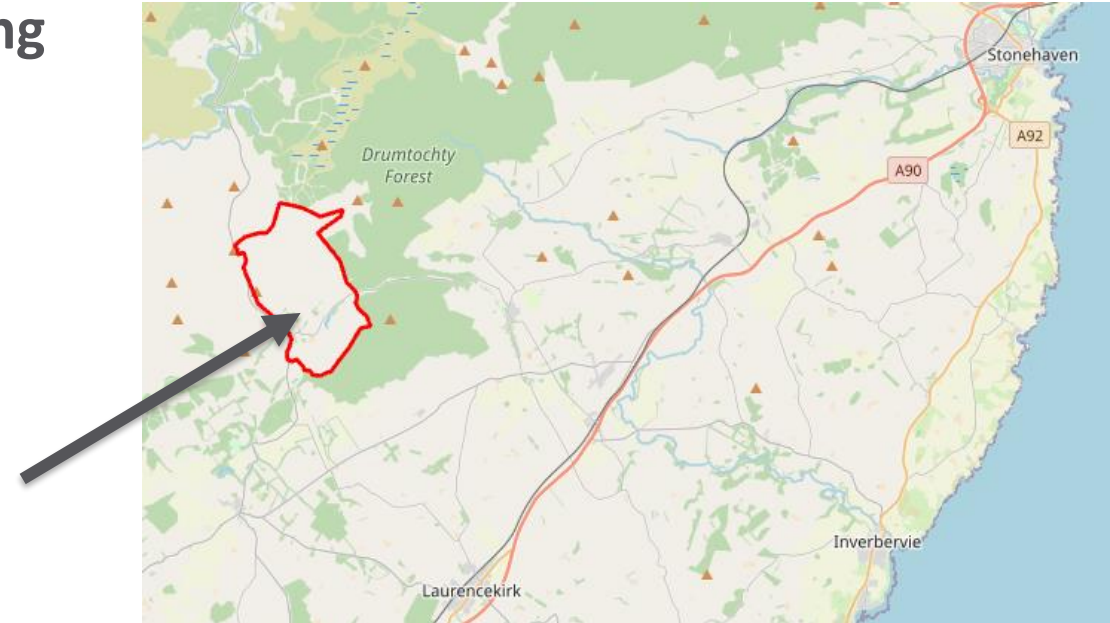


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Niamh Carr – HydroGlen Development Officer
November 2025

HydroGlen – introducing the project

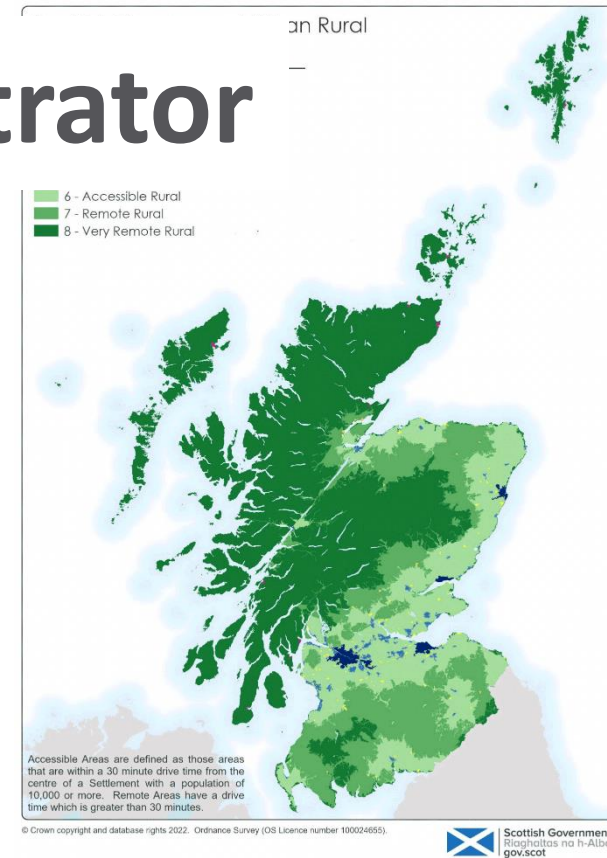
- **Research and demonstrator project** – how farming communities can become self-reliant, green-hydrogen energy producers, aiming to generate 100%+ of all energy requirements (electricity, heating, transport)
- Located at JHI's Research Farm and community at Glensaugh



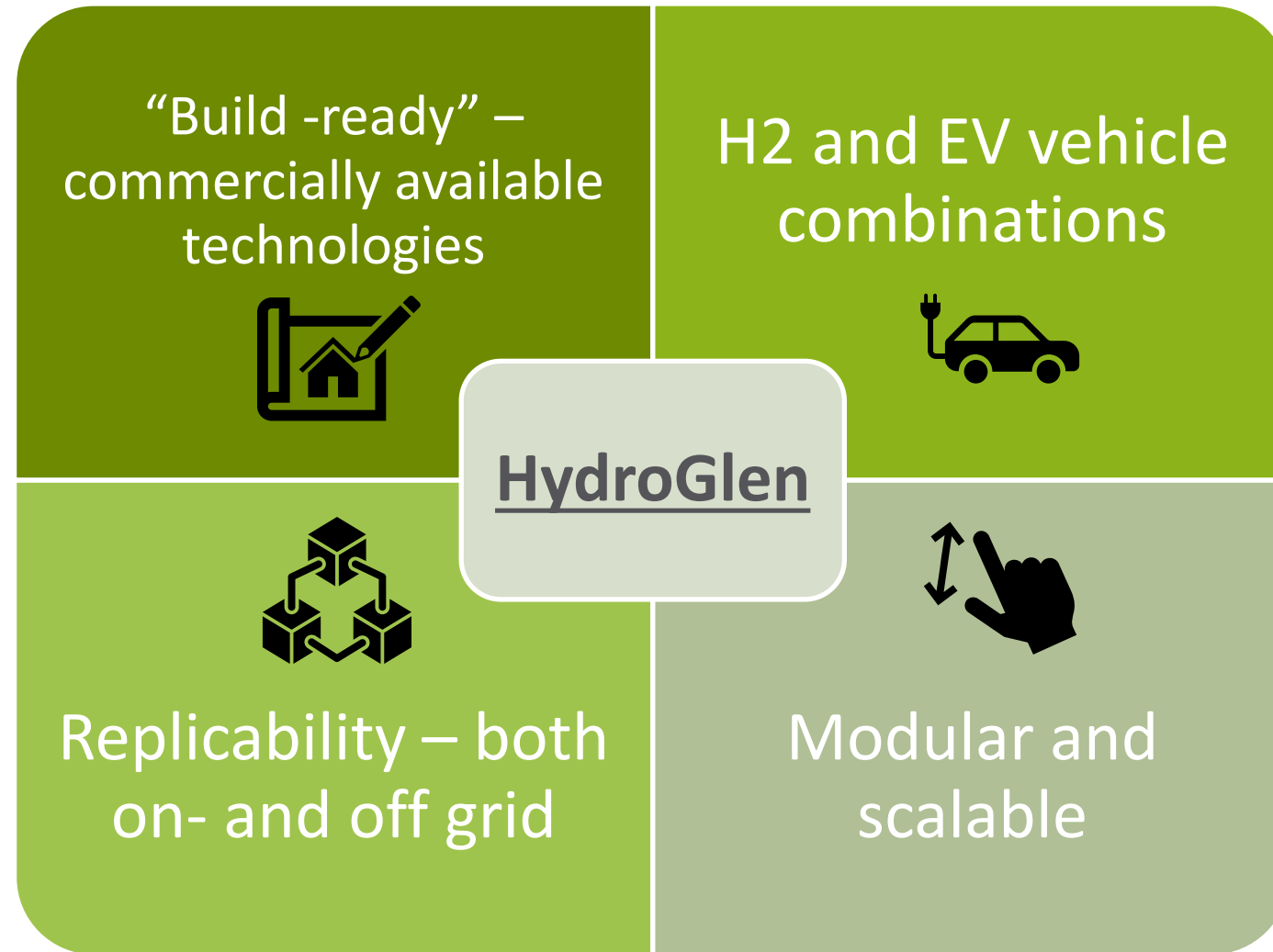
- HydroGlen Feasibility study (2021) funded by Scottish Government's Community and Renewable Energy Scheme (CARES)
- Oct 2022: awarded £6.2million from Scottish Government's Just Transition Fund for detailed design and build.

HydroGlen – importance as a demonstrator

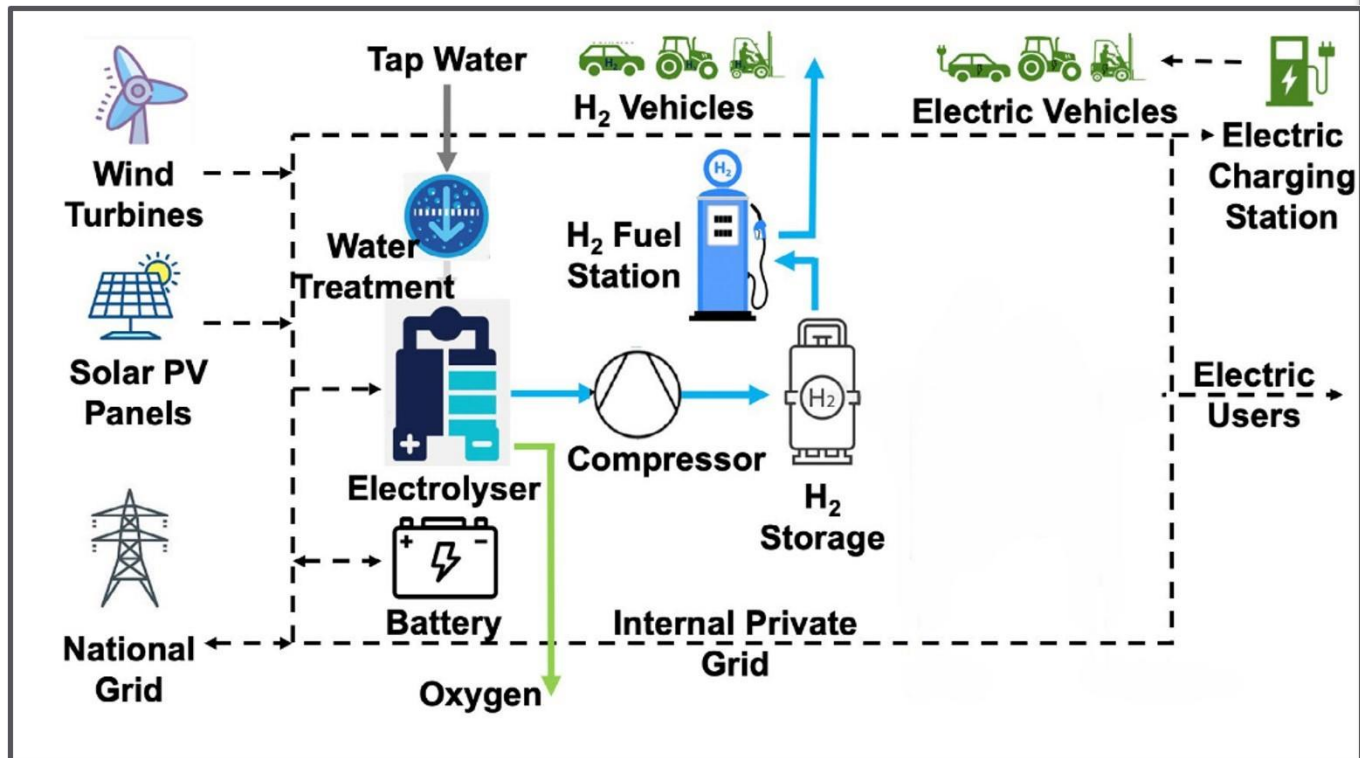
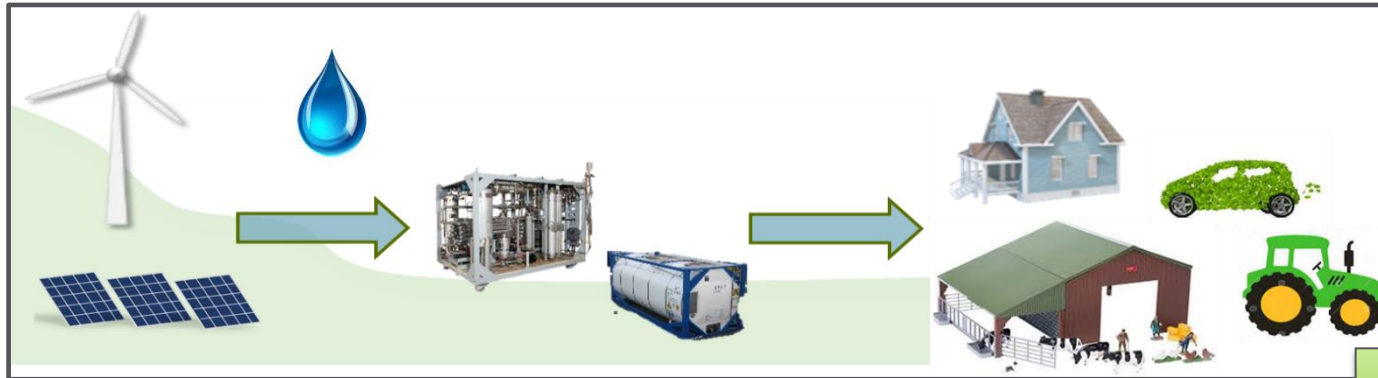
- Scotland's rural areas still depend heavily on oil and gas. Vast renewable resources give potential for green hydrogen production to bring **energy-independence, efficiency and economic benefits...**
- HydroGlen demonstrates how farming communities can contribute to the energy transition through green hydrogen production, storage and use, representing a **significant decarbonisation step for this sector...**
- Green hydrogen provides a particularly promising decarbonisation strategy for **heavy-duty machinery** used in farming systems...



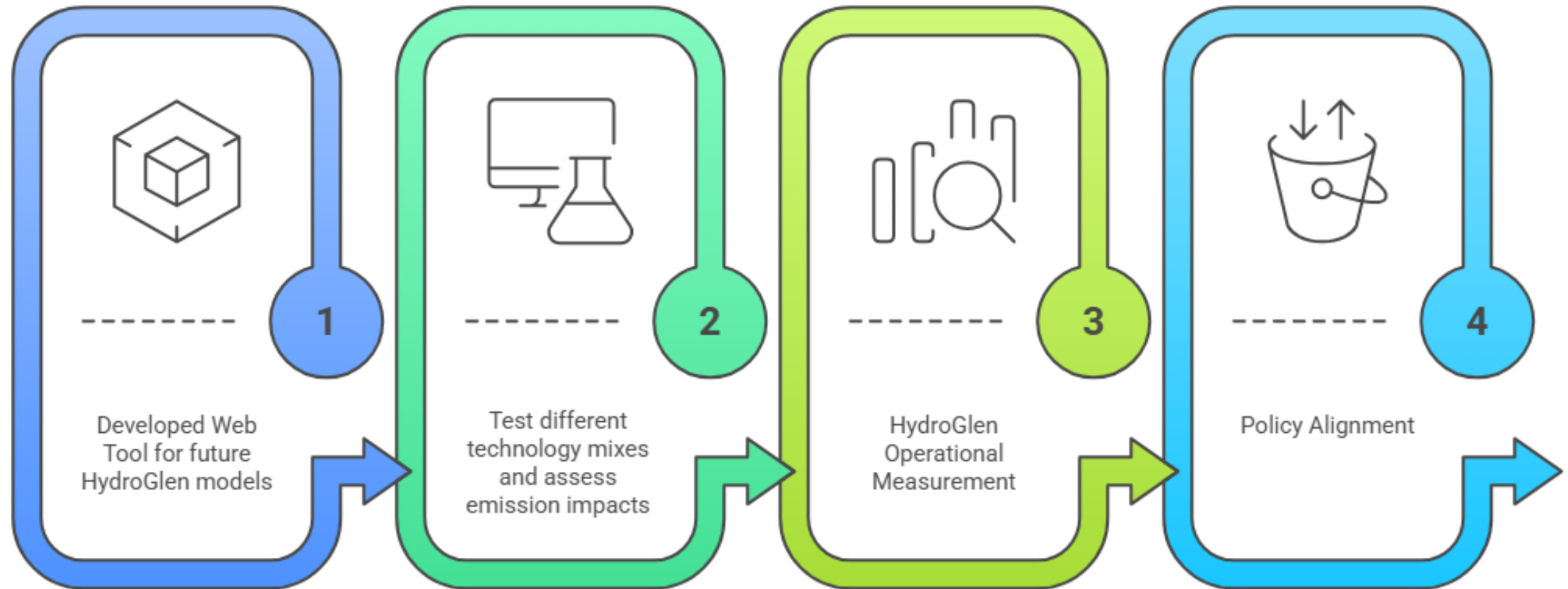
HydroGlen Key Goals



HydroGlen – basic operating model



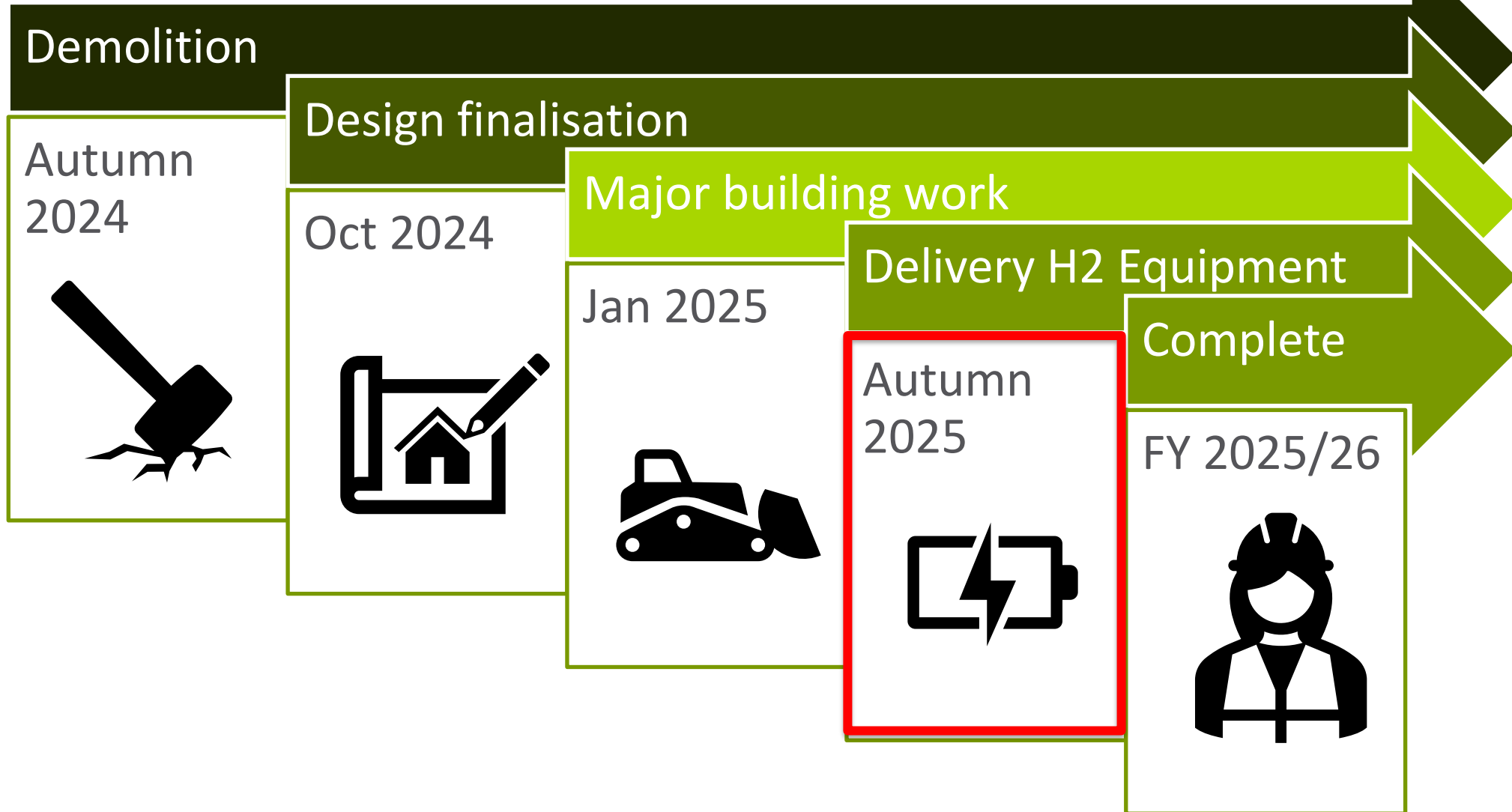
Emissions and Modelling for HydroGlen



Timeline of HydroGlen



Timeline of HydroGlen



Working in Partnership



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Design



Local Councils



Scottish
Government
H2 team

Hydrogen and
Renewable
Experts



**Thornton
Tomasetti**

Build



Universities

H2 Vehicle
Manufacturers

R&D

Technological
Developments



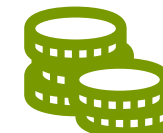
Skills Training



Green Jobs



Associated
Revenue



Progress in photos



Hydrogen Plant
Preparatory Work



Hydrogen Equipment
Ordered



Wind turbine
erection



HydroGlen – looking to the future

Rural Green Hydrogen



Transformative model and supports Scotland's net-zero goals creating new revenue streams

GHG Reduction



18%

Urgent to decarbonise agriculture sector

Scale of opportunity



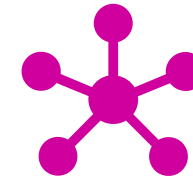
45,000



900,000

Local energy = Decarbonisation + Energy
Independence

HydroGlen demonstrator



Govt, farmers, co-ops, scientists: knowledge-sharing,
policy input, funding/regulation development.

Thank you to the
Scottish Government's Just Transition Fund and
The Community and Renewable Energy Scheme (CARES)
for their support of HydroGlen

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