Green Industrial Futures
Centre for Doctoral Training

EPSRC Centre for Doctoral Training in Green Industrial Futures

Research, innovation and talent to realise the green industrial revolution

Prospectus 2025/26

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Heriot-Watt University

In partnership with:

Imperial

University of Bath

University of Sheffield

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Who we are?

The CDT-GIF is a doctoral training centre that supports PhD students to undertake pioneering research projects that will drive forward research and innovation in industrial decarbonisation. The centre supports a skills & talent pipeline that will develop the next generation of global leaders. The CDT-GIF integrates £18m of UKRI, university and industry investment. Research projects are co-created with our industry partners to address pressing industry and policy challenges.

Our model

The CDT-GIF provides a 4-year taught and research programme to develop future leaders:

1. 4-year innovative industry-led research projects starting from Day 1 of the studentship.
2. Students receive advanced training to embed cross-disciplinary thinking to enable all aspects of industrial decarbonisation to be considered.
3. Developing talent pipelines through professional opportunities and building business skills.

Our university partners

The CDT-GIF brings together four universities with global standing, enabling the centre to have cross-disciplinary expertise across many aspects of industrial decarbonisation. The centre brings together world-leading academic researchers and access to world-class facilities, including Translational Energy Research Centre (TERC) and Imperial Carbon Capture Pilot Plant.

Our project partners

The CDT-GIF works alongside industry partners to provide research solutions to specific engineering and non-engineering challenges. There are two ways to become partners:

1. **Co-sponsorship of project.** Over £75k government funding per project to support your company's research and innovation needs.
2. **Host a student placement.** Host a CDT-GIF student within your organisation to work on a discrete shorter project (1-3 months) and support their development.

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Research programme to power the UK's industrial strategy

The CDT-GIF research and training programme is centred on five themes. Within these themes, students will undertake challenging & original research projects that will be co-created with industrial collaborators to discover transformative, responsible and integrated solutions to achieve net zero.

Carbon capture, utilisation & storage

- Advanced materials and technologies for CO_2 capture & utilisation from industrial sources.
- Resolving engineering & geological issues required to achieve the scaleup of the UK's CO_2 storage capacity.
- Developing sensors & metrology methods to monitor and model CO_2 transport and storage.
- Advanced digital platforms to integrate & optimise CCUS into technologies.

Green hydrogen & sustainable fuels

- Scaling up & integration of H_2 into large energy systems.
- Development and optimisation of novel materials and devices (e.g. electrolyte membranes, multifunction catalyst, heat driven solid oxide co-electrolysis cells).
- Address challenges that arise from curtailed renewable energy.
- Develop novel designs for the use of sustainable fuels.

Systems integration & resource efficiency

- Integrate solutions considering site-specific industrial symbiosis, energy & resource efficiency and techno-economic and life cycle analysis (LCA) studies.
- Integrating process modelling to support the net-zero production of base/platform chemicals and fuels.
- Novel advanced optimisation and value to design energy-materials-technology pathways to achieve net-zero manufacturing at minimum cost.

CO_2 removal technologies

- Develop next generation CDR solutions (DAC, BECCS, Biomass Carbon Removal and Storage).
- Developing state of the art methods for materials characterisation.
- Fit-for-purpose model development combining first principles and empirical modelling with machine learning.
- Systems architecting approach to technology design.

Integrated theme: Social change, policy & net zero economics

- Apply cutting-edge social science and behavioural insights to ensure net zero-consistent behaviour change in industry and society.
- Assess underpinning policy and regulatory frameworks linked with systems integration.
- Mechanisms for leveraging ESG finance and development of value chains.

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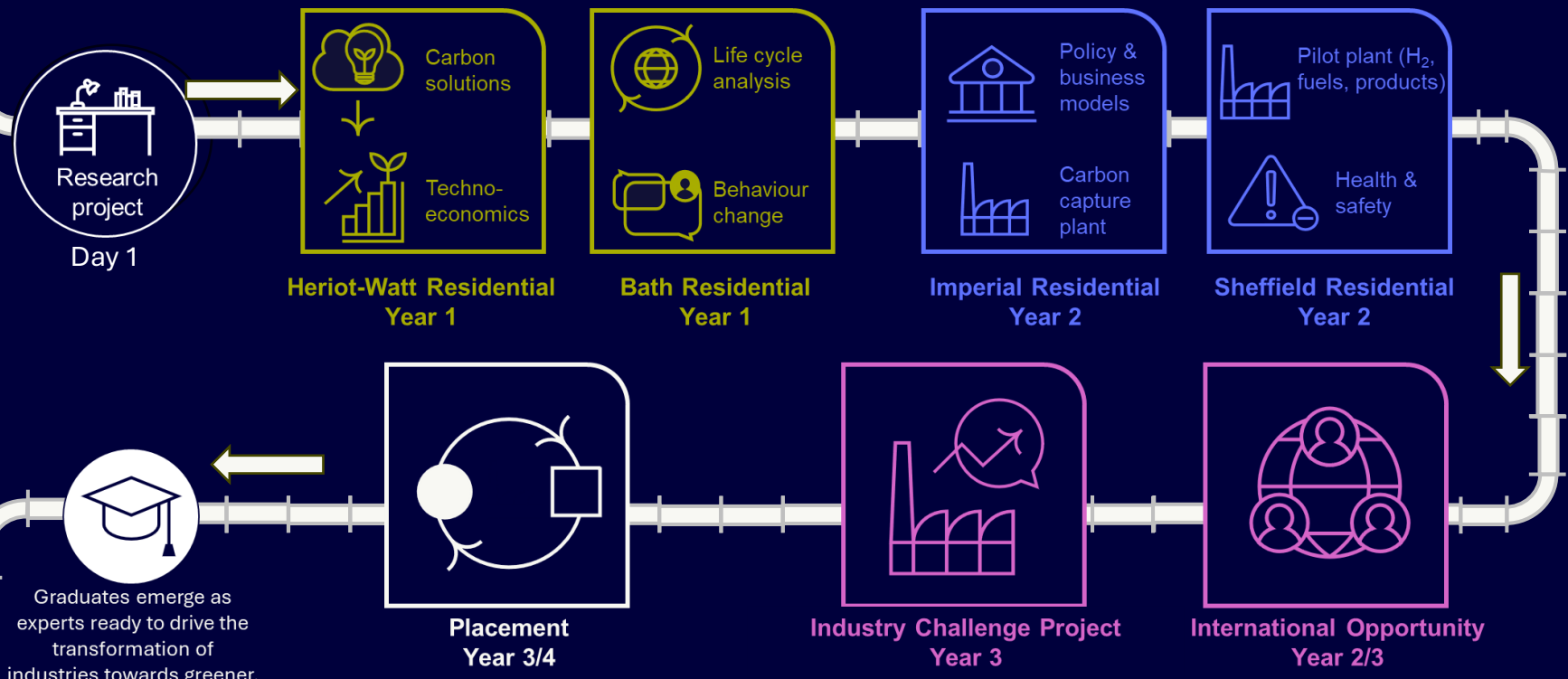
Whole system training programme

The CDT-GIF training programme runs concurrently with the research project to maximise research time from Day 1 and provide flexibility for students. Alongside their research projects, students undertake a whole system training programme that contextualises technologies within the real-world industrial system, understanding the key drivers and barriers to scaling technologies and supply chains. These courses are delivered at a series of residentials.

In addition, students take part in exciting opportunities for professional development that include business skills training; national and international facility visits; work placements and cohort building activities to develop peer-to-peer networks.



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Solutions to emerging challenges

"The emphasis on interdisciplinarity was a real draw to see not only the technological side but the social & behavioural side, coming together to work on the challenge of net zero"

Jainaba Conteh

Advancing low carbon fuel infrastructure: A quantitative whole system approach to enable sustainable energy solutions and mobility

Sponsored by Centrica

Michal Ciesielka

Developing non-critical raw materials-based electrocatalysts for green hydrogen generation from wastewater

Sponsored by EPSRC

Michael Ownsworth

Post-combustion CO_2 capture solvents: addressing the knowledge gap with long-term testing

Sponsored by SSE Thermal

"A really interesting, valuable and fulfilling residential that covered lots of different perspectives. I enjoyed it immensely!"

Iliana Dimitrova

Flashback in hydrogen-fuelled gas turbine combustors

Sponsored by Siemens

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Partnership Opportunities

Help us to shape the development and deployment of industrial decarbonisation by supporting talent pipelines to drive innovation.

Why work with CDT-GIF?

Access to a highly skilled pool of talent that has expertise across the industrial system and an interdisciplinary awareness of industrial decarbonisation.

Access to world-leading academic experts and state-of-the-art facilities to develop practical solutions to decarbonisation challenges.

Direct input into the direction of the centre to steer our programme to meet your talent & research needs.

Engage and network with other project partners via the CDT-GIF annual conferences and other events/webinars.

Engage with our students via site visits and/or our Frontiers Forum, a fortnightly online session where we discuss topical issues in the net zero space.

Partner Option 1

Co-sponsoring a four-year studentship*

*50% of studentship cost matched by UKRI. SMEs have reduced rates.

Scope and shape a PhD research project that addresses your organisation's R&D needs, as well as supporting the talent pipeline. Including hosting a work placement.

Partner Option 2

Host a work placement

Access to the best students for placements or internships. Host a CDT-GIF student working on a discrete shorter project (1-3 months) to develop ideas and support their development.

Want to join CDT-GIF?

Contact **cdtgreenindustrialfutures@hw.ac.uk t**o arrange an introductory meeting with the team to discuss potential collaboration pathways.