



2 years of Construct Innovate

Ireland's National Research Centre for Construction Technology and Innovation

Colm McHugh, Centre Manager

24th of October 2024



**How can our Industry benefit from an
Innovation focused Research Centre?**

Background - Challenges for the sector

CYCLICAL NATURE

FRAGMENTED SECTOR

LOW PRODUCTIVITY

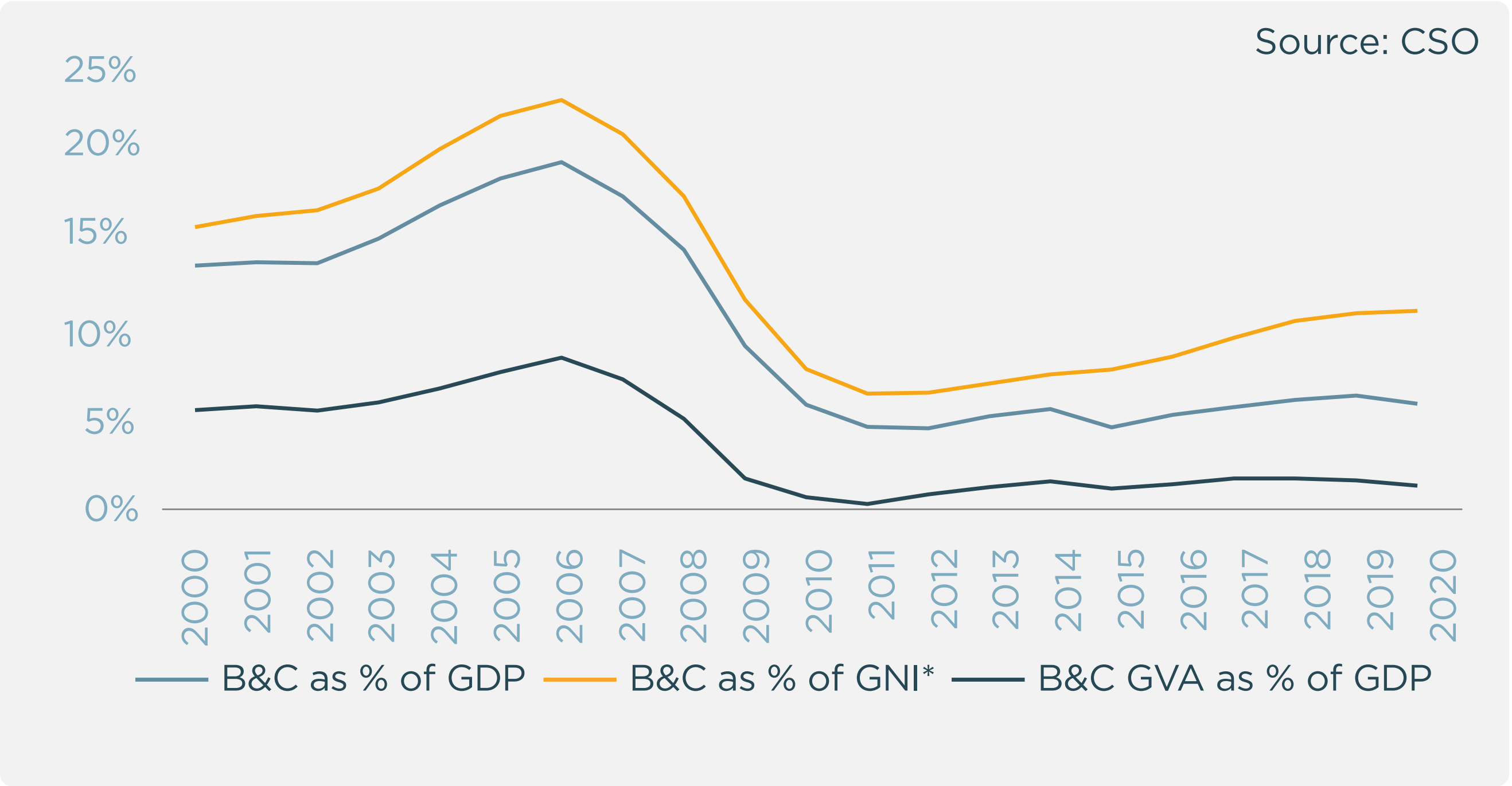
92.8%

of companies employ <6 people

99.6%

of companies employ <50 people

Building and Construction Output
as % of GDP and GNI* and GVA as % of GDP



Background - Challenges for the sector

CYCLICAL NATURE

FRAGMENTED SECTOR

LOW PRODUCTIVITY

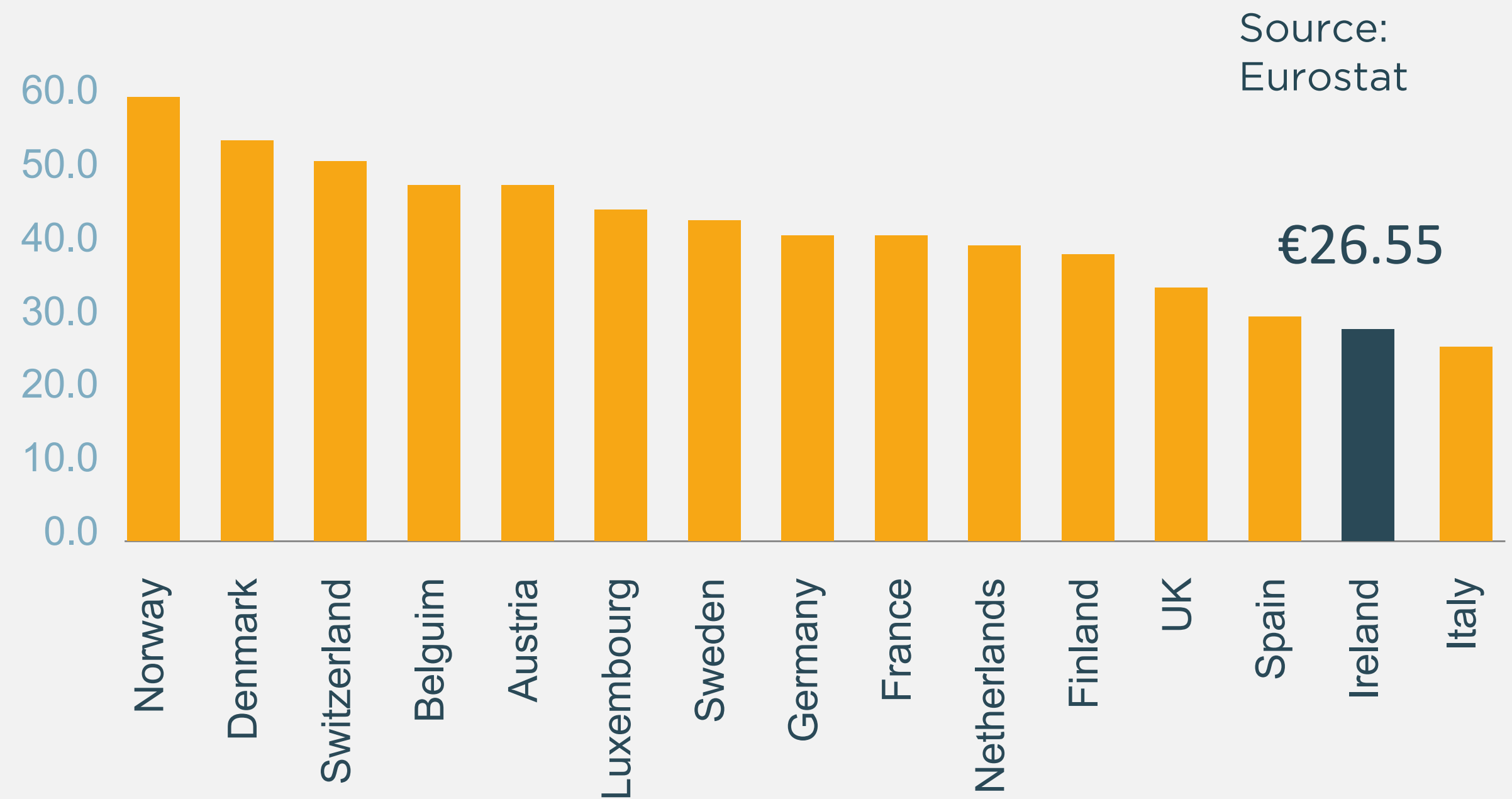
92.8%

of companies employ <6 people

99.6%

of companies employ <50 people

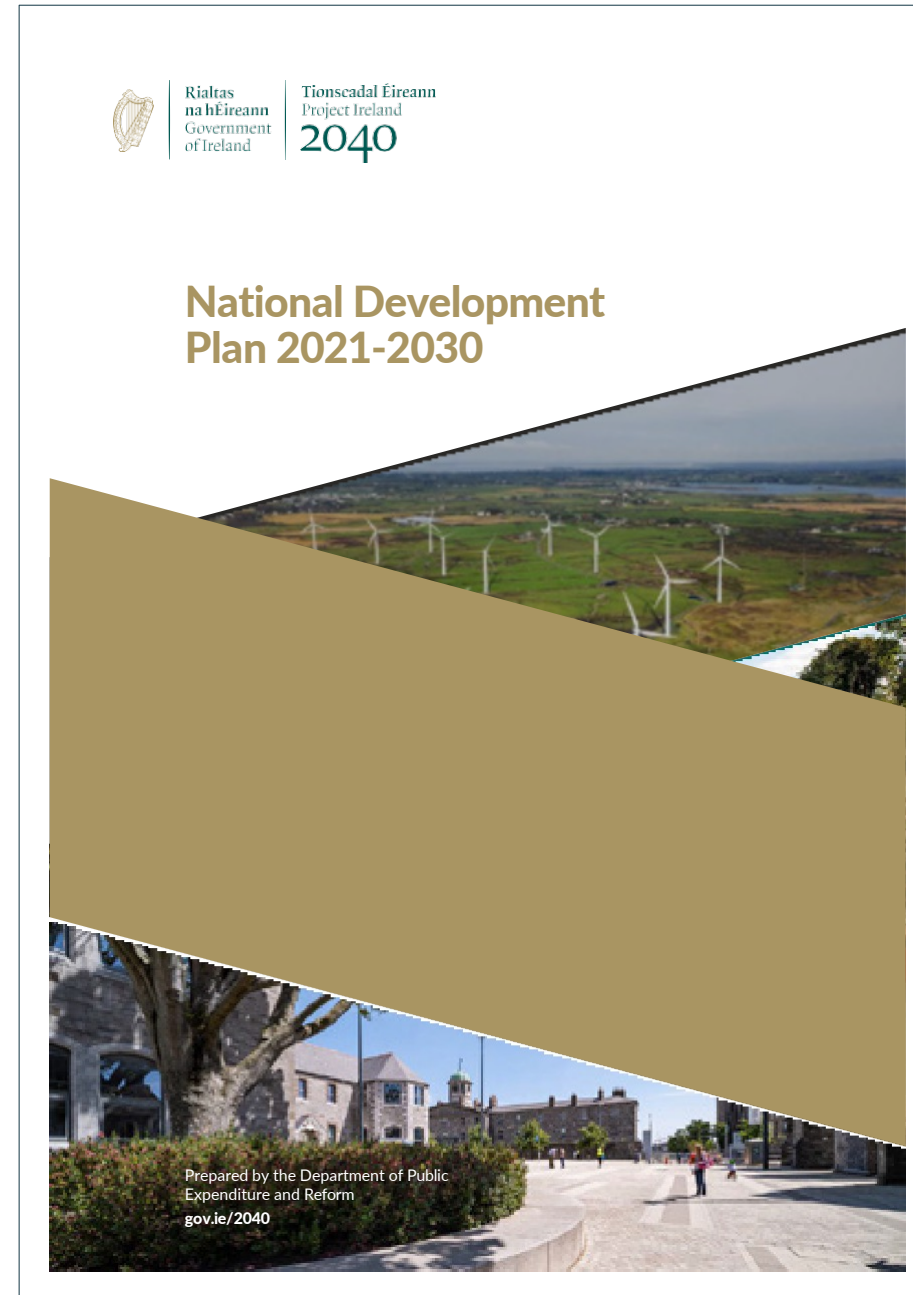
Construction Productivity 2019
(Real GVA per hours worked)



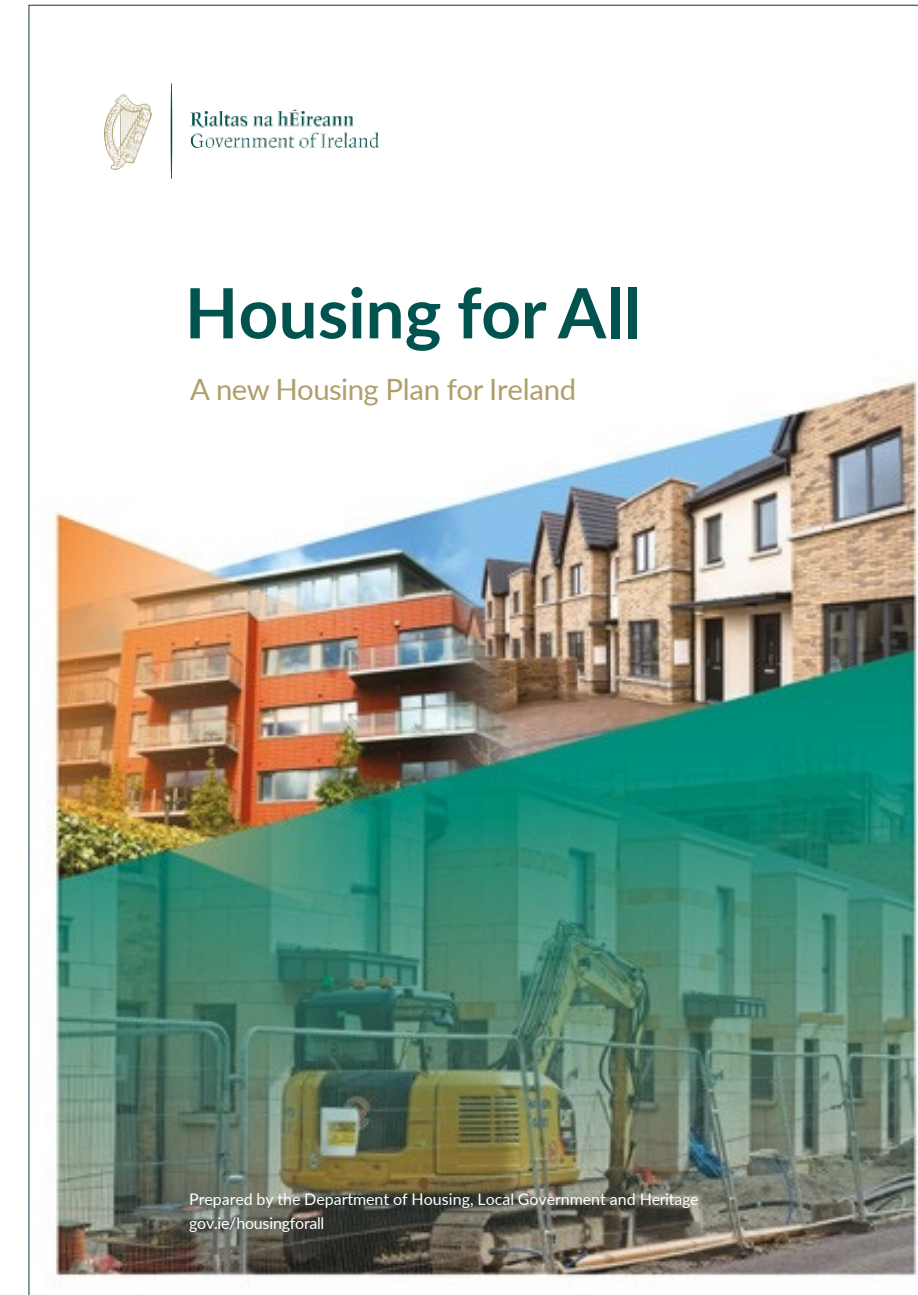
Background - Challenges for the sector



Low carbon materials
& technologies in
construction & renovation



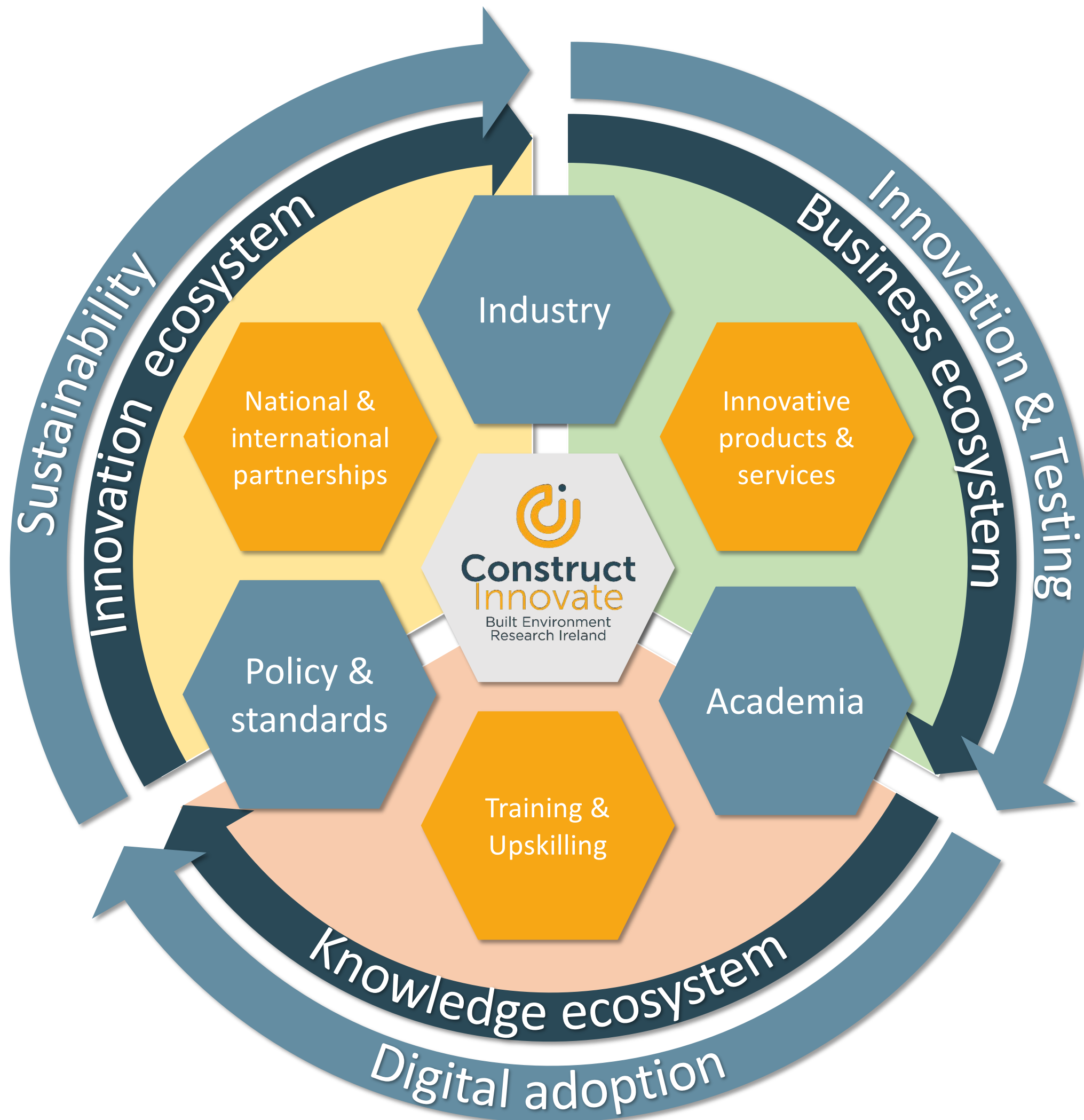
€165 billion in 2021 - 2030



33,000 new homes
each year 2021 - 2030



Enterprise Ireland Strategy
2022-2024



The national *industry led, industry focused* construction research Centre.

The central platform for independent research with industry and academia

- Improve the productivity, quality and sustainability of the sector
- Inform policy, standards and regulation
- Develop research expertise across both.
- Make Ireland a global leader in construction related research and practices

Let's define what we're talking about...



Innovation

Examining
potentially new ways
of doing things,
better

Cost reduction	Experienced academic experts
Higher Quality	Novel approaches building on existing research
More productive	Systematic execution including data gathering, modelling and data analytics
More sustainable	Institutional testing infrastructure
Higher certainty/less risk	Academic Peer review

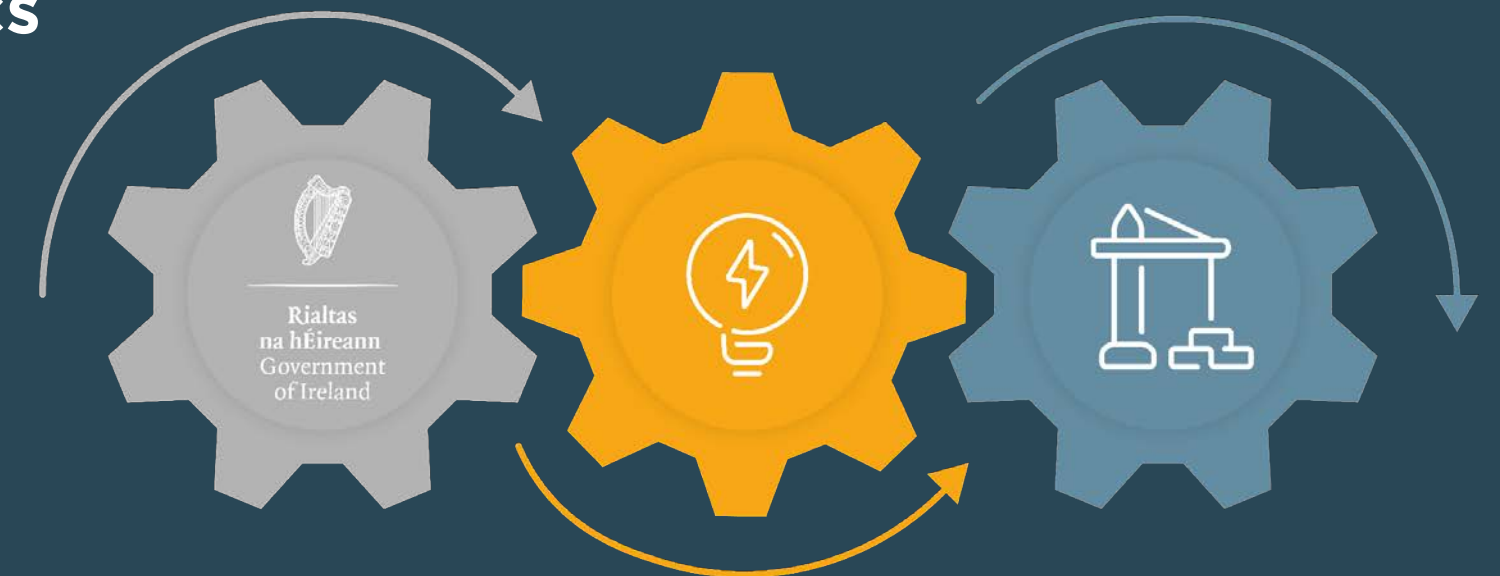
Research

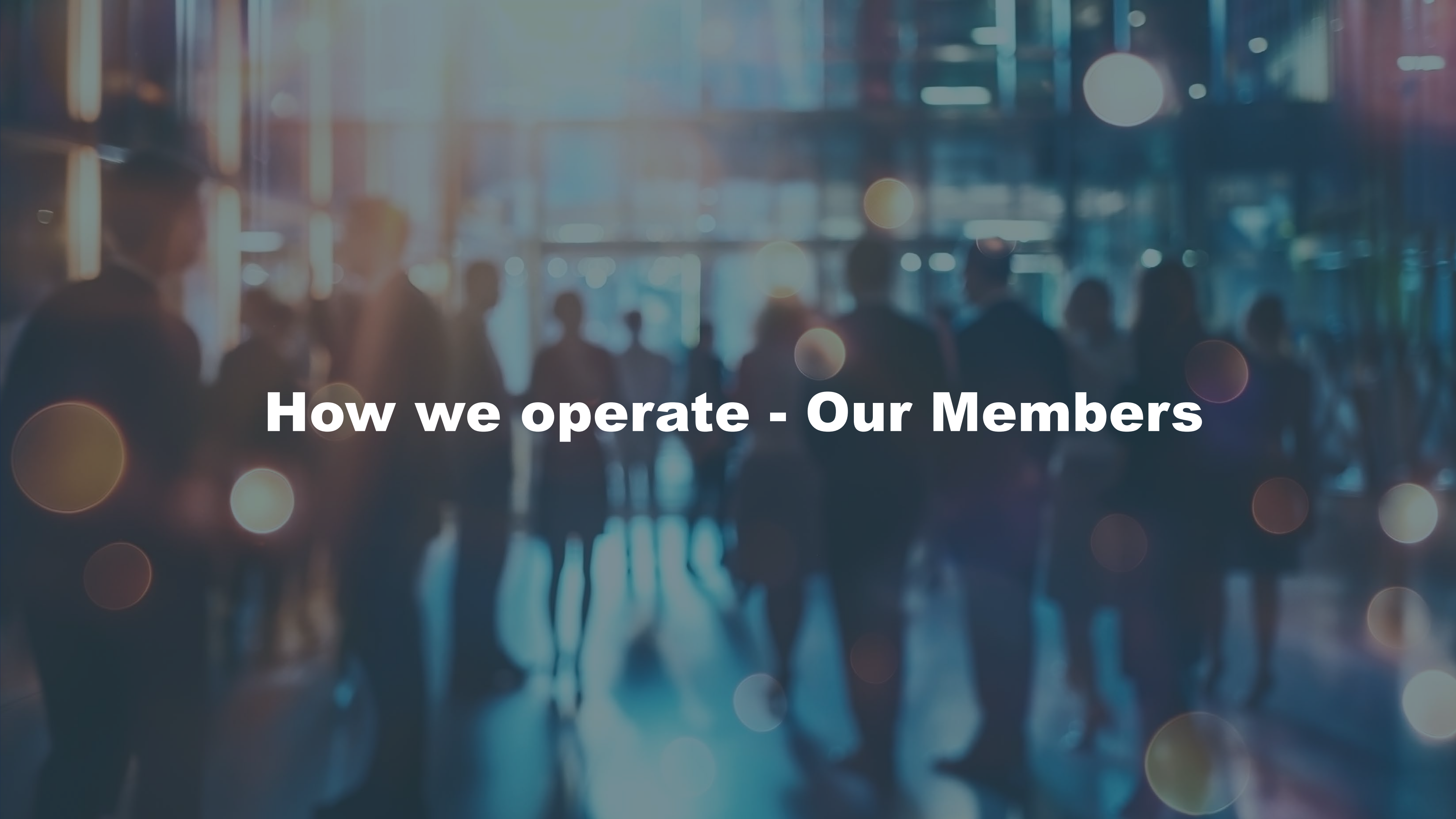
Systematically
interrogating these
ideas through
independent
investigation and
testing

Vision

1. An Industry led, centre for all
2. A facilitator & funder of world class research
 - facilitating companies on their own research journey,
breaking down barriers in adopting innovative approaches
3. An enabler of collaboration - opportunities for networking
4. Providing open-source information, widely shared

Collaboration | Agility of Operation | Transparency | Ethics





How we operate - Our Members

Membership



Membership is open to all stakeholders in the construction & built environment sector in Ireland

All members can:

- Submit proposals on industry-focused research topics
- Be informed of all published Centre results that are in the public domain
 - Participate in working groups
 - Network with industry and academic peers
- Benefit from Centre support initiatives and information sharing channels

Our Members

86 fully signed Associate members



Our Members



1 Patron Member

9 RPO (Research
Performing
Organisations)
Members

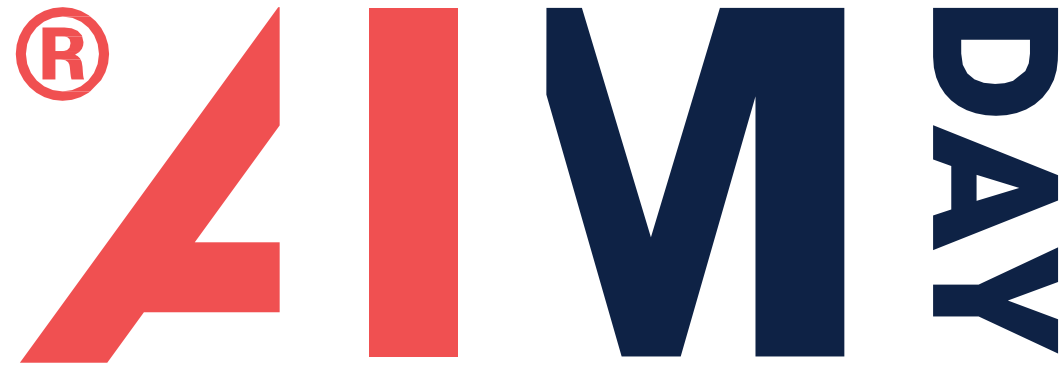
> 25 MULTIDISCIPLINARY
RESEARCH GROUPS

> 300 RESEARCHERS

> 1200 RESEARCHERS IN
PARTNER R.I. CENTRES & E.I
TECHNOLOGY CENTRES



Development of our Research Programme



May 2023:

University of Galway

October 2023:

Trinity College Dublin

April 2024:

University College Dublin

Workshop sessions based around industry challenges (submitted by members) that can form project applications for the Seed Funding

Members Working Groups

Modern Methods of Construction (MMC)

Sustainable Concrete & Cements,

Innovative material and technology adoption

Whole Life Cycle Carbon

Materials & Technology Testing

Sustainable Planning & Construction

Overheating in Irish Dwellings

Lean Construction & Digital Tools (being established)

AIMday in UCD, May 2024



90 attendees

10 workshops

Industry Focused Initiatives

2023 & 2024 Seed Fund Call



- The Seed Fund calls are aimed to promote collaborative, impactful projects
- initiated by industry members
- Opportunities for innovation through research.
- Project Grant available of up to

€50,000 per project

1. Certification of Innovative Construction Products and Systems
2. Advancing Indoor Acoustic Quality Through Innovative Acoustic Metamaterial Solutions
3. Timber Flow: Enhancing Efficiency in Mass Timber Construction Through Innovative Design Practices and Capacity Building
4. Building Regenerative Towns & Cities
5. Woodspec: A Guide to Designing, Specifying and Detailing Timber in Ireland
6. Naturally Grown Timber Pilot Project
7. Mass Timber Demonstrator Buildings
8. Mass Timber Living Lab
9. Home User Guides, Templates and Best Practice
10. Development and 3D Printing of Three-Dimensional Reinforcement from Waste Composites for Concrete Structures (3DREDO)
11. Automated QUALity Control System for 3D Construction Printing (AQUA3D)
12. MOTOR-1 (Mobile Construction Robot Project – Phase 01)
13. Leveraging the Role of PP Fibres in Maximising Adoption of 3D Concrete Printing Technology in the Irish Construction Industry
14. Commercialisation of Low Carbon Cements
15. Developing an Environmental, Social and Governance (ESG) Methodology for Construction Industry
16. Investigating Polymers as Pipe-jacking Lubricants
17. DECAR-CON: Decarbonisation of Construction Process for Buildings in Ireland
18. DEEP-PHit: Evaluation of Deep and Passive House Retrofit Homes



**2023 Seed
fund projects**

1. Pioneering and promoting the Material Passport technology in the Irish Construction Sector
2. Modernizing Wind Load Standards for Ireland: A Comparative Analysis of Eurocode Revisions
3. Tailoring Steel Fibres for 3D Printed Concrete in Civil Engineering Applications within the Irish Construction Sector
4. RUBBERPAVE: Integration of ELTs Produced Crumb Rubber in Pavement Construction for Enhanced Performance
5. Alternative Irish-based materials suitable as cementitious binders
6. Assessment of recycled tyres as underlay floor treatment (ART-FLOOR)
7. Roadmap for small builders to transition to green finance
8. (A)I-COMPLI: AI Supported Automated Construction compliance inspection
9. Automated Predictive Estimation Tool for Pricing Modern Methods of Construction (LGS) Building Projects
10. Testing the Regulatory Sandbox Approach in Ireland to Support Innovation in the Construction Industry
11. Development of the Green Binder Ireland 3050 (GBI3050) system for Ireland: Promoting sustainable cement production using alternative binders (Part I)
12. Residential building performance modelling for better indoor environment
13. Structural health monitoring of mass timber for the Irish Climate
14. Reducing Embodied Carbon in the Manufacture of LGS Modular Construction
15. Optimizing Slot and Stud Panel Connectors for Light Gauge Steel Framing Systems: Development and Testing
16. PRODIGI: Probabilistic Digital Twins for Bridges
17. RIADA: Irish road network Rapid Impact Assessment (RIA) for an efficient recovery after major disasters
18. Solar Construct: Enabling the use of solar energy in the construction sector



**2nd
call**

**2024 Seed
fund projects**

DETE / DHLGH Housing Related Research Projects



#

Project Name

- Project 1** Creation of standardised design details for MMC builds
- Project 2** Durability of Dense Aggregate Concrete masonry units in Irish structures
- Project 3** A study to evaluate alternative methods of remediation of buildings damaged by defective concrete blocks.
- Project 4** Ageing population and universal access – Building Regulations compliance assessment of UD Homes.
- Project 5** Report into the Reuse of existing buildings (including traditional buildings)
- Project 6** A study on the effectiveness of the Technical Guidance Document J (TGD J) provisions regarding the locations of flue outlets for solid fuel burning appliances



Rialtas na hÉireann
Government of Ireland

€5m over 4 years



Value adding initiatives

Work Ready Graduate Programme

Year 1: September 2024 – August 2025



EOI from **35** industry
members
7 successfully placed
graduates
Up to **70%** Funding
Support



4 RPOs



43% Female & **57%** Male



7 different disciplines

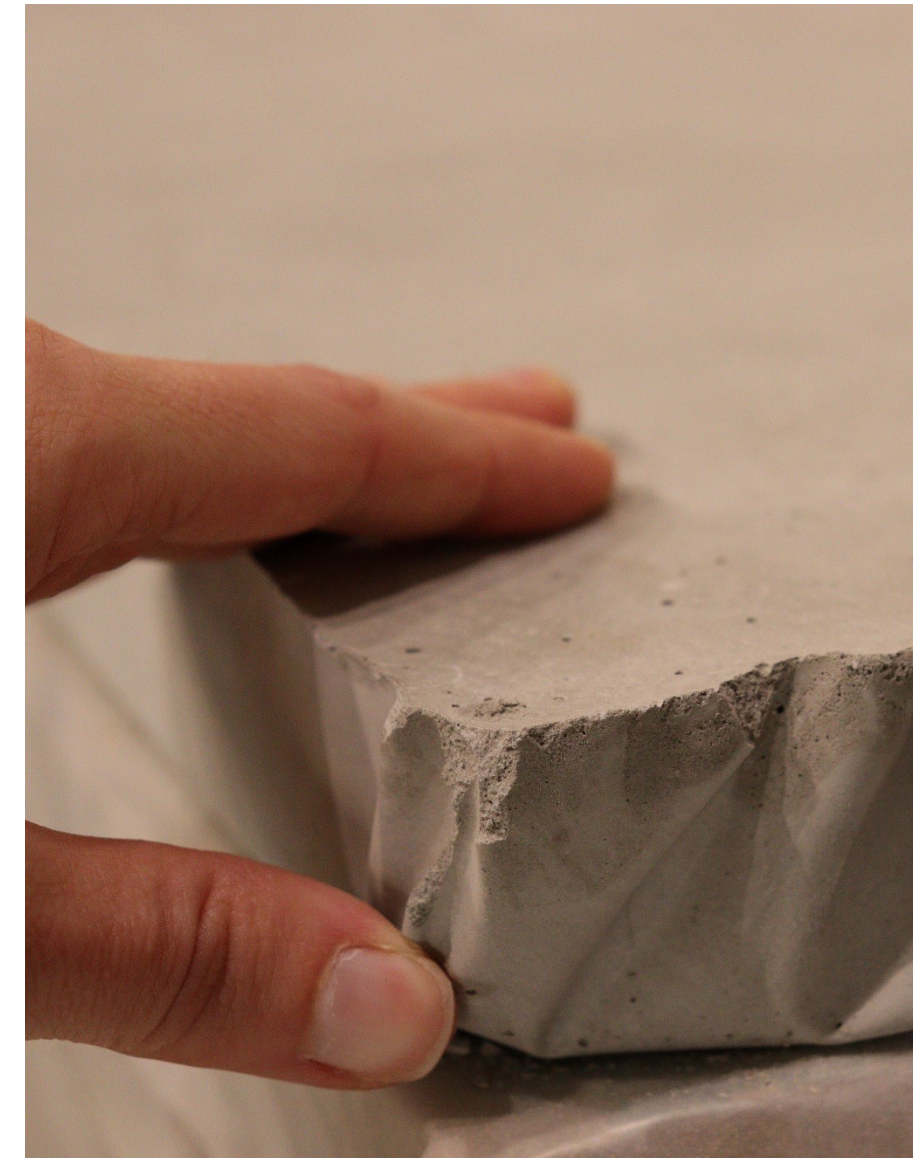


6 different nationalities



6 different locations

Testing Services



Construct Innovate Webinar Series

27 webinars delivered in 2023

Available through the Engineers Ireland Youtube Channel

2024 modules

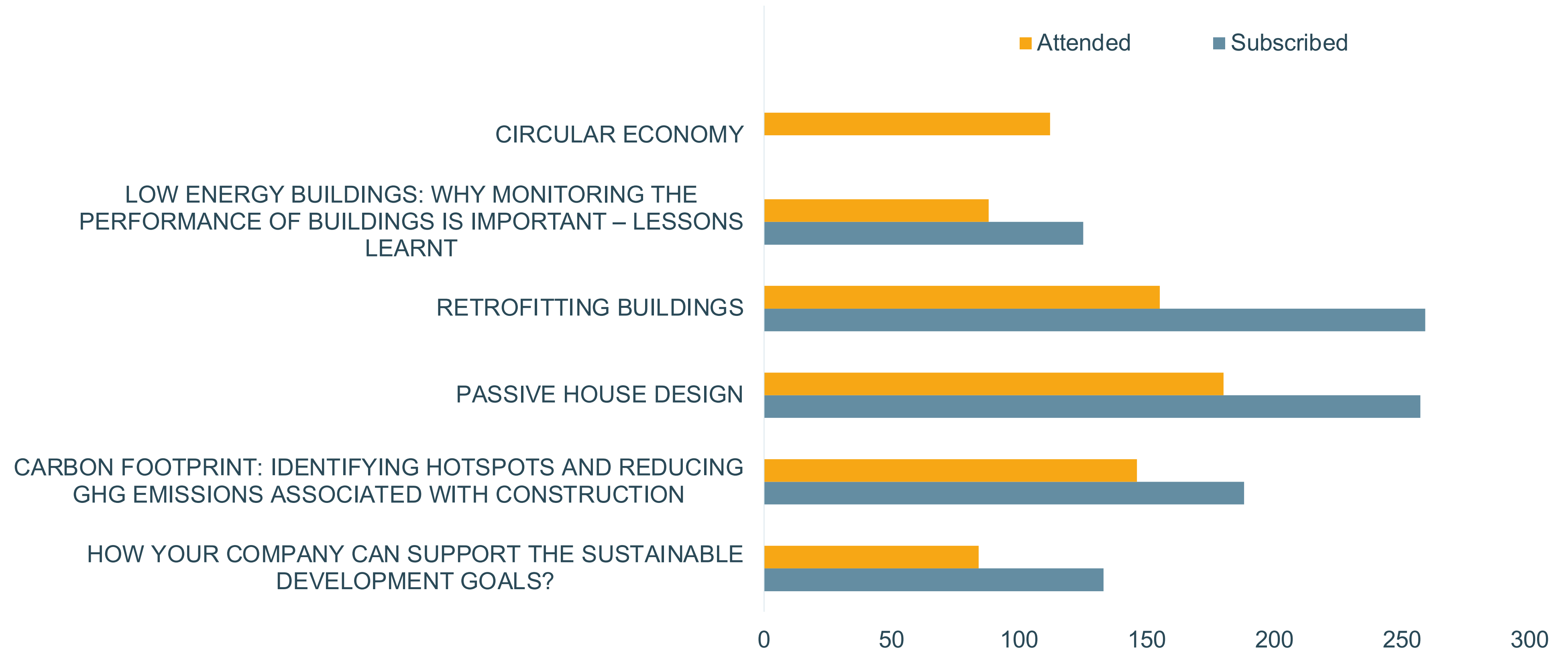
Tuesdays 12pm-1pm through Engineers Ireland webinar platform

- Sustainability planning in construction ✓
- Digital construction technologies
- Modern methods of construction
- Innovation & entrepreneurship



Webinars

SUSTAINABILITY PLANNING IN CONSTRUCTION



Construct Innovate Knowledge Hub



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

Postgraduate courses:

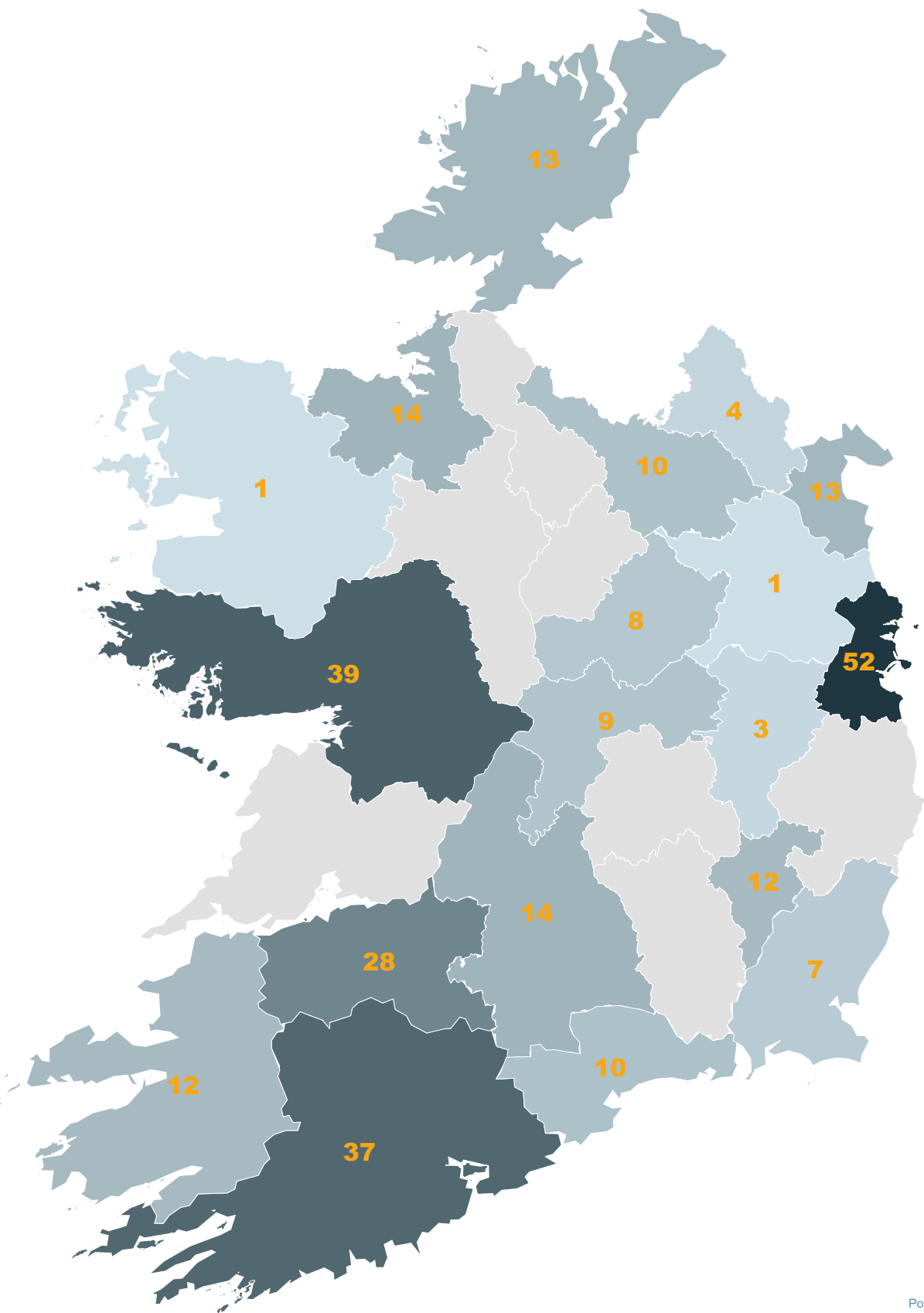
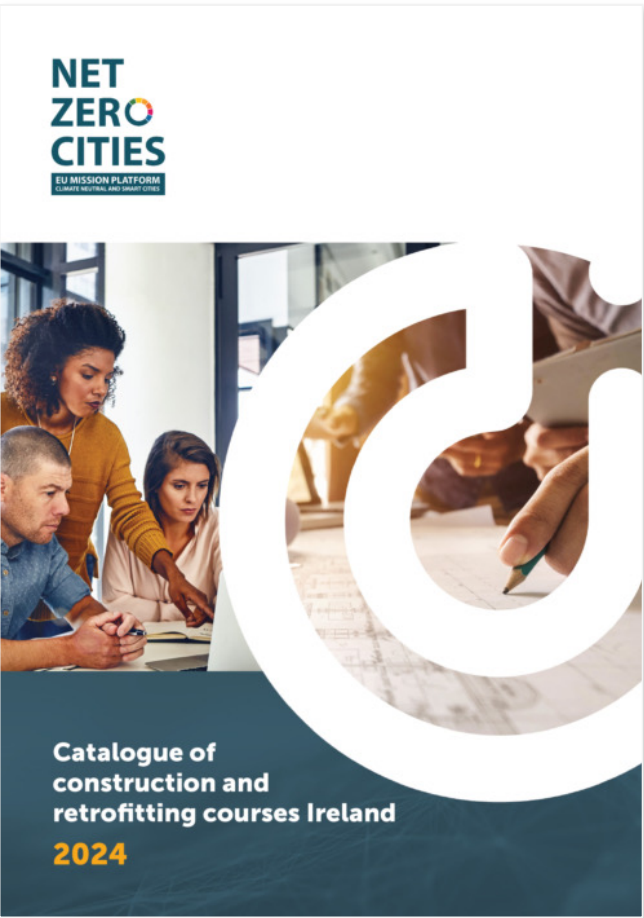
- ❑ **Postgraduate Diploma in Construction Innovation** (60 ECTS, 52 weeks, 90% HEA HCI grant) <https://www.universityofgalway.ie/courses/taught-postgraduate-courses/construction-innovation.html>
- ❑ **Postgraduate Certificate in Modern Methods of Construction** (30 ECTS, 24 weeks, 80% HEA Subsidy) <https://www.universityofgalway.ie/courses/taught-postgraduate-courses/Modern-Methods-of-Construction.html>
- ❑ **Sustainability Planning in Construction** (10 ECTS; 8 weeks, 80% HEA Subsidy) <https://microcreds.ie/partners/university-of-galway/offerings/sustainability-planning-in-lgff-7>
- ❑ **Passive House Designer** (10 ECTS; 12 weeks, 80% HEA Subsidy) <https://microcreds.ie/partners/university-of-galway/offerings/passive-house-lfpi-7>
- ❑ **Digital Construction Technologies** (10 ECTS; 8 weeks, 80% HEA Subsidy) <https://microcreds.ie/partners/university-of-galway/offerings/digital-construction-euns-7>
- ❑ **Modern Methods of Construction** (10 ECTS; 8 weeks, 80% HEA Subsidy) <https://microcreds.ie/partners/university-of-galway/offerings/modern-methods-of-ehjq-7>
- ❑ **Innovation and Entrepreneurship** (10 ECTS; 8 weeks, 80% HEA Subsidy) <https://microcreds.ie/partners/university-of-galway/offerings/innovation-and-4nsa-7>

Courses aim to equip participants with key knowledge and skills needed to develop sustainable technology solutions to the challenges facing the construction and built environment sector in Ireland and elsewhere.

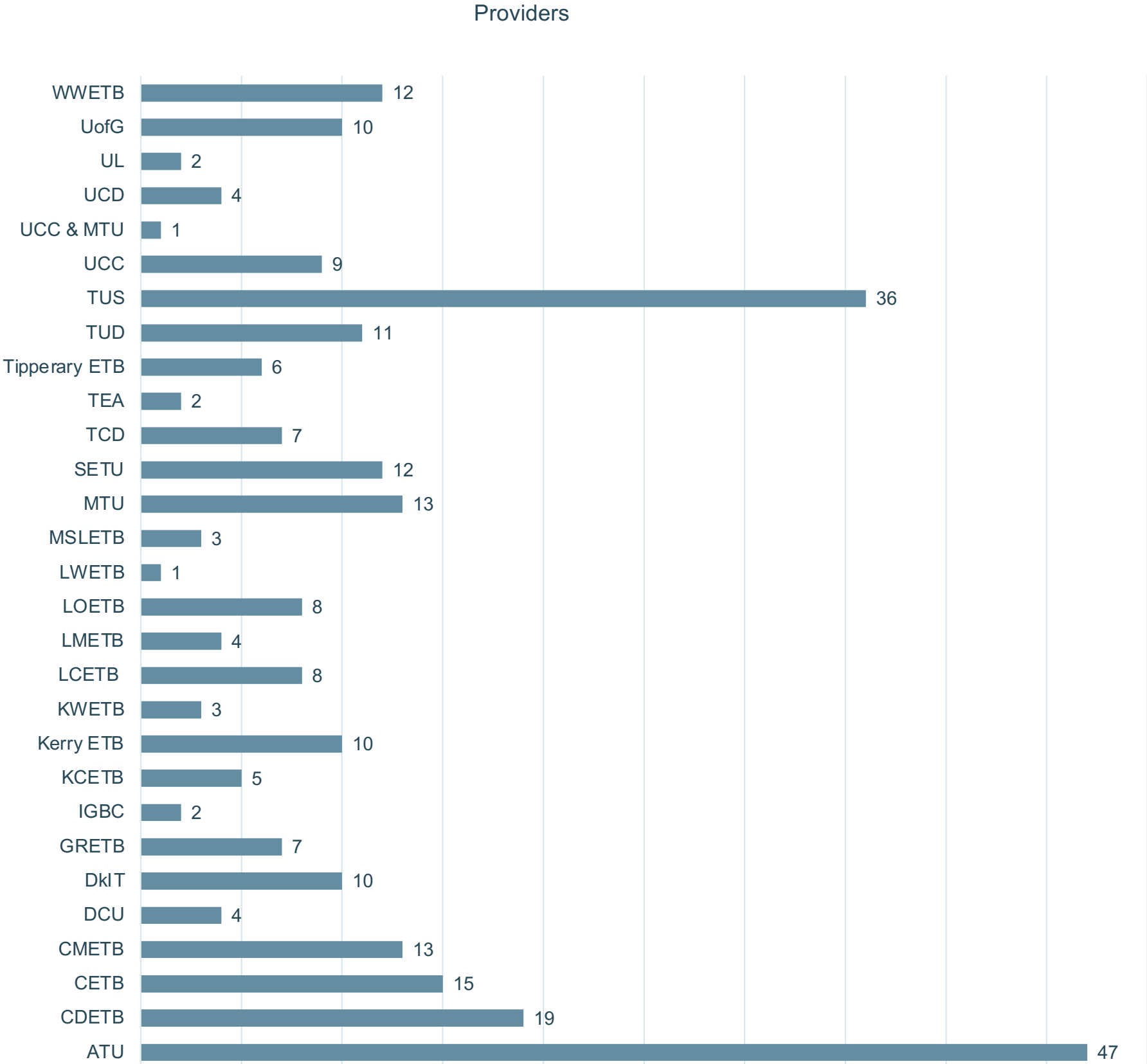
Targeted at individuals wishing to upskill/reskill to meet the critical demand for skills in innovation, digital adoption, sustainability and modern methods of construction,

Delivered through **blended learning**, consisting of pre-recorded lectures, live online webinars (1 hour/week), live online workshops (2 hours/week), self-directed learning materials, online activities and extensive resources, and on campus sessions (one full-day every 8 weeks).

Training Database - Retrofitting



Powered by Bing
© OpenStreetMap



Our Knowledge Hub - Reports and guides





Networking

Industry and Academia Members



10 workshops

30th April 2024, The Newstead Building UCD



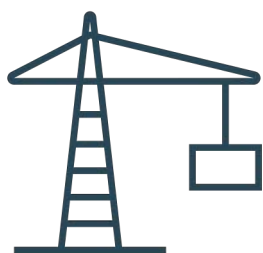
Construct Innovate

90 attendees



2 Year Summary

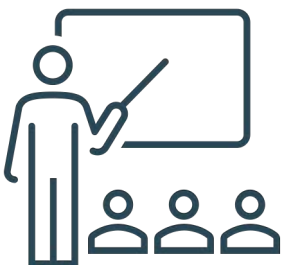
86 associate members
1 patron member



9 RPOs

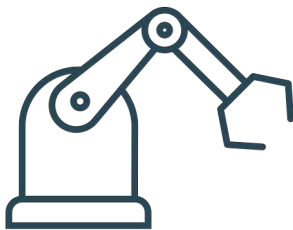


30 industry professionals completed 1st year of PgDip in Construction Innovation

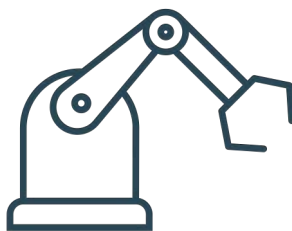


7 Graduates placed through for Work-ready Graduate programme, starting Sept 2024

€5 million
DHLGH Housing Related Research funding awarded



€2 million
in capital equipment to support construction industry in RD&I needs



9 research projects completed (€290k)



18 Seed Fund 2024 projects awarded (€1.1m)
18 Seed Fund 2024 projects awarded (€1.1m)

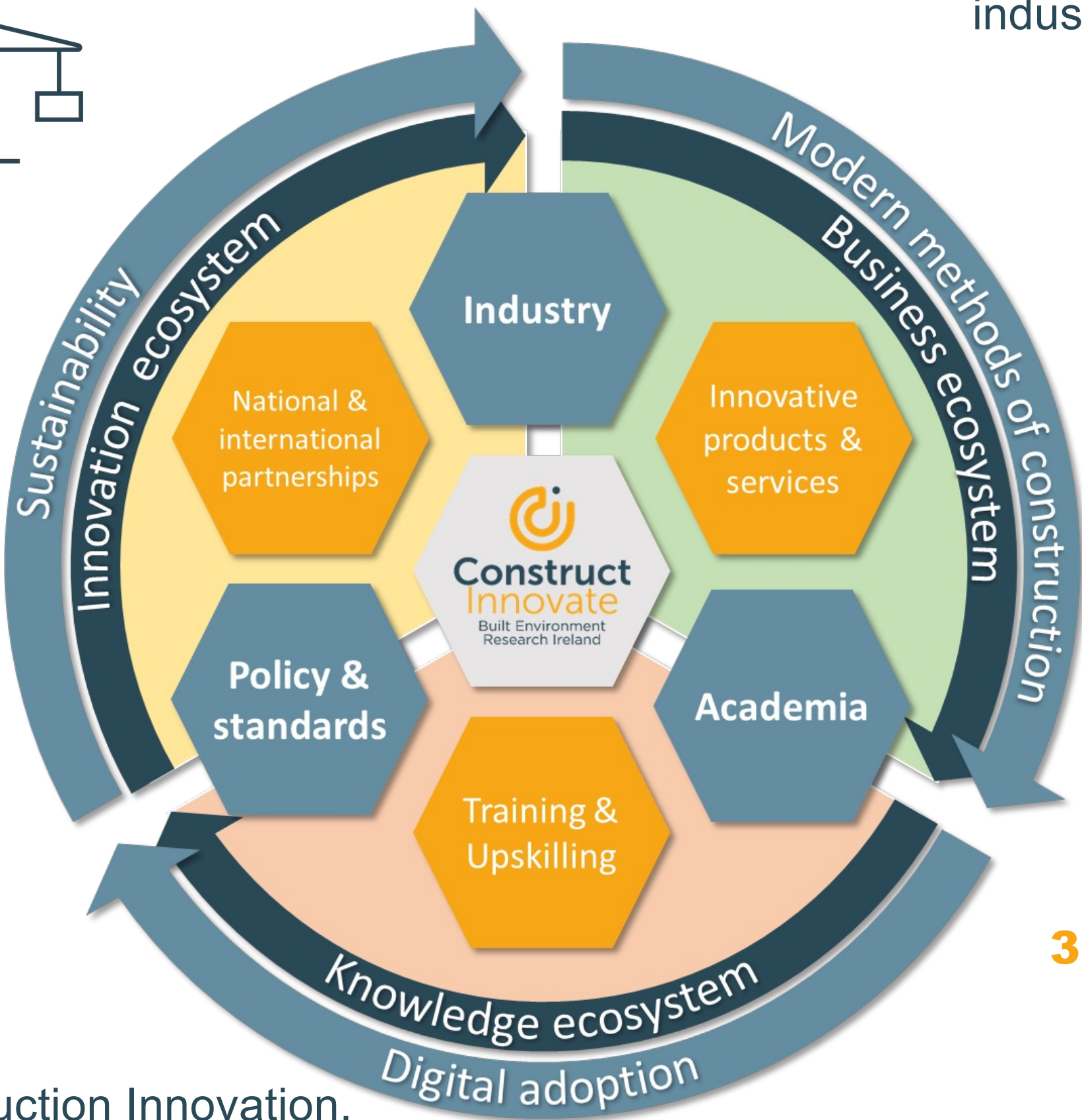
8 working groups



30 webinars delivered



3 AIMdays



MSc in Construction Innovation,
5 micro-creds & 1 PgCert in MMC
launching in Sept 2024