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Green Industrial Futures
Realised.

Workshop

Harnessing early career researchers to achieve net zero in industry

Workshop lead: Charlotte McLean

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Key messages

- PhD holders have unique attributes that industry could utilise to address skill gaps for industrial decarbonisation (e.g. specialist knowledge, goal-orientated, strategic, resilient, innovative).
- However, there is a need to develop opportunities to build mechanisms to enable PhD holders to move more efficiently into industry roles (e.g. developing business knowledge/skills, training on how to better position themselves when applying for industry roles, chartership pathways).
- Secondments, internships and KTPs are important mechanisms for ECR career development and knowledge exchange but are often challenging to set up because of university red tape, lack of awareness, funding structures, project timelines, lack of university/supervisor support, visa considerations.
- 75% of workshop participants thought that excessive bureaucracy is creating barriers for mobility between academic and industrial sectors.
- Ensuring wider research impact is recognised and given more weighting when applying for academic roles.
- More funding routes for ECRs to lead their own industry-aligned research.

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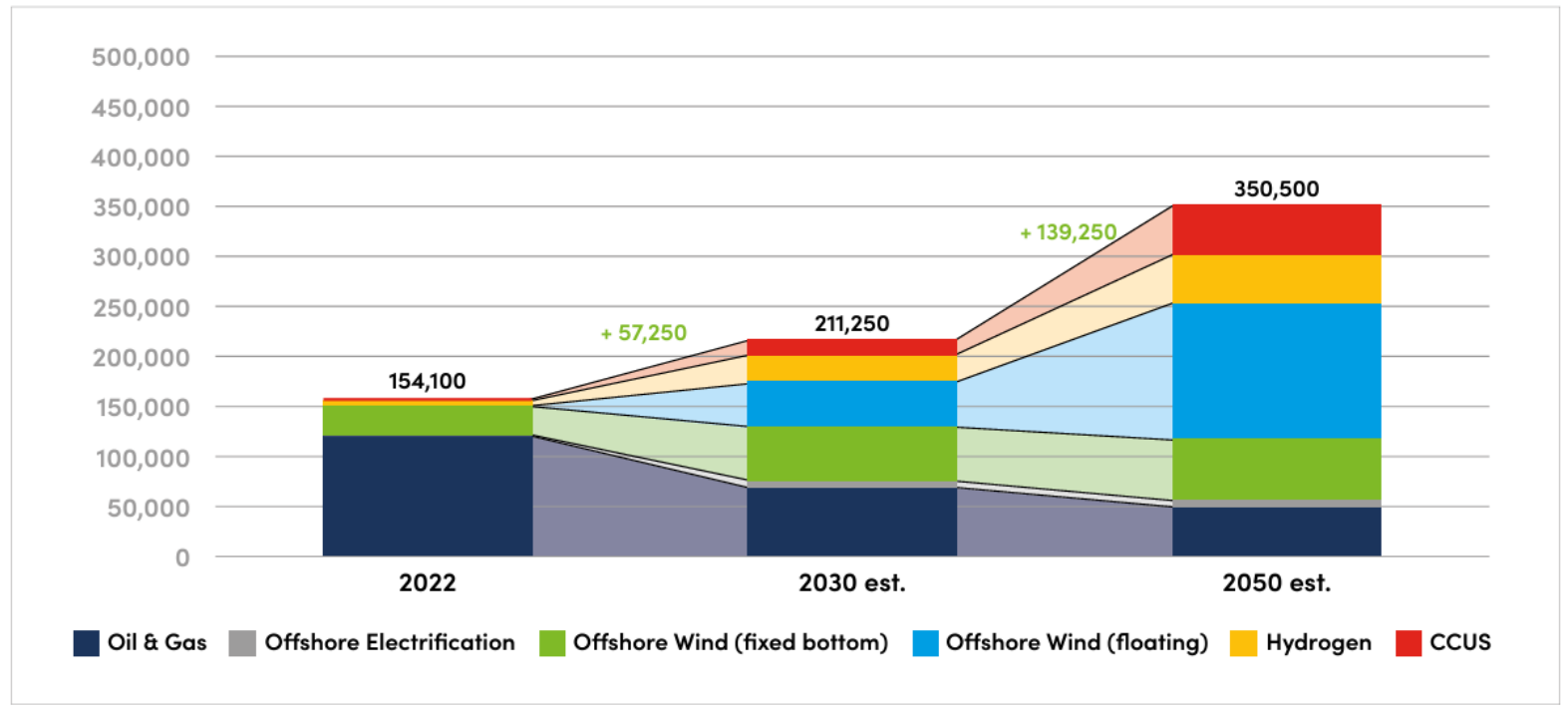
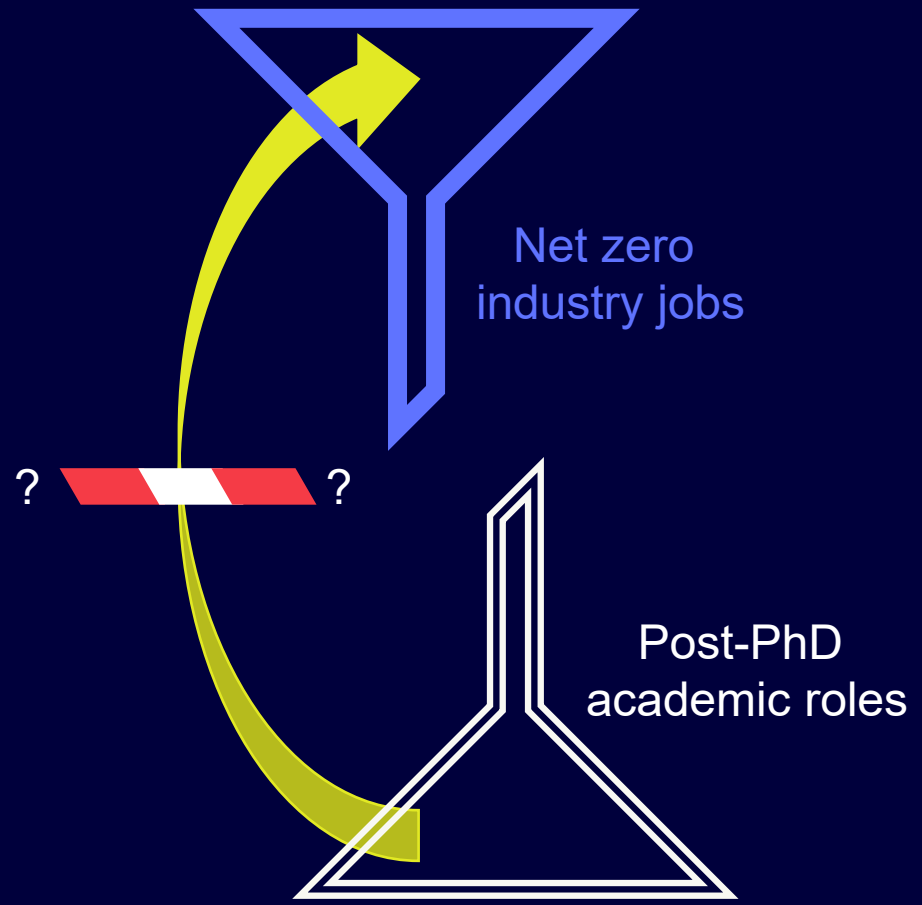
Workforce shortages for industrial decarbonisation



Offshore Energy sectors: 2022 to 2050 Job estimates by sector - Direct and Indirect Employment (NSTD Integrated People and Skills strategy report 2022)



UK jobs

353k*

72% Technical roles
28% Professional roles

Project managers
Geosciences
Process engineers
Data analysts
Infrastructure engineers

*Enabling Skills for the Industrial Decarbonisation Supply Chain, University of Chester, IDRIC 2022

IDRIC's Early Career Researcher Academy

Slido Questions

Slido.com
#2755715

Question 1
How much do you agree with this statement?

Red tape is creating barriers to mobility/cross collaboration between academic and industrial sectors for early-to-mid career researchers.

Question 2
What are the barriers to effective collaboration between ECR/MCR & industry stakeholders **or** mobility between academic and industry roles?

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Decarbonization Odyssey: An ECR's Reflections on Bridging the Gap

Dr Chitrakshi Goel
University of Swansea

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Decarbonization Odyssey: An ECR's Reflections on Bridging the Gap

Dr. Chitrakshi Goel

Department of Chemical Engineering – Energy Safety Research Institute

IDRIC Annual Conference 2024

Workshop – Harnessing early career researchers to achieve net zero in industry

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Industrial Secondments

“In the journey towards decarbonization, industrial secondments serve as vital connectors, merging expertise, innovation, and purpose to propel us towards a sustainable future.”

Swansea University
Prifysgol Abertawe

HERIOT WATT UNIVERSITY

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Industrial Secondment at Rockwool

RICE
Reducing Industrial Carbon Emissions
Lleihau Allyriadau Carbon Diwydiannol

ESRI

UNDEB EWROPEAIDD
EUROPEAN UNION
Llywodraeth Cymru
Welsh Government
Cronfa Datblygu Rhanbarthol Ewrop
European Regional Development Fund

University of South Wales
Prifysgol De Cymru

ROCKWOOL®

State-of-the-art pilot scale pressure swing adsorption demonstrator deployed at Rockwool's manufacturing site

Business NewsWales

HOME SECTORS REGIONS BUSINESS ZONE EVENTS

Carbon Capture Research Helps Industry Tackle Carbon Emissions

SOUTH WEST WALES SWANSEA

ENERGY & ENVIRONMENT , 25TH JULY 2022

CYMRAEG

SHARE

A collaboration between researchers at the Energy Safety Research Institute (ESRI) at Swansea University and insulation producer ROCKWOOL Limited has seen the installation of a new carbon dioxide demonstration unit at the company's manufacturing plant in Bridgend, South Wales.

The research, which involves the capture of carbon dioxide gas, is an important technological contribution in enabling Wales and the UK achieve net zero carbon by 2050.

With Prof. Enrico Andreoli (Swansea University) & Prof. Susana Garcia (Heriot-Watt University)

https://businessnewswales.com/carbon-capture-research-helps-industry-tackle-carbon-emissions/

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Industrial Secondment at Rockwool

Pressure Swing Adsorption Demonstrator

Aims

Identifying optimal process conditions for the PSA unit to successfully capture CO_2 from the emissions of Rockwool's manufacturing site.

Outcomes

- Due to unforeseen technical challenges, determining optimal process conditions is still pending.
- Successful resolution and adaptation of the interface between the stack and PSA unit.
- Working model developed for process modelling and simulation.
- Successful acquisition of EPSRC IAA grant to continue further collaboration with Rockwool.

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Impacts on Career Development

First-hand experience and expertise in the potential next-generation technology for industrial decarbonisation

Specialised knowledge and problems-solving skills with challenges otherwise not encountered in academic research settings.

Managing complex, multidisciplinary projects with tight timelines and specific deliverables added breadth to the project management skills

Enhanced qualifications and potential to open-up new pathways within the industry

Facilitated networking opportunities & collaboration with industry leaders & research institutions

Transition from researcher to research practitioner

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Academia vs Industry

Symbiotic relationship

- ✓ Fosters research skills and theoretical knowledge
- ✓ Publication of results – Scientific recognition
- ✓ Most favourable solution within limited budget.
- ✓ Limited exposure to real-world applications, industry practices, and commercialization.

- ✓ Focus on practical applications, innovation, and market relevance.
- ✓ Protection of innovation and know-how.
- ✓ Best cost-effective solution.
- ✓ Emphasis on teamwork, project management, and delivering tangible results.
- ✓ Adapting to corporate culture, timelines, and profit-driven goals.

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Perspectives of moving between academia and industry

- Continuous learning and adaptation.
- Leveraging and applying diverse perspectives.
- Broader outlook on research impact.
- Making the research perspective multidimensional.

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Academia to Industry: Constraints & Restrictions

Limited project timeframes

Restricted budget

Balancing academic & industry demands

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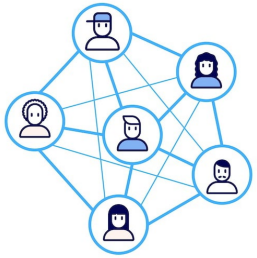
Enhancing ECRs' Engagement with Industry

Flexible funding models

- equipment/technology transfer,
- extended research stays in industry,
- support for a team of ECRs.

Industry-embedded training programs

- skill development workshops/seminars on industry specific skills,
- mentorship initiatives connecting ECRs with industry professionals.



Direct placement of ECRs in industry

- platforms for matchmaking between researchers and industry partners,
- programs to spend extended periods working within companies,
- career development opportunities for active industry engagement.

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Acknowledgments

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Thank you!

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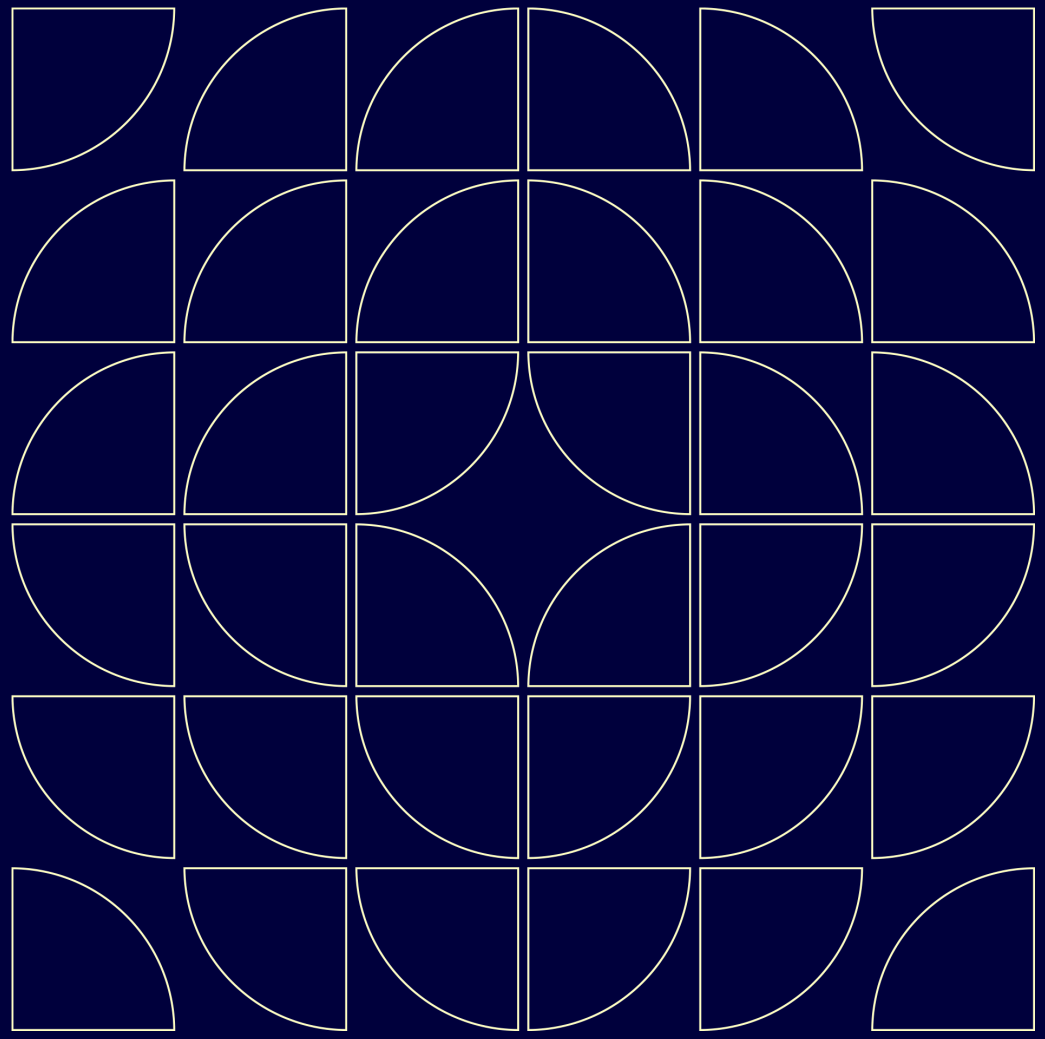
Next steps:

- Write up key findings and actions. A brief will be published on IDRIC website.

- Utilise findings to establish targeted ECR & MCR opportunities in the next phase of IDRIC

- Work with other centres & universities to help drive stepwise systemic change where needed.



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