

BUILD UP Skills – IRELAND –

National Roadmap 2030 D3.3 – BUSI2030 Roadmap

BUSI2030



Project 101075961 – LIFE21-CET-BUILDSKILLS-BUSI2030

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BUILD UP Skills – IRELAND –

National Roadmap 2030



October 2024



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Further information

More details on the implementation of BUILD UP Skills in Ireland can be found at [Making sure we have the right skills to decarbonise Ireland's built environment - BUSI2030 - Irish Green Building Council \(igbc.ie\)](#)

More details on the BUILD UP Skills initiative can be found at www.build-up.ec.europa.eu

More details on the LIFE programme can be found at https://cinea.ec.europa.eu/programmes/life_en

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Foreword

Build Up Skills Ireland (BUSI2030) is a national project funded by the European Commission (CINEA) through the LIFE programme funding. The project's scope is to analyse the current and future skills gaps in sustainable construction for 2030. It aims to create a National Upskilling Roadmap for Ireland to achieve its climate targets for housing, retrofitting, renewables and the decarbonisation of Ireland's built environment. The project is led by the Technological University of the Shannon in partnership with the Irish Green Building Council, the Construction Industry Federation and the Laois Offaly Education and Training Board under grant agreement Project 101075961.

Baseline

Following a review of the 2012 BUSI roadmap published in 2014, taking into account the achievements and implementation of the identified measures along with a recent extensive consultation process, a draft 2024-2030 roadmap has been published. The roadmap is informed by the Status Quo report and by the outcomes from the engagement workshops, interviews, and survey activity of the current BUSI2030 project. The methodology has been refined by a group shortlisting exercise by project partners, from a long list of proposed actions (more than 100+), some of which were outside the BUSI scope and were therefore removed.

National Platform

Through presentation to and discussion with a National Platform, a fully transparent roadmap development process involving the key stakeholders (which will be critical for future endorsement and implementation) has been pursued. A first draft of the roadmap has been presented to the National Platform for approval (December 2023) prior to entering into a wider consultation process in January 2024. The roadmap will be further refined based on stakeholder feedback in the public consultation process (Feb 2024) and launched in March 2024.

Recommendations

The Roadmap is presented as a table with a list of recommendations under the headings 'Public', 'Educators' and 'Industry', without assigning responsibility for implementation and monitoring regarding Governance, Awareness, Systems and Supports. The apportionment of responsibilities is recommended to lie with the Construction Sector Skills Forum (CSSF); the purpose of the CSSF will be to provide an overview of the range of work emanating from participating organisations, which will facilitate networking and collaboration, as well as inform strategic developments for construction skills provision. BUSI2030 Roadmap recommends the enhancement and strengthening of this remit by government to include monitoring and oversight of the Roadmap itself.

4 key overarching recommendations and 12 sectoral recommendations are presented sub divided into core sub-actions, which are intended to convey urgency and priority and enabling actions, intended to serve as support actions.

Policies and state actions supporting the roll out of BUSI2030 have been catalogued and in particular the [Commission on Housing](#) will make recommendations on housing in due course, however the Statue Quo has found that Housing for All for new built targets will be achieved, and the industry is well situated to produce 30,000-60,000 units annually. Delays in time for construction projects are an issue which concerns the speed of which we need to implement BUSI2030 recommendations on the uptake of skills. As regards paid educational leave, a pilot scheme has been announced by DFHERIS in Budget 2024 (a new scheme to help small and medium enterprises with the cost of upskilling and reskilling their employees) which we continue to monitor. The Expert Group on Future Skills Needs and the results of the [OECD](#) Skills Strategy in Ireland (May 2023) are also available. The [CEDEFOP](#) methodology

is central to the work of BUSI20230 and research in relation to skills in Ireland [Ireland | CEDEFOP \(europa.eu\)](https://ireland.cedefop.europa.eu). We are particularly concerned with skills mapping and skills gaps and the finding that opportunities for people with low qualifications will continue to shrink.

The [Climate Action Plan 2024](#) specifies ‘public sector leading by example’ (‘Achieve the buildings and retrofitting targets laid out in the Public Sector Climate Action Mandate’) as seen reflected in BUSI2030 recommendations and ‘cross-sectoral collaborations help to develop the talent and skills needed for the jobs of the future, and provide innovative technologies, processes and insights to address key challenges’ as well as the development, design and delivery of new training content such as Quality and Qualifications Ireland (QQI) Level 4 Retrofit Assistant programme. Awareness raising measures such as ‘National Campaign of Communication and Engagement on Climate Action’ must extend to skills and construction skills to meet climate action targets.

The Sustainable Development Goals have also played a significant role in our work with particular emphasis on those identified in the Climate Action Plan. Building the resilience of the poor and those in vulnerable situations and reducing their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters is of great importance.

After months of consultation, workshops, interviews, surveys and analyses, 4 top level key recommendations have been established, which if implemented, is believed will meet the training and upskilling required for climate action targets and housing targets. Explained in more detailed later, these four are:

- Connect the Silos
- Address Carbon Challenges
- Construction is Exciting ?
- Climate Literacy & Training

Complimenting the 4 top level key recommendations are 12 sector specific actions designed to support in meeting the training and upskilling required for climate action targets and housing targets. The sectors identified are public, education and industry. Some actions are labelled ‘core’ meaning critical and others are labelled ‘enabler’ actions meaning supporting the realisation of the ‘core’ actions.

The assessment also points to several key themes arising but not limited to the following:

- **Climate literacy:** Deliver a public awareness campaign for all citizens to understand the importance of climate action in the built environment sector (3.1.1).
- **Zero Emission Buildings Fundamental (ZEB) Training For All:** (Existing Workforce and New Entrants): Expedite provision of the key principles through ZEB Fundamentals Training (at a minimum) and provide targeted (3.2.1) leadership development training for all involved in construction sector. ZEB suite of training content to be regularly updated in line with Climate Action Plan targets and EU Legislation ambitions.
- **Registers:** Facilitate approved competency Registers for contractors and consultants and specialist installers/advisers linked to quality and competency criteria. Link participation to grant provisions and finance conditions. (3.4.1)
- **Asylum seekers and Refugees:** Support migrant workers to upskill, re-train and learn new construction skills through appropriate and relevant provisions (11.6)
- **Exemplar Case Studies:** Establish and support a public platform for sharing best practice (public & private) projects & delivery models which can act as a central knowledge hub for education/training providers. Incentivise contributions of best practice as well as lessons learned. (5.3)

- **Train The Trainer (TTT):** Establish, monitor and regularly update a coherent system of TtT programmes and pathways for supporting upskilling of trainers in the Further Education and Training and Higher Education systems (targeting current and emerging issues regularly updated e.g. zero emission construction, MMC, circular economy, indoor air quality, digitisation and digitalisation in the built environment) (6.3).
- **New training provision in Emerging Technologies:** Similar approach required for other emerging technologies such as circular economy principles. Create broader MMC manufacturing technician apprenticeship/trade courses focused on MMC / Modular Construction; create modules with a focus on innovation, modern materials and manufacturing which can be integrated into the curriculum for all third level and CPD courses in civil, built environment, mechanical and electrical engineering and construction studies (7.3).
- **Effective dissemination** of new research to education sector particularly in relation to results from EU funded projects (7.4)
- **Construction as an Exciting Career prospect:** Continue to host events such ‘Higher Options*’ and ‘WorldSkills **’ to ensure equal status and visibility to both.

**Higher Options provides a unique opportunity for up to 30,000 students from across Ireland to speak to representatives from third-level institutions from Ireland, the UK, Europe and further afield. Students can gather information about their third-level options and attend career talks on a wide range of topics.*

***WorldSkills Ireland is a partnership between enterprise, industry, education, training and government that raises the profile and recognition of skills and apprenticeships and prepares the talent of today for the careers of the future.*

Following on from the findings of the Build Up Skills Ireland Status Quo Analysis (June 2023) and the projected requirements of upskilling of the current student population (c.26,000) and of the current workforce (c.164,000), along with reskilling new entrants (projected at 120,000 if ‘business as usual’ construction methods prevail), a considerable challenge is presented to all entities within the public sector, education providers and construction delivery sectors. The following recommendations and a collaborative approach across all these sectors is required to meet built environment Climate Action Plan targets and Housing for All targets to 2030. The proposed timelines set out for short and medium-term actions will need to be reviewed in due course to continue to address the 2050 targets.

Complimenting the 4 key themes, there are 12 sector-specific recommendations aimed at supporting the training and upskilling needed to meet climate action and housing targets. Some recommendations are classified as "core," indicating they are essential, while others are designated as "enablers," meaning they support the implementation of the core recommendations. The Roadmap is presented as a table of recommendations under the headings ‘PUBLIC’, ‘EDUCATORS’ and ‘INDUSTRY’, regarding governance, awareness, systems and supports.



Fig 1 BUSI2030 Status Quo Summary Outcomes



Fig 2 BUSI2030 Skills & Labour Shortages Solutions

1. Executive summary

Qualification needs and gaps in the building sector

The BUSI2030 [Status Quo Analysis](#) published in June 2023 outlined skills and labour shortages, and highlighted the skills needed to meet the Climate Action Programme (CAP) and Housing for All (HfA) targets. Several key areas have been identified where skills are needed to meet our targets for 2030:

Energy Calculation Tools

In order to improve the buildings in Ireland, energy calculations will be required to ensure that adequate improvements are made to reduce the buildings energy usage. Tools have been developed by SEAI that are used to calculate energy usage and produce a Building Energy Rating (BER), these tools being the Dwelling Energy Assessment Procedure (DEAP) and Non-Domestic Energy Assessment Procedure (NEAP). Adequate skills to use these tools will be required for engineers, so further investment into free accessible training on these tools is required. There is also no centralised Irish approved methodology for measuring carbon in the built environment. The Climate Action Plan (Action 198) requires the establishment of a standard methodology re carbon calculation, materials data base.

Building Deep Renovation

The future skills required for building deep renovation include knowledge of energy-efficient building techniques, retrofitting methods, and the ability to assess and analyse existing building conditions. The FET Sector led by the Steering Committee of the 6 Centres of Excellence for NZEB and Retrofitting is working with Industry to deliver certified programmes in these areas to both current workforce and new entrants. However, more programmes across all levels are required alongside further financial and technical supports for construction sector workers.

Modular and Industrialised Solutions:

Reskilling and upskilling of construction sector workers as well as a change in mindset is required to implement more modular and industrial construction. Modular and industrialised solutions offer benefits such as shorter construction times, improved quality control, and reduced environmental impact. Modular construction involves assembling prefabricated components or modules off-site, which are then transported and assembled on-site. Industrialised construction emphasises the use of advanced manufacturing processes, automation, and standardised components to streamline construction workflows.

The FET sector is working with Industry both locally and nationally to develop training programmes and deliver awareness programmes in all areas of MMC. The National Construction Training Centre in Mount Lucas Co Offaly will house the National MMC Demonstration Park. The Centre, under the guidance of LOETB, and collaboration with Industry leaders and CIF is piloting and rolling out programmes in all areas of MMC.

Digitalisation of construction

The national Build Digital Project is the central focus from government regarding digitisation and digitalisation for construction. The current lack of a skilled workforce is affecting the rate of greater BIM implementation, adoption of Artificial Intelligence, Extended Reality, and the industrial Internet of Things (IOT) in the construction sector, which are required for the development of construction technologies and smart infrastructure. The key requirements going forward will continue to be the provision of focused upskilling initiatives to address immediate industry needs and multi-disciplinary courses which contain both methodological skills (mathematics, computation, building-physics,

manufacturing, structural mechanics, etc) technological skills (programming languages, software applications and cross disciplinary collaboration and information management skills.

Smart buildings

Smart buildings can contribute significantly to reduce energy consumption through the integration of digitalisation, open innovation, and data sharing which are key new technologies that can be used to decarbonise the building sector. This includes developing interoperable solutions which can then connect smart homes, buildings, and grids to communicate and achieve electric and other load peak shaving through production and consumption monitoring which will maximise on-site and locally produced Renewable Energy consumption.

Embodied Carbon

Built environment emissions are divided in the first instance into embodied (EE) and operational (OE) emissions. These are further subdivided into emissions related to different materials and construction stages, and to the operation of varied building types/sectors. In the baseline year of 2018 operational related emissions accounted for 62% of all BE emissions, and 23% of national emissions. In the same year capital or embodied related emissions accounted for 38% of all BE emissions, and 14% of national emissions.

Modern Methods of Construction

The transition from traditional construction methodologies to off-site manufacturing processes and other MMC solutions is still relatively new and an emerging industry in Ireland. MMC is identified in many reports as one of the key areas that will transform productivity and efficiency of the construction sector in Ireland.

New Technologies

The following list of technologies and skills requirements have been identified that are either existing in the construction sector or are planned to become more common in the construction sector. The skills required to implement these emerging technologies will require upskilling or re-skilling of workers.

Category	Skill/Technology
Space heating	Heating System installation: - Pipe installation - Unit installation - Electrical Connection - Radiator installation - Underfloor heating installation - Heat Pump Systems - Biomass systems Heating System Design: - Commissioning - Customer Handover - Cost analysis of different heating systems - Modes of heat transfer - Distribution and storage losses - Efficiency of appliances - Hydraulic balancing - Integration of systems - Heating Controls - Ventilation & condensation - Building regulations and DEAP / NEAP requirements - Multifunctional heat pumps
District Heating	District Heating System Technician - Operation and Maintenance of District Heating system District Heating System Manager - Contract Management - Compliance - Operations - Customer Relation
Renewable Energy	Renewable Energy Installation - Installation of PV or Wind - Electrical Wiring - Component connections - Integration Renewable Energy design - Feasibility Studies - Cost analysis - Integration - Control Strategy Community PV array management - Contracts Management - Financial Management

Circular Economy	- Supply Chain Logistics - Inter-company relations - Macro and Microeconomics - Embodied Carbon calculations and Carbon Accounting - Life Cycle Analysis of building elements
Monitoring and Controls	Controls installer - Electrical Connections - Lighting controls - Heating Controls - Alarms and Security
Lighting	- Lighting Controls - Factors affecting energy use for lighting. - Efficacy, colour rendering, colour temperature - Lamp types - Energy saving potential of lamp replacement. - Building Regulations
Building Modelling	- BIM and CAD - Electrical drawings - Mechanical Drawings - Water Services Drawings - 3D Modelling - Virtual Reality and Augmented Reality - Drone Mapping - Photogrammetry
Ventilation	- Building regulations for ventilation - Air infiltration and air tightness - Analysis of ventilation rates - Design and selection of ventilation systems - Location and maintenance of mechanical units - Fire safety regulations - Building Regulations - Controls for mechanical ventilation systems - Ventilation requirements for combustion appliances - System efficiency - Heat recovery - Ducting (i.e., positioning, insulating, jointing, sealing and moisture control).
Insulation	- External Wall Insulation - Internal Wall Insulation - Natural Insulation - Modes of heat transfer. - Properties, selection & positioning of insulation materials. - Continuity of insulation layers. - Thermal bridging. - Low Carbon Insulation
Air Tightness	- Selection & positioning of building membranes. - Ventilation, vapour control & condensation. - Air infiltration, exfiltration, and air tightness.
Air Conditioning / Air Handling	- Refrigeration Cycle - Air Con components - Air Handling Unit components - Ventilation rates - Air Quality - F-gas Regulation - Heat transfer modes - Chillers
Off Site Construction	- Robotics construction, programming, operation, and maintenance. - 3D Modelling and Printing. - Concrete Shuttering
Construction Management	- Construction technology, - Building Physics, energy use, - Principles of space and water heating systems and controls - Renewable energy technologies, - Thermal bridging, - Air permeability - Insulation materials, - Building Regulations, - Energy conservation - Building renovation - communication skills - Calculation of energy use and cost savings, - Energy performance assessment tools and procedures, - Entrepreneurship skills and project management - Interpersonal skills - Customer Relations - Public relations - Finance - Modern Methods of Construction - Supply Chain Logistics - Design and Commissioning
Building Management	Energy Management System - ISO50001, - ISO50002, - Monitoring and Control - Legislation, Regulation - Resource management Building Management System operation and maintenance - Control Strategies - Fault Diagnosis - BMS Networks - System Integration - User Interface - Indoor Environment and Quality
Supply Chain Management	- Supply Chain Logistics - Micro / Macroeconomics - Transport Management - Regulation and Health and Safety - Logistics

Career gaps Identified in Irish Higher Education System

The Following careers have been identified as careers that will become more in demand up to 2030: ICT Technician, Robots Technician, Manufacturing Engineer, Sustainability Manager, Logistics and Transport Management, BIM technician, BIM Manager, Civil Engineering Technician, Procurement Officer, Circular Economist, Structural Engineering Technician, M&E Engineering Technician, Landscape Architect, District Heating Technician.

Priority measures identified for each relevant profession

The BUSI2030 [Status Quo Analysis](#) has also outlined several measures for each profession that need to be implemented to meet our targets. It is estimated that more than 300,000 individuals will be needed in the construction sector alone to achieve these goals, leaving a shortfall of over 100,000 when compared to current workforce levels and graduates.

Professionals

Architects, Planners, Quantity Surveyors, also Building Surveyors, Chartered Surveyors, Engineers / (all disciplines in engineering including energy engineers) are urgently required. Forecasts show up to 25,000 additional personnel in these roles alone will be required immediately to meet 2030 and onto 2050 zero carbon targets. Upskilling & reskilling the current workforce (at least 35,000 people) is equally urgently required, not only in the guise of lifelong learning but through flexible, accessible and fully financed and incentivised approaches to upskilling.

In terms of educational provision for those currently in the system, across all NQF levels and those entering in the coming years, relevant, innovative and new tailored content must be added to existing courses to reflect emerging technologies and methods such as BIM, circular economy, green public procurement, Life Cycle Assessment, Life Cycle Costing, whole life carbon, indoor air quality, water usage, biodiversity etc.

For professionals it is recommended to:

- Expand and refine current programmes to ensure the present relevant pathways in these areas to meet industry requirements and provide students with industry-specific skills
- Offer industry certifications and continuous professional development opportunities to enhance workforce capabilities
- Foster partnerships and engagement between us and industry to provide on the job training, internships, and networking opportunities for students

Craft trades

It is forecasted that an additional 25,000 plumbers, electricians, carpenters will be required to meet targets. For craft trades it is recommended to:

- Develop and promote vocational education comparable options to current crafts and apprenticeship programs to encourage participation and develop a skilled workforce
- Collaborate with industry stakeholders to ensure curricula align with current and emerging skills demands
- Implement flexible and accessible training programs to attract, retain, and upskill talent in these fields

Wet trades

Retrofitting 500,000 homes to 2030 will require the efforts of traditional trades or so-called wet trades, plasterers, bricklayers, painters and decorators using external and internal wall insulation, but also in understanding heritage, traditional and conservation in order to work with that building type, structure and physics, to apply modern materials in air tightness and ventilation and breathability.

Site Managers and Project Managers

Site managers and project managers will be needed across both new build and retrofitting of homes and of course in public, private non-domestic and commercial retrofits, which are conservatively projected at 480 buildings a year.

Other:

‘Other’ is a catch all category which contains a lot of professional roles and following CEDEFOP and John McGrath’s 54 methodologies, we project an additional 25,000 machine operators, crane drivers but other also new and emerging professionals. Increasing demand for digital project delivery across all levels of workers needs to be managed and met. Awareness raising of good practice within the industry e.g. case studies of SMEs using MMC or digitisation or circular economy in construction on work sites, would be helpful if disseminated through a dedicated social media channel. New case studies would also be helpful for the design of up-to-date training modules and for toolbox talks.

Niche and Emerging Occupations:

To address the skills gaps in niche and emerging occupations across the renewable energy, electric vehicles, and retrofit sectors:

- Invest in research and development in future skills needs and adapt our training programmes accordingly
- Encourage interdisciplinary collaboration among different departments to develop well rounded professionals (common undertone of critical thinking, problem solving, soft skills)
- Design tailored training programs to address unique workforce requirements and bridge the skills gaps in niche sectors Adapting to Technological Advancements and

Key Actions

Key actions to address these challenges include:

- Upskilling of existing workforce in relevant areas of energy efficiency, digitisation, circular economy and decarbonisation (emphasis on where relevant)
- Incentivising upskilling through 100% grants, tax exemptions etc
- Attracting up to 100,000 additional new entrants to the construction sector on a pro rata basis over the coming 5 years
- Attracting younger people into trades and into construction in general
- Attracting greater numbers of women into construction roles particularly as new roles emerge
- Construction roles, as with all industries, need to meet 2023 lifestyle expectations, family friendly work times, work life balance etc
- Better use of the existing building stock (prioritise renovating derelict and vacant properties over new builds)
- Start measuring whole life carbon - we can't manage what we do not measure – through a universal system applied by all in Ireland
- Transition to low embodied carbon construction processes and technologies

Endorsement

The BUSI2030 [Status Quo Analysis](#) published in June 2023 outlines skills and labour shortages, and highlights the skills needed to meet the Climate Action Programme (CAP) and Housing for All (HfA) targets. The Build Up Skills Ireland 2030 (BUSI2030) Roadmap presents recommendations to address these challenges, including the need to incentivise upskilling.

The roadmap presents 4 key overarching recommendations and 12 sector specific recommendations for rollout, over the coming years, to meet 2030 targets. Resourcing of the Roadmap and a concerted effort across stakeholders, agencies, government departments and industry in endorsing and delivering on the recommendations will be vital for the success of any skills strategy. A number of

relevant national stakeholders including public authorities and building and industry associations have endorsed the Roadmap, including the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS), Skillnet Ireland, Construct Innovate, Sustainable Energy Authority of Ireland (SEAI), Construction Industry Federation Education and Skills Committee, Royal Institute of Architects, Clancy Construction.

2. Introduction

Background

The Build Up Skills Ireland 2030 (BUSI2030) Roadmap for the built environment presents research and makes recommendations on skills and labour shortages for energy efficiency, renewable energy, decarbonisation, digital and digitalisation processes, life cycle analysis and circular economy processes. The Roadmap was developed following on from the extensive research findings of the BUSI 2030 [Status Quo Analysis](#) (June 2023) which focused on skills needed to meet the Climate Action Programme (CAP) and Housing for All (HfA) targets, along with further public workshops, BUSI2030 steering committee meetings and desk research analysis in the interim. The roadmap makes **core** and **enabling** recommendations for industry, policy and education stakeholders. The BUSI2030 Roadmap was available for public consultation and feedback from a variety of stakeholders and the general public over a 5 week period from January 19th 2024. The roadmap and a feedback survey was published on the IGBC website and widely promoted on social media and a number of stakeholders were also directly invited to submit responses. The roadmap presents 4 key overarching recommendations and 12 sector specific recommendations for rollout, over the coming years, to meet 2030 targets. Resourcing of the Roadmap and a concerted effort across stakeholders, agencies, government departments and industry in endorsing and delivering on the recommendations will be vital for the success of any skills strategy.

The BUSI2030 [Status Quo Analysis](#) published in June 2023 outlines skills and labour shortages, and highlights the skills needed to meet the Climate Action Programme (CAP) and Housing for All (HfA) targets. The Build Up Skills Ireland 2030 (BUSI2030) Roadmap presents recommendations to address these challenges, including the need to incentivise upskilling e.g. a new scheme to help small and medium enterprises with the cost of upskilling employees and reskilling their employees is already due to be piloted under Budget 2024.

Characterisation of the building sector

The construction industry had a significant rebound in demand in 2022 (post-pandemic), which produced a 2022 bounce in GVA (+14%). Real Gross Value Add (GVA) for the sector grew to €10.7 billion in 2022. GVA is estimated to reach approximately €11.7 billion in 2023, bringing the sector back in line with its pre-pandemic trend.

On a seasonally adjusted basis the volume of production in construction fell by 4.9% between Q2 2023 and Q3 2023. During the same period, Residential Building was down 7.0%, Non-Residential Building declined by 6.4%, and Civil Engineering fell by 2.7%.

EY / EUROCONSTRUCT are forecasting that overall construction investment in Ireland will increase by 3.2% in 2023, 4.4% in 2024 and 2.2% in 2025. The Irish construction forecast is in direct contrast to the wider European trend where construction activity is forecast to fall in 2023 and 2024 by -1.7% and -



2.1% respectively on account of a range of influences, some sector specific and some geopolitical and economic.

The cyclical or 'boom-bust' nature of the construction industry can lead to fluctuations in employment at any given point in time based on the underlying economy.

The construction sector is one of Ireland's biggest employers. In 2023, the industry supported over 217,000 jobs across the entire economy or 8% of the workforce, directly and indirectly, in small communities and urban centres across the country. Skills and labour shortages are a key issue within the sector as companies struggle to recruit and retain skilled workers.

Construction Statistics 2023

Construction Statistics	2019	2020	2021	2022	2023
Direct employment in sector (thousand)	145,600	136,400	158,300	168,700	167,400 (Q3)
Direct and Indirect employment - Built Environment Sector - indirect employment equals 30% of total approximately (thousand)	205,400	177,320	205,790	219,310	217, 620
Total employment (Millions)	2,357,300	2,276,800	2,140,000	2,531,000	2,655,900
Proportion of construction employment v total employment in economy and expressed as a %	9%	8%	10%	9%	8%

Material and supply chain issues will continue to impact the competitiveness of the construction sector in 2024. Public investment under the National Development Plan remains an important stabiliser for construction demand and employment. The high rate of inflation in Ireland since mid-2021 has been largely driven by external factors, including the global supply chain disruption arising from the COVID-19 pandemic and the energy price shock of 2022 following the Russian invasion of Ukraine. This combined with high interest rates, supply chain disruptions and increased demand for non-energy goods post the pandemic brought about significant price pressures and exceptionally high rates of inflation. Underlying inflationary pressures are beginning to ease and it is acknowledged that the primary factor driving inflation is expected to be the strength of the domestic economy and its associated capacity constraints. However, the duration of inflation and high interest rates remains somewhat uncertain. Slower economic growth and diverging levels of inflation across European Member States will remain for the foreseeable.

National Policies and Existing VET Provisions

National Policies

Under the United Nations Framework Convention on Climate Change (Article 6) "Governments shall implement educational and public awareness programmes on climate change and its effects; "In addition Article 12 of the Paris Agreement notes that Parties shall "enhance climate change education, training, public awareness, public participation and public access to information".

CAP23 Principle 2 advises that “People are equipped with the right skills to be able to participate in and benefit from the future net zero economy”. Ireland’s National Skills Strategy (NSS) 2025 – Ireland’s Future Report was published in December 2022 and within this short timeframe the OECD report (see below) from May 2023 reviews how Ireland’s existing skills strategy (NSS) might need to be adapted to ensure that it is still fit for purpose. In addition, the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS), published a report called Report on the Analysis of Skills for Residential Construction & Retrofitting, 2023 to 2030. The report highlights numbers required to deliver the Government’s targets on new Housing and retrofitting.

OECD Skills Strategy Ireland Assessment and Recommendations report as published May 2023. The 4no. priority areas are: 1. securing a balance in skills through a responsive and diversified supply of skills; 2. fostering greater participation in lifelong learning in and outside the workplace; 3. leveraging skills to drive innovation and strengthen firm performance; 4. strengthening skills governance to build a joined-up skills ecosystem. The recommendations within this report should inform projects (such as this BUSI2030) to set out implementation of the actions as identified.

The Expert Group on Future Skills Needs (EGFSN) advises the Irish Government on the current and future skills needs of the economy and on other labour market issues that impact on Ireland’s enterprise and employment growth. It has a central role in ensuring that labour market needs for skilled workers are anticipated and met. The EGFSN report, Skills for Zero Carbon – The Demand for Renewable Energy, Residential Retrofit and Electric Vehicle Deployment Skills to 2030 (*November 2021*), sets out the demand for, and nature of, the skills required to deliver on key elements of Ireland’s Climate Action Plan (first version) over the period to 2030. It identifies the nature and quantifies the scale of the skills needs of enterprises supporting the transition to a low carbon economy. It develops a suite of recommendations that can be drawn upon to ensure that these future skills needs are fully addressed. In addition, further education and skills for climate action is being delivered through SOLAS Green Skills for Further Education and Training 2021-2030.

Within this FET context, the Regional Skills Fora continue to play an important role in identifying future skills needs emerging from a greener economy. These feed directly into the regional skills development pipelines through the Education and Training Boards. Each forum provides for ongoing regional engagement between the employment, enterprise, education, and skills sectors, such as Local Enterprise Offices, Enterprise Ireland, the Department of Further and Higher Education, Skillet, and the Education and Training Boards. Other CAP 23 proposed Actions relate to supports and initiatives through the education systems, through formal education (primary and secondary curriculum), non-formal education and through informal education.

At education policy level, there have been significant changes in anticipation of addressing the skills and labour shortages required to meet Climate Action Targets, including:

- Higher Education Authority Bill 2022 (Including Strategic Planning for third-level education)
- Department of Further and Higher Education, Research, Innovation and Science (Established 2021) (Combination sub-departments from Department of Education & Department Enterprise Trade & Employment)

A significant amount of education strategies and pilot programmes have been put in place.

Table Education Programmes overview

Name	Description
Human Capital Initiative (2020) (Refer 7.12)	Funded 24no. Industry & Academia Innovation projects e.g. Sustainable Futures, DASBE,

	Recognition of Prior Learning, Micro Credentials, Virtual Labs etc
National Training Fund (National Training Fund Act 2000)	Includes supporting Skillnet Ireland; SOLAS/ETB Framework etc
GREEN SKILLS for FET 2021-2030	Green Skills for Life / for Construction / for Careers
Ireland's National Skills Strategy 2025	Restore full employment and build a sustainable economy
Pathways to Work Strategy 2021-2025	Assist people back to work as the economy and labour market recovers from COVID-19
Skillnet Ireland National Agency for workforce learning (See below table)	Consists of groups of private sector businesses that collaborate cross networks, regions and sectors.
Enterprise 2025 Renewed	Building resilience in the face of global challenges
Future FET: Transforming Learning 2022	A strategy which aims to repair, repurpose and revive the economy and communities, based around the three core pillars of building skills, fostering inclusion, and facilitating pathways
Action Plan for Apprenticeships 2021-2025	The action plan aims to expand the types of programmes available and increase the number of apprenticeships to 10,000 per year by 2025.
Future Jobs Ireland 2019	Represents an integrated approach to prepare for the opportunities and challenges of the future economy
All Ireland Heritage Skills Programme	Full-time, 12-month course which gives practical experience in heritage building skills. Participants will also undertake a Level 3 NVQ Diploma in Heritage Skills (Construction)
Centralised portal for School Leavers (CAO)	Now includes Further Education and Training (FET) options
Development 5no. Technological Universities	
Research / Digitisation	Construct Innovate; Build Digital,
Training Centres of Excellence	6no. Centres of Excellence for NZEB and Retrofit training, Modern Methods of Construction (MMC) Demonstration Park to be developed

SKILLNET IRELAND is a national business support agency of the Irish Government, which works with companies of all sizes to identify and develop the talent they need to succeed.
Some Examples of SKILLNET IRELAND* Initiatives include:

Table SKILLNET IRELAND programme overview

Sample Programmes	Description
Green Tech Skillnet	Business network (renewable energy and green technology sectors)
Lean & Green Skillnet	Business network (environmental, water and energy management)
CITA Skillnet and Construction Professionals Skillnet	Training programs for professionals (PM, HR, BIM, Comms)
Springboard+	Free and subsidised courses at certificate, degree and masters' levels
Centres of Excellence for Green Building skills	Four centres to train 2,000 people in retrofit skills, including Near Zero Energy Buildings (NZEB) skills
Ireland's Renovation Upskilling Committee (Reno-NUC)	Provide high-level strategic and policy input to support large-scale upskilling of building professionals and construction workers in energy renovation in Ireland
Energy Renovation for Traditional Buildings, Continued Professional Development	Aim is to up-skill building professionals to develop knowledge and skills that allow them to design and deliver high-quality, energy-efficient renovations to existing traditional buildings
Just Transition Midlands	The fund will support communities most negatively affected by the move away from fossil fuels and the cessation of commercial peat extraction
Action Plan for Apprenticeship 2021-2025	Promotion of Training, Apprenticeships and Vocational Educational Training in the Built Environment Sector
Construction Industry Register Ireland (CIRI)	Private-sector Training programmes are also increasing in quantity and scope in parallel to public-sector offerings
Skillnet Irelands Future Dynamics, Co-Creation initiative	The initiative enables businesses to unlock their innovation potential through workforce

	design and development approaches that drive transformational change
Innovation Exchange	Multi-year program that facilitates collaboration between Irish SME's and large multinationals to boost innovation

Enterprise Ireland provides hands-on support to companies, promotes awareness of the benefits of innovation and provides important funding support. Some Examples of Enterprise Ireland Programmes include:

Table Enterprise Ireland supports overview

Sample Initiatives	Description
Lean Business Offer	Is designed to encourage clients to adopt Lean business principles in their organisation to increase performance and competitiveness
Digital Innovation	Digital Innovation is about redesigning your business to serve your customers better, starting with a deep understanding of your customer needs and your value stream and then using new technology to improve the customer experience
Green Transition Fund	Is designed to support companies, whether starting out or already on the journey, to act now and get ready for the low carbon, more resource efficient economy of the future.
Built To Innovate	Seeks to support Irish companies active within the residential construction sector who wish to enhance the operational performance of their business

In conclusion, although there are policies, strategies, and programmes in place regarding upskilling and addressing skills and labour shortages in Ireland, more action is critical for engagement with initiatives to meet our significant national targets.

Existing VET provisions

The national system for vocational education and training (VET) for building professionals encompasses various qualifications and training programs. The responsibility for overseeing and implementing these programs lies with several authorities at different administrative levels. Quality and Qualifications Ireland (QQI) are the national awarding body for further education and training (FET) in Ireland, support the recognition of prior learning, and verify existing or emerging qualifications.

FET is primarily provided by the 16 Education Training Boards (ETBs) around the country and An tSeirbhís Oideachais Leanúnaigh agus Scileanna (SOLAS) is the state agency that oversees and leads the strategic development, initiatives, and programmes within the FET sector, including the rollout of upskilling programmes funded through initiatives such as Skills to Advance or Skills to Compete, or standalone awards such as Safe Pass training and the Construction Skills Certification Scheme. The FET sector also offers a range of Post Leaving Certificate (PLC) courses as well as other practical training models such as Traineeships or Apprenticeship. These programmes are aimed at school leavers or those wishing to upskill and move into an entry level role within a new sector.

Traditionally, apprenticeship training in Ireland was conducted on a “time served” basis with little emphasis on the achievement of pre-determined standards of competence and knowledge. However, this has changed with the introduction of new “Standards-Based” programmes that were designed as a system of employment-focused training and education, and first implemented on a phased basis in 1993.

Each of the Apprenticeship Programmes for the “Standards Based” construction crafts were developed on the basis of industry surveys and research into the skills, knowledge and competence required by craftspeople. SOLAS has the statutory responsibility for the organisation and control of apprenticeships in Ireland and has responsibility for promoting and overseeing the training and education of all apprentices, including the construction related crafts.

Apprenticeship training programmes consist of alternating phases of ‘On-the-Job’ and ‘Off-the-Job’ training and education as outlined in Table 2. The alternating phases of training generally consist of three Off-the-Job phases and four On-the-Job phases, although differences do occur in some apprenticeships. Generally, the first off-the-job training phase will take place in an Education and Training Board (ETB) while the subsequent off-the-job training phases will be in a Technological University or Institute of Technology.

Table Typical Apprenticeship Training Phase Duration

Phase	Duration/Weeks	Location
1 On-the-Job	12	Employer
2 Off-the-Job	20	Education and Training Board
3 On-the-Job	26	Employer
4 Off-the-Job	10/11	Institute of Technology, Technological University
5 On-the-Job	26	Employer
6 Off-the-Job	10/11	Institute of Technology, Technological University
7 On-the-Job	12	Employer

The apprenticeship Programme is deemed to be completed when the apprentice has reached the minimum qualifying standard in all modular and competency-based assessments and has completed the minimum duration of 4 years in employment as an apprentice in the specified trade (exception Print Media 3 years). On successful completion of an apprenticeship programme, candidates are awarded a FETAC Advanced Certificate in a named trade at Level 6 on the NFQ. Such certificates may serve as an entry qualification for progression into appropriate degree level programmes.

An exception to the above apprenticeship structure are the “Post 16 apprenticeships”, referring to apprenticeship programs that individuals can start after the age of 16. These apprenticeships are designed to be completed in two years, combining both on-the-job training with an employer and off-the-job training in an educational institution. These apprenticeships are classified as Level 5 on the NFQ.

Quantified data related to:

Number of current workforce in the building sector

The Table below shows the estimated employment in the construction industry in both 2019 and 2022 in specific occupations and in groups of occupations. The most striking aspect of the figures is that employment in many of the craft occupations did not increase significantly over the period, despite the increase of over 40% in the number of house completions.

Table Estimated employment in the construction industry in 2019 and 2022 in selected groups of occupations and specific occupations. Source: DFHERIS estimates

Occupation	2022	2019	Difference
Production managers	7,500	5,500	2,000
Administration, sales etc.	21,500	18,000	3,500
Civil engineers	5,000	4,500	500
Professionals, associate professionals	5,000	5,000	0
Managers, admin. Prof. etc.	39,000	3,000	6,000
Welding trades, pipe fitters	4,000	4,000	0
Electricians and electrical fitters	19,000	14,500	4,500
Steel erectors, roofers, other trades etc.	17,000	16,000	1,000
Brick layers and masons	8,000	6,500	1,500
Plumbers, heating	10,000	10,000	0
Carpenters and joiners	18,000	18,000	0
Plasterers, floorers, wall tilers	9,000	9,000	0
Painters and decorators	9,000	9,000	0
Skilled trades	94,000	87,000	7,000
Operative building occupations	15,000	13,000	2,000
Elementary building occupations	17,000	14,000	3,000
Operative and elementary occupations	32,000	27,000	5,000
Grand total	165,000	147,000	18,000

Current Energy Consumption

Total primary energy production in Ireland for 2021 was 3 million tonnes of oil equivalent (Toe) Green House Gas emissions are estimated to be 62.11 million tonnes carbon dioxide equivalent (Mt CO₂eq).

In 2022, Ireland's total energy demand increased by 4.7% compared to 2021, with the country still largely reliant on imported fossil fuels. Fossil fuels accounted for 85.8% of Ireland's primary energy

needs, while renewable energy made up 13.1% of total consumption. The transport sector continues to be the largest consumer of energy, followed by residential, industrial, and service sectors.

In 2023, 40.7% of Ireland's electricity supply came from renewable energy, up from 38.6% in 2022. The construction and operation of buildings in Ireland account for more than 36% of the country's greenhouse gas emissions, with a split of approximately 2:1 between operational and embodied emissions.

2030 Energy Targets

Ireland has committed to achieving an average annual reduction of 7% in greenhouse gas emissions from 2021 to 2030. If fully implemented, the planned policies and measures could result in a 28% reduction in emissions by 2030, equating to 4% per year. Additionally, targets for the construction industry include:

- 500,000 homes retrofitted to a B2 Building Energy Rating by 2030
- Public sector buildings to have a B Building Energy Rating, or carbon equivalent by 2030
- One third of all commercial buildings to have a Building Energy Rating of B (or carbon equivalent gains) by 2030

Number of building workers to be trained

The predicted 2030 workforce, the 2030 target workforce requirement, the difference between target workforce and predicted workforce, and the current workforce is shown in the following table. This provides a scenario for 2030 if the traditional construction sector continues and there are no interventions.

It also provides a recommended path for current professions to upskill in key areas to help the industry reach its 2030 targets. Some existing flexible courses are identified which address these key areas, with providers such as DASBE, Mount Lucas training centre, WWETB, and IGBC.

Job Title	Current Workforce	Required for 2030 Targets	Workforce Forecasting Projection	Required	Recommended upskilling
Site Manager / Supervisor	4,600	8,518	5,190	3,329	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in Digital Construction Technology (NQF 7)
Project Manager	2,000	3,704	2,374	1,329	ZEB Fundamentals Training (industry recognised), MMC demonstration park

					training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in Digital Construction Technology (NQF 7)
Architecture and construction	9,400	17,407	16,034	1,373	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Cert in Community Energy (NQF 6), Whole Life Carbon Training (CPD), Design for Sustainability and Circular Economies (NQF 9), Certificate in Digital Construction Technology (NQF 7)
Architecture and town planning					
Civil Engineer	11,900	22,036	12,014	10,022	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in Digital Construction Technology (NQF 7)
Quantity Surveyor	4,800	8,889	5,141	3,748	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in

					Digital Construction Technology (NQF 7)
Electrical Engineer	5,429	10,053	6,582	3,472	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in Digital Construction Technology (NQF 7)
Mechanical Engineer	3,692	6,837	7,235	-	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Certificate in Digital Construction Technology (NQF 7)
Structural Engineer	384	712	570	142	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in green procurement in construction (NQF 7), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in Digital Construction Technology (NQF 7)
Energy Engineer	5,893	10,913	6,174	4,739	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in residential energy retrofit (NQF 8), Whole Life Carbon Training (CPD), Certificate in Digital Construction Technology (NQF 7)

Plumber	9,400	17,407	12,752	4,655	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), cert in heat pump installation, commissioning, maintenance and servicing (NQF 6), NZEB Plumbing (industry recognised)
Electricians	38,800	71,849	49,590	22,259	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), NZEB Electrical (industry recognised), Whole Life Carbon Training (CPD)
Bricklayer & Plasterers	11,800	21,851	9,556	12,295	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), NZEB Bricklaying (industry recognised), NZEB Plastering (industry recognised), Whole Life Carbon Training (CPD)
Painters & Decorators	6,600	12,222	5,124	7,098	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), Whole Life Carbon Training (CPD)
Carpentry and Joiners	17,700	32,777	17,968	14,809	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), NZEB Carpentry (industry recognised), Whole Life Carbon Training (CPD)
Other (i.e., Machine Drivers, Crane Drivers, General Operatives)	32,000	59,257	35,113	24,144	ZEB Fundamentals Training (industry recognised), MMC demonstration park training (industry recognised), Whole

					Life Carbon Training (CPD)
Total	164,398	304,430	183,851	120,579	

- *Qualification needs: required qualification courses by EQF level and schemes, number of required trainers, training and accreditation structures for carrying out the trainings.*

Progress achieved at national level within the BUILD UP Skills initiative

The BUILD UP Skills initiative in Ireland has made significant strides. Some key achievements include:

- **National Roadmap for Energy Training in Construction, 2014:** This roadmap laid the foundation for upskilling the construction workforce in energy efficiency.
- **Skills Development:** The initiative focused on enhancing skills for driving sustainable construction and supporting the decarbonisation of Ireland's built environment.
- **Stakeholder Engagement:** Extensive collaboration with various stakeholders, including public authorities, building professionals, and educational institutions, was a cornerstone of the initiative.
- **Training Programs:** Numerous workshops were conducted to address skills gaps in key areas such as decarbonisation, energy efficiency, and digitalisation.
- **National Upskilling Roadmap 2030:** Launched in March 2024

These efforts have helped Ireland progress towards its climate goals by ensuring the construction sector is equipped with the necessary skills to build and retrofit energy-efficient buildings.

Identified barriers to the achievement of the 2030 targets

The findings in Status Quo report highlight overall significant skills and labour shortages at all levels of construction workers and professionals, across public and private new build and retrofit sectors. As part of BUSI2030, a series of interviews; workshops; attendance at industry conferences; engagement with relevant cross disciplinary parties; analysis of public discourse has informed the collation of the following barriers. There are a broad range of relevant policies, strategies and programmes regarding education and upskilling provision within the construction industry.

However, there are still several impediments and barriers at all levels (supply, operative, management and professional roles) regarding:

- implementation of new up-skilling initiatives to address the 2030+ targets;
- lack of statutory accreditation for green skills;
- effective adaptability for strategies and technologies progressing at a fast rate;
- provision of incentives to upskill, facilitation of participation for an already stretched;
- workforce due to workloads and labour shortages;

Communication	Awareness	Promotion of Green issues
Companies don't engage all their stakeholders within the organisation, i.e., board members and senior management	lack of business opportunities highlighted for companies	lack of practical on-site training

poor communication- too complicated	Need for simple language when advising at community level	legal regulations act as an opportunity barrier for retrofitting
need for enhanced customer support for businesses	Upskilling behaviour isn't normalised- lack of education	
concept of digitalisation is too complicated		
Workforce	Best Practice	Diversity
not enough collaboration in the industry	Too many incentives for new builds	Lack of women studying STEM subjects
not enough focus on multidisciplinary skills/ transversal skills	lack of understanding of digitalisation and its market value	Too many gender-specific subjects in schools
Lack of basic knowledge amongst key stakeholders in areas such as carbon, circular economy and green procurement makes quick implementation of change difficult.	financial burden of digitalisation courses	Lack of apprenticeship schemes
	Benefits aren't promoted to businesses	
Training	Education	Lifelong Learning
Lack of incentives for Training and Upskilling	Over emphasis placed on 3 rd level education, with few opportunities for young people to learn more about upskilling.	Perceptions, lack of structures, formal accreditation and opportunities regarding 'non-formal' learning needs to be addressed and supported
Lack of Training in relation to digitalisation	lack of mentors for school students to engage with	No prospects of gaining or sustaining employment
Poor conditions of apprenticeships		No industry qualification for digitalisation
Not financially viable		
lack of flexibility with training		

3. The Action Plan

The BUSI2030 [Status Quo Analysis](#) published in June 2023 outlines skills and labour shortages, and highlights the skills needed to meet the Climate Action Programme (CAP) and Housing for All (HfA) targets. The Build Up Skills Ireland 2030 (BUSI2030) Roadmap presents recommendations to address these challenges, including the need to incentivise upskilling e.g. a new scheme to help small and medium enterprises is imminent, with the cost of upskilling employees and reskilling their employees is already due to be piloted under Budget 2024.

The Expert Group on Future Skills Needs (EGFSN) and the results of the [OECD](#) Skills Strategy in Ireland (May 2023) have been crucial to our analysis. The [CEDEFOP](#) methodology is central to the work of BUSI2030 in relation to skills in Ireland [Ireland | CEDEFOP \(europa.eu\)](#). BUSI2030 is particularly concerned with skills mapping and skills gaps and in the CEDEFOP finding that opportunities for ‘people with low qualifications will continue to shrink’.

The [Climate Action Plan 2024](#) specifies ‘public sector leading by example’ (*‘Achieve the buildings and retrofitting targets laid out in the Public Sector Climate Action Mandate’*) as seen reflected in BUSI2030 recommendations and ‘cross-sectoral collaborations help to develop the talent and skills needed for the jobs of the future, and provide innovative technologies, processes and insights to address key challenges’ as well as the development, design and delivery of new training content such as Quality and Qualifications Ireland (QQI) Level 4 accredited Retrofit Assistant programme. Awareness raising measures such as ‘*National Campaign of Communication and Engagement on Climate Action*’ must extend to skills and construction skills to meet climate action targets.

[The Sustainable Development Goals](#) and [Level\(s\)](#) the EU European framework for sustainable buildings have also played a significant role in our work, with particular emphasis on those identified in the Climate Action Plan 2024.

3.1 Key Themes

Arising from extensive stakeholder engagement, four key themes have emerged outlined below. Addressing these themes is central to meeting the training and upskilling required to enable Ireland to meet its climate targets. The four key themes are:



CONNECT THE SILOS

A significant variety of actors and stakeholders are involved in the education, training and upskilling field, relevant to construction. This includes Government Departments and their Agencies, public and private education and training providers, industry and others. There are multiple activities/initiatives on-going which, in some cases, are operating in silos. A strong concerted effort is required to develop a more effective and efficient construction skills eco-system where these multiple actors must enhance collaboration.

ADDRESS THE CARBON CHALLENGES

EU and National policies demand that reducing carbon become a central focus of the construction and built environment sector. At a minimum it is recommended that Government mandate Zero Emission Building (ZEB) Fundamental Training (key principles) to be provided at scale, across the sector (including to trainers). This must then be supported by specific education and training, Continuous Professional Development and lifelong learning opportunities which must also respond to areas such as Life Cycle Analysis (LCA), Modern Methods of Construction (MMC) and circular economy principles applied to design and construction.

CONSTRUCTION IS EXCITING?

The construction and built environment sector is evolving rapidly. A national campaign which promotes Green Careers (Construction, Consultancy and Education) and promotes diversity, should be developed to target those within education (primary, secondary and tertiary) and those in the workforce (all sectors).

ENCOURAGE CLIMATE LITERACY & TRAINING:

An innovative and exciting public awareness campaign should be developed to maximise awareness of the positive actions that society can take to address climate change.

12 sector-specific recommendations

Complimenting the 4 key themes, are 12 sector specific recommendations designed to support training and upskilling required to achieve climate action and housing targets. Some recommendations are labelled 'core' meaning critical and others are labelled 'enabler' meaning supporting the realisation of the 'core' recommendations.

The Roadmap is presented as a table of recommendations under the headings 'Public,' 'Educators' and 'Industry,' regarding governance, awareness, systems and supports.

3.2 Public Sector Recommendations

1. SKILLS ECO-SYSTEM (Governance)

- **Core** - Promote a **whole of government approach** to addressing skills gaps and shortages within a connected and efficient skills ecosystem.

Strengthen the government department DFHERIS (Department of Further and Higher Education, Research Innovation and Science), hosted **Construction Sector Skills Forum (CSSF)** to facilitate on-going opportunity for co-operation, sharing and networking

2. GREEN CAREERS (Governance)

- **Core - Green Careers (Public, Existing Workforce, Schools):** Actively promote and deliver a public campaign on career opportunities within the built environment and construction sectors, focusing on opportunities, climate action, sustainability, emerging technologies, circular economy, digitalisation, retrofit, renewables, net zero carbon strategies and nature-based solutions.
- **Core - Diversity & Inclusion:** Actively promote diversity and inclusion (e.g. gender, age, ability, cultural, socio-economic) in all aspects of the built environment to address current imbalances within construction (e.g., through recruitment strategies, mentoring programmes, buddy systems

in education and workplace, promoting positive role models, financial supports for access to training etc).

- **Core - Apprenticeships:** Regular review of processes for apprenticeships (craft and consortium led) incorporating the need for fast-paced course adaptation, climate action targets combined with working conditions, payments, accessibility, awareness etc.
- **Enabler - Diaspora:** Promote and encourage skilled Irish workers abroad to return home to take up employment in the construction sector specifically.
- **Enabler - Mobility and Recognition:** Examine options and consolidate government and industry initiatives for further attracting workers from abroad. This may include streamlining visas and mutual recognition of qualifications, reviewing the 'Critical Skills List' regarding mobility in relation to skills to achieve Climate Action targets.

3. QUALITY ASSURANCE FOR SUSTAINABILITY

- **Core - Climate Literacy:** Deliver a public awareness campaign for all citizens to understand the importance of climate action and sustainability in the built environment sector.
- **Core - Zero Emission Buildings Fundamentals (ZEB) Training for All (Existing Workforce and New Entrants):** Expedite provision of the key principles through ZEB Fundamentals Training (at a minimum) and provide targeted leadership development training for all involved in construction sector.
ZEB suite of training content to be regularly updated in line Climate Action targets and EU Legislation ambitions.
- **Core - Public Sector ZEB Training:** Expedite provision of key principles through ZEB Fundamental Training for management and procurement teams, public representatives in Local Authorities, relevant State Agencies and Government Departments to increase understanding of the key issues.
- **Core - Construction Workforce ZEB Training Incentives:** Provision of enhanced knowledge cross sectoral, on key principles through ZEB Fundamentals Training: Incentivise initially, then it is recommended that Government mandate through mechanisms such as Green Public Procurement and/or relevant public grant criteria, the participation in ZEB Fundamentals training to deliver critical upskilling through CPD at scale (c.160,000+).
Consider the need to provide additional (benefits / paid time off) incentives for construction micro, small and medium businesses to upskill their workforce through funded accessible, flexible and blended, micro-credentials pathways.
- **Core- Immediate / Short term Awareness Training:** Actively promote and assess the need to incentivise attendance at existing 1 day online NZEB Training for all micro and small contractors. (Similar to RECI / RGII systems).
Encourage homeowners / financial providers to request proof of attendance at this City & Guilds assured course as short-term measure in advance of mandated ZEB Fundamentals training.
- **Enabler - BIM Mandate:** Review viability to fast-track BIM Mandate to focus on micro, small and medium businesses.
- **Enabler - Circular Economy (CE) Roadmap:** Expedite delivery and implementation of proposed National Circular Economy Roadmap (arising out of the Circular Economy Plan 2021-2027)
- **Enabler - Modern Methods of Construction (MMC) Roadmap:** Expedite delivery and implementation MMC Roadmap
- **Enabler - Digital: Fast-track implementation of digital skills** with specific focus on supporting micro, small and medium businesses through ETB Centers of Excellence.
- **Enabler – Sustainable Energy Authority of Ireland (SEAI) Pathfinder Projects:** Review viability to fast-track sharing findings and delivery of projects.

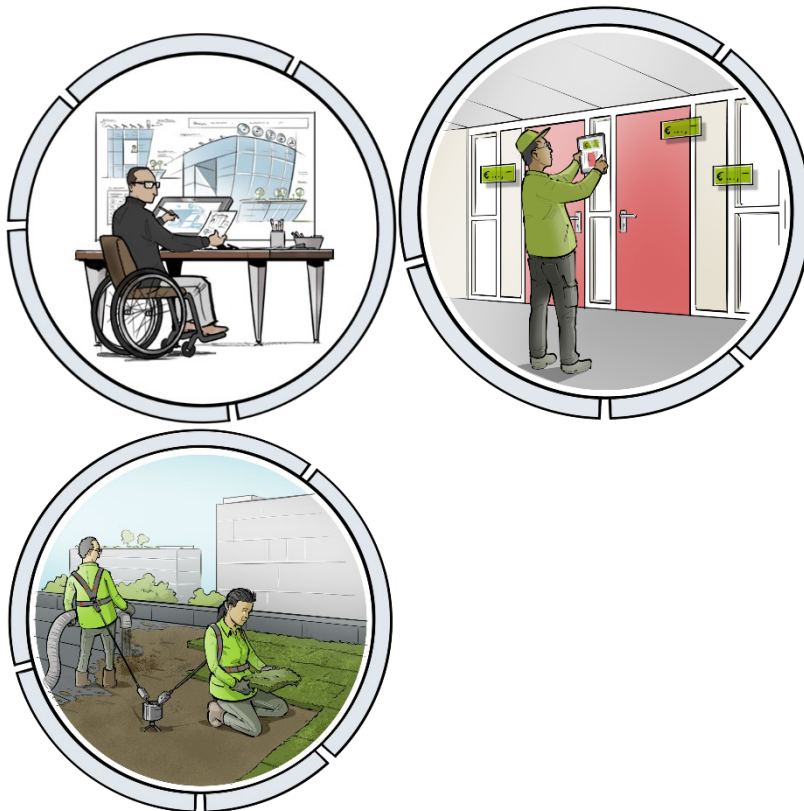
- **Enabler – Certification of Materials & Products:** Support fast-tracking certification processes to encourage innovation, knowledge sharing, use of and quality assurance re Environmental Product Declarations (EPDs) for all materials.
- **Core - Registers:** Facilitate approved 'competency' registers for contractors and consultants and specialist Installers / advisers linked to quality and skills criteria.
- Link participation to grant provisions and finance conditions.
- **Core - CIRI Registers:** Expedite Implementation of the Contractor Register CIRI prioritising inclusion of micro, small and medium sized businesses mandating annual CPD, with annual review of competencies.
A strategy is required for contractors completing works not subject to statutory consents e.g. Building Control Act exemptions, Planning Permission exemptions etc Interim solution refer item 3.2.4 in short term to participate in training or skills development programmes.
- **Core - Construction Safety Licensing Bill:** Review and scope of the Bill (within statutory parameters) for potential use so that it is used as a mechanism for licensing construction skills. The Bill's objective is to put in place a license requirement for certain operations in the construction sector to improve competency in these areas. The Bill, as currently drafted, is limited to the operations / skills as listed in the Safety, Health and Welfare at Work (Construction) Regulations 2013. This legislation could be the vehicle to extend the competency requirements, and so enhance quality of delivery, for other construction related skills areas, such as retrofit.
- **Core - Further support construction industry micro, small and medium sized businesses;** actively promote training and incentivise upskilling of construction enterprises E.g. through tailored support.
Strengthen lean, green and digital support and advice at local / regional level through local enterprise offices network.
- **Core - Certification Schemes:** Promote use of and skills development for Life Cycle Assessments and building certification schemes e.g. BREEAM, LEED, Home Performance Index, WELL etc. Although government departments cannot mandate one scheme.

4. STRENGTHEN PUBLIC SECTOR LEADING BY EXAMPLE

- **Core - Climate Action Leadership Training:** Regular review and update of content for mandatory attendance at Climate Leadership training for all Public Principal Officers/Equivalents e.g. REMARKABLE climate leaders (Horizon 2020 funded)
- **Enabler - Holistic approach:** Support combined public sector ambitions to achieving Climate Action targets, promoting 'Design for Performance' approaches. Examples include measuring against environmental indicators while considering long-term energy, carbon and cost efficiencies
- **Enabler - Resource Efficiencies:** Prioritise and incentivise economies of scale to deliver Ireland's targets with limited resources (e.g. in energy renovation projects: terraces, housing estates, sustainable energy communities; district heating projects, smart buildings)
- **Enabler - Sustainability Checklists / Best Practice Case Studies:** Establish sustainability checklists for all public sector retrofit, new and maintenance projects, enforcing use of Display Energy Certificates (D.E.C) for all public buildings for optimum operational efficiencies and awareness raising.
- **Enabler - Quality Assurance:** Provide additional resources and ZEB training for Local Authority Building Control and Enforcement Offices

5. COLLABORATION AND KNOWLEDGE SHARING

- **Core- Skills Eco-System:** Provide a central source with information and access to public and private training and CPD offerings to strengthen the collection, exchange and provision of skills information (Continuous Professional Development in one place) e.g. building on experience of the Build Up Skills (BUS) advisor app and DASBE
- **Core- Built Environment networks:** Support and resource the Construction Industry Council to strengthen the collaboration by construction industry stakeholders focusing on Climate Action targets.
- **Enabler - Exemplar Case Studies:** Establish and support a public platform for sharing best practice (public & private) projects & delivery models which can act as a central knowledge hub for education/training providers. Incentivise contributions of best practice as well as lesson learned.
- **Enabler - Learnings from Pilot Projects:** Consolidate outputs and share resources and findings of numerous national, European and internationally publicly funded research projects e.g. Construction Blueprint and BIMzeED.



3.3 Education Recommendations

Following on from the findings of the [Build Up Skills Ireland Status Quo Analysis \(June 2023\)](#) and the projected requirements of upskilling the current student population (roughly 26,000) and the current workforce (roughly 164,000) along with reskilling new entrants (projected at 120,000 if '*business as usual*' construction systems prevail), a considerable challenge is presented to the education and construction sectors across all national qualifications framework (NQF) .

The following recommendations and a collaborate approach across all sectors is required to assist meeting built environment Climate Action targets and Housing for All targets to 2030 through short, medium and long term actions and onwards to continue to address 2050 targets.

6. EDUCATION SKILLS ECO-SYSTEM (VET, HE and CPD)

- **Core - Skills Mapping:** Establish a system allowing for clearer and consistent data acquisition on content of all existing publicly funded further and higher education training courses along with an accurate national skills mapping programme for existing, new and emerging construction roles and tasks. Required data would include specific course content, learning outcomes, entrant numbers and graduate numbers and places available comparable across all education providers.
- **Core - Central Platform for upskilling in construction:** Centralise data and information on all construction training programmes in a user friendly, easily accessible public platform, similar to [CAO platform](#) e.g. [Build Up Skills advisor APP](#).
- Develop a centralised online platform (similar to CAO) showcasing specific upskilling, reskilling, and new skill training programs across the construction industry. This platform should include clear information on programme content, delivery methods, eligibility requirements, and contact details for providers.
- **Core- Train the Trainer (TtT):** Establish, monitor and regularly update a coherent system of TtT programmes and pathways for supporting upskilling of trainers in the Further Education and Training and Higher Education systems (targeting current and emerging issues and regularly updated e.g. zero emission construction, MMC, circular economy, indoor air quality, digitisation and digitalisation in the built environment).
- **Core - Flexibility in delivery:** Explore options for greater flexibility in delivery methods and in accreditation systems across the education sector in order to deliver the training required at scale including the utilisation of micro credentials and onsite, online, self-directed delivery. Support will need to be provided to trainers as well as to trainees in this regard.
- **Core - Training Centers:** Re-focus existing NZEB (Nearly Zero Energy Building) Education and Training Board's Centres of Excellence (CoE) to ZEB (Zero Emission Building) Centres of Excellence regarding course offerings and processes.
Consider the need to provide additional mobile training rigs to facilitate on-site workforce development

7. PRIORITISE GREEN CAREERS

- **Core - Innovative training and upskilling opportunities across EQF levels:** Develop and promote new training modules and new course content tailored across EQF levels to complement the

Climate Action targets and Housing for All developments such as MMC Demonstration Park at the National Construction Training Campus.

- **Core - Continuous Professional Development (CPD)** : Develop further Continuing Professional Development (CPD) training programmes for construction professionals e.g. engineers/architects/energy advisers/planners/ ecologists to address identified skills gaps such as circular economy, lifecycle analysis, digitisation, digitalisation for built environment.
- **Core- New Training Provision in Emerging Technologies e.g. MMC** (Similar approach required for other emerging technologies): Create broader MMC manufacturing technician apprenticeship/trade courses focused on MMC / Modular Construction; Create modules with a focus on innovation, modern materials and manufacturing which can be integrated into the curriculum for all third level and CPD courses such as civil, mechanical and electrical engineering, built environment, planning, finance, project management and construction studies courses.
- **Enabler - Effective dissemination of new research to education sector:** Utilise research outcomes to provide evidence and data to inform new programme development as well as education and training pathways.
Disseminate the work of relevant Government supported initiatives such as DASBE (HEA), Construct Innovate (Enterprise Ireland) and Build Digital (Project 2040 and the Construction Sector Group Innovation and Digital Adaption).

8. AWARENESS IN SCHOOLS

- **Core - Career Guidance:** Increase engagement with career guidance counsellors (and other relevant teachers) to ensure promotion of construction as a green and sustainable career. Create content for career guidance, transition year, construction technology teachers to promote innovative green and digital construction career pathway options. Promotion of Generation Apprenticeship within schools in conjunction with (PLC, FET, HE) CAO offerings.
Develop and disseminate **targeted resources** (e.g, career guidance modules, interactive tools) for career guidance counsellors and teachers, emphasizing the **green and sustainable nature** of construction careers. Partner with industry bodies to **facilitate school visits** from construction professionals and showcase **real-world career paths** in the sector.
- **Core- Promotion of construction as an exciting career:** Continue to host events together such 'Higher Options*' and 'World skills**' to ensure equal status and visibility to both.
**Higher Options provides a unique opportunity for up to 30,000 students from across Ireland to speak to representatives from third-level institutions from Ireland, the UK, Europe and further afield. Students can gather information about their third-level options and attend career talks on a wide range of topics.*
*** Worldskills Ireland is a partnership between enterprise, industry, education, training and government that raises the profile and recognition of skills and apprenticeships and prepares the talent of today for the careers of the future.*
- **Core - Upskilling of teachers:** Provision of ZEB fundamentals (basics) training for career guidance and all teachers focusing on construction and related skills.
- **Enabler - Make innovative technologies available to schools:** Utilise mobile training rigs, VR/AR and mobile technologies available to all primary and secondary schools to facilitate active learning and encourage entry into construction careers.

9. LIFELONG LEARNING

- **Core - Pathways to Life Long Learning opportunities:** Promote pathways from *work* to *FET* to *HE* for career progression opportunities; further options for construction related pathways should be explored. In order to meet the construction labour needs, pathways from non-construction related roles should be given equal prominence e.g. IT to digitisation in construction, procurement to green

procurement, accountant to carbon accounting. Digital security will be considered essential to avoid disruption and improve resilience.

- **Core - Recognition of Prior Learning (RPL) and Experience:** Ensure greater flexibility in RPL to allow for greater entry into construction courses.
- **Core - Stronger Links between Secondary and Tertiary:** Higher education institutes to continue to work in collaboration with education providers at second level to ensure promotion of new skills in construction as career opportunities.
- **Core - New apprenticeships and traineeships:** Contribute to the development of new apprenticeships, traineeships and micro credentials to ensure that the skills gaps are addressed.
- **Core - Career pathways:** Provide support and guidance to FET and HE learners through individual mentoring and career guidance, while also developing innovative tools e.g. using AI to support career/upskilling choices and pathway identification

3.4 Industry Recommendations

Attracting Young Talent

Attracting a new generation of construction talent into the industry has for a long time been an issue. Common perceptions that all roles in the industry are physical and dirty have unfortunately led to skills shortages and an ageing workforce. Perceptions around construction being a male-dominated industry remain. With just over 9% of those working in the industry being female, there's a large portion of the labour market not being utilised. This gender imbalance needs to be addressed by breaking down the pre-conceived ideas of what working in the industry is like. This can be achieved by organisations making efforts to promote more women into leadership positions, and women in the industry inspiring the younger generation to follow in their footsteps. Construction roles need to meet 2024 lifestyle expectations of family friendly work times and work life balance if the industry is to attract and retain young talent, both male and female.

The composition of employment across the construction sector has been changing in recent years reflecting the emerging technological developments, which are transforming the way in which the sector is innovating into the future. The advancement of digital adoption and off-site construction have many new career opportunities available that may not have been typically associated with the industry and would be of interest to women and young talent.

There is a renewed focus on Apprenticeships in Ireland with the establishment of the National Apprenticeship office in 2022 with the focus on the implementation of the Action Plan for Apprenticeship 2021-2025. The plan will work to ensure equity of access to ensure underrepresented groups are able to avail themselves of apprenticeships by creating simplified routes to entry, and improved flexibility within the system. One of the initiatives is the Facts, Faces, Futures campaign which aims to communicate the growing participation and leadership of women in careers available through apprenticeship and to ensure that students in girls' schools around the country are aware of the apprenticeship programmes now available.

DFHERIS as part of their *Careers in Construction Action Plan* have allocated €750,00 to implement the promotional requirements of its plan in 2024. There are seven activities outlined with the objective to:

1. Change the perception of school leavers from just the narrow lens of "on-site" to the opportunities that exist through modern methods of construction and other advances in the sector.
2. Break down the stereotype that construction is an inappropriate industry for females.
3. Encourage skilled construction workers to return home and take up sustainable employment here.

Reskilling workers and professionals previously or currently active in fossil fuel related sectors and regions.

LOETB led the multi-agency response to Bord Na Móna workers whose jobs were, and are, at risk due to the company's decarbonisation process. This initiative involved GRETB – at Blackwater Bord Na Mona Works - and LWETB – who led it in Mount Dillon Bord Na Mona Works. Having offered Training Needs Analyses and Skills Audits to all Bord Na Móna staff who were availing of Voluntary Redundancy, LOETB engaged 450 Bord Na Móna training participants during 2020-2022 on a range of programmes from Bicycle Maintenance to Retrofit and NZEB provision, from Train The Trainer to Sustainable Agriculture, from Electrical Instrumentation to Horticulture at QQI Level 4.

The focus was originally on employees engaged in the Peat Climate Action Scheme (also known as Peatland Rehabilitation/Bog Rewetting) (PCAS) and those employed in Derrinlough Briquette Factory.

122 Bord Na Mona employees undertook the initial Skills Audits/Training Needs Analysis (TNA) and Career Coaching with LOETB in 2022 – Blackwater (31), Boora (24), Derrinlough (22), Derrygreenagh (9), Kilberry (2), Mount Dillon (33), Newbridge (1).

15 of those employees have, to date, availed of the Bord Na Mona Employee Supports Training and Upskilling Project funded under the Irish Just Transition Fund to enable them avail of upskilling and reskilling programmes that are not available from the ETB's.

LOETB is continuing to ensure tailored provision throughout 2022 and is offering up to 300 current Bord Na Móna employees the opportunity to participate in Skills Audits and TNAs that will entitle them to benefit from Just Transition upskilling funding to enhance their employment potential post PCAS. Workers are supported to identify future employment career opportunities based on current skillsets and interests and advice and support on the upskilling pathway required. They can then apply to Bord Na Móna's Just Transition Upskilling Fund to support individual pathways or a FET Pathway, if more appropriate to their level of educational attainment. This action is reflected in Ireland's Climate Action Plan - (CAP) *Action 29 Enhance delivery of further and higher education in the Midlands region to equip people for future employment opportunities in green growth sectors - Education and Training Boards will undertake skills audits.*

Indeed, LOETB's intensive work with Bord Na Móna (former) employees as part of the Just Transition process is mirrored in many of the ETB-related actions in the Government's Climate Action Plan 2023.

- *Climate Action Plan (CAP) Action 16 Promote timely and tailored activation and training responses for workers whose jobs are at risk by the decarbonisation process.*

LOETB led the multi-agency response to Bord Na Móna workers whose jobs were, and are, at risk due to the company's decarbonisation process. Having completed Training Needs Analyses and Skills Audits with all Bord Na Móna staff who were availing of Voluntary Redundancy, LOETB engaged 450 Bord Na Móna training participants during 2020-2022 on a range of programmes from Bicycle Maintenance to Retrofit and NZEB provision, from Train The Trainer to Sustainable Agriculture, from Electrical Instrumentation to Horticulture at QQI Level 4.

- *(CAP) Action 29 Enhance delivery of further and higher education in the Midlands region to equip people for future employment opportunities in green growth sectors.*
(1) Education and Training Boards to offer deep retrofit training provision and renewable energy courses

LOETB engaged 174 learners in Retrofit and NZEB provision in 2021 (66 of whom were Bord Na Móna employees). 136 learners engaged in Renewable Energy upskilling and reskilling provision – including Domestic Heat Pumps, Solar PV, Micro Gen and Domestic Gas Safety with a further 250 Renewable Energy Learners in 2022 focusing primarily on Domestic Heat Pump Installation.

(2) Education and Training Boards to provide Bog Rewetting Programme Traineeship and the Sustainable Agriculture Traineeship.

LOETB continues to engage with Bord Na Móna and 130 of their employees (all of those engaged operationally on the Peat Climate Action Scheme) in the **Peatland Rehabilitation Traineeship**. Despite experiencing some delays and interruptions due to COVID19 and the piecemeal nature of bog licensing for the national rewetting programme, 102 Bord Na Móna operatives participated on the Traineeship in 2021. LOETB has agreed to facilitate those yet to complete the programme during 2022 and have reoriented provision to upskill employees in the specific work being undertaken by the company on Peat Climate Action Scheme (PCAS) this year.

56 Bord Na Móna learners engaged in the **Certificate in Sustainable Agriculture** during 2021, with 48 Bord Na Mona beneficiaries the following year. LOETB is providing this programme in partnership with Teagasc and the Agricultural Colleges at Gurteen and Mountbellew. It is primarily aimed at Bord Na Móna seasonal employees and Bord Na Móna families aiming to enhance the agricultural landscape and support the farming community in its transition to a lower carbon environment and provide them with the skills to avail of likely green initiatives in new CAP reform policies as well as exploring diversification and off-farm income generation. The success of this initiative has resulted in the focus of the programme being expanded to the impacted families and communities in the Just Transition region in 2023.

LOETB in partnership with Offaly LEO and Bord Na Mona is offering a Start Your Own Business Programme – New Beginnings – to Bord Na Mona employees in 2023, resulting in QQI Certification and, crucially, a Business Plan that will attract seed funding from Bord Na Mona.

Bord Na Mona Learners with LOETB 2020/2021	
Programme	No. of Learners
NZEB Retrofit	36
Peatland Rehabilitation Traineeship	60
Sustainable Agriculture Traineeship	51
MIG Welding	38
Advanced Welding	16
Bicycle Mechanic	18
Industrial Electrical Systems	18
ICSE Door Security/Guarding Skills	13
Train The Trainer	16
Site Supervisor	7

HGV Artic/Rigid	14
Supervisory Management	22
Basic IT Skills	13
CSCS	
Telescopic Handler	43
360° Excavator	79
Site Dumper	5
Slinger/Signaller	1
Total	450

Pact for Skills

The Pact was initiated by the European Commission in the framework of the “EU Skills Agenda”, to mobilise concerted efforts among private and public stakeholders for quality investment in Vocational and Educational Training (VET). The priority of the Pact for Skills is to strengthen collective action on skills development by all stakeholders through skills partnerships.

At EU level, Large-Scale Skills partnerships (LSPs) set up a shared engagement model for collective action where major players in industrial ecosystems and value or supply chains, including associations, relevant public authorities and SMEs, commit to cooperate and invest to provide upskilling and reskilling opportunities for people of working age in the whole industrial ecosystem.

Regional Skills Partnerships (RSPs) are similar multi-stakeholder partnerships seeking to advance the Pact for Skills’ objectives at the regional level. RSPs can cover a region within a single Member State, ‘macro regions’ spanning across Member States that have a shared geographical or economic relationship or can bring together different regions facing similar skills challenges on the regional level. The Construction ecosystem within pact for Skills covers the design, construction, maintenance, refurbishment, renovation and demolition of buildings and infrastructure.

Commitments made under the Pact for Skills will be addressed in this National Roadmap for Upskilling in Ireland. The Pact for Skills partnership represented by sectoral social partners, is committed to upskill and reskill at least 25% of the EU construction workforce (3 million people) in the next 5 years, including by building strong partnerships, monitoring occupational supply/demand chains, and anticipating knowledge and skills needs. They also aim at attracting more young people and women to the construction sector and promoting a culture of lifelong learning for all.

Stakeholders' commitments will revolve around 5 key principles:

1. Building strong partnerships, including with VET institutions;
2. Monitoring occupational supply/demand and anticipating knowledge, skills and competences (KSC) needs;
3. Working against discrimination;
4. Attracting more young people and women in the sector;
5. Promoting a culture of lifelong learning for all, supported by adapted incentive

4. Conclusions

The Climate Action Plan 2024 emphasises the public sector's role in meeting building and retrofitting targets, as seen in the BUSI2030 ROADMAP recommendations, and highlights cross-sector collaboration required to develop future skills and technologies. The Sustainable Development Goals are central, focusing on building resilience for vulnerable populations and reducing their exposure to climate-related and other shocks. Based on the Build Up Skills Ireland Status Quo Analysis (June 2023) and the upskilling needs of 26,000 students, 164,000 workers, and 120,000 new entrants, a significant challenge faces the public sector, education providers, and construction sectors. A collaborative approach is essential to meet Climate Action Plan and Housing for All targets by 2030.

Under the UN Framework Convention on Climate Change (Article 6) and the Paris Agreement (Article 12), governments are tasked with promoting climate change education, public awareness, and participation. CAP23 aligns with this by emphasizing the need for people to acquire the skills necessary for a net-zero economy. Ireland's National Skills Strategy (NSS) 2025 – Ireland's Future Report was published in December 2022 and the OECD's May 2023 report suggest adjustments to ensure the strategy remains effective, focusing on skills balance, lifelong learning, innovation, and governance. The Expert Group on Future Skills Needs (EGFSN) highlights the demand for skills in renewable energy, retrofitting, and electric vehicle deployment, with recommendations to meet future skills needs for Ireland's Climate Action Plan goals.

Recent amendments to the EU Energy Performance of Building Directive (EPBD) means that the building of new homes must achieve certain minimum levels of reduction in carbon emissions by 2030 as part of the European pathway to achieving zero emissions by 2050. This goal requires that construction industry professionals be proficient in the latest energy-efficient building techniques and materials. Skills in areas such as thermal insulation, energy-efficient HVAC systems, and renewable energy integration (like solar panels) will be crucial. Training programs and certifications in energy efficiency will become increasingly important to ensure that workers can meet these new standards

Construction professionals will need to be knowledgeable about sustainable building practices, including the use of recycled materials and the design of buildings for easy disassembly and material recovery at the end of their life cycle. Skills in waste management, material science, life cycle analysis, green procurement and sustainable design principles generally will be essential.

Digitalisation is another key area where the construction industry will need to evolve. The EPBD encourages the use of digital tools to improve the energy performance of buildings. This includes Building Information Modelling (BIM), which allows for the detailed planning and management of building projects, as well as smart building technologies which can monitor and optimise energy use in real-time. Construction professionals will need to be adept at using these digital tools and technologies. Training in digital skills, data analysis, and the use of software for energy management will be critical. EU Horizon funded projects such as HumanTech along with the provisions of the BIM mandate will assist in progression in this area.

Modern Methods of Construction can also assist in the reduction of carbon emissions because as a building technique, it generates superior levels of insulation and airtightness than the traditional approach. It was noted in recent studies on the skills required in MMC that there is a lack of skilled tutors and assessors with a sufficient knowledge of the competences required to achieve MMC. The Expert Group on Future Skills Needs published the 'Skills for Modern Methods of Construction' in 2024.

Although there are policies, strategies, and programmes in place regarding upskilling and addressing skills and labour shortages in Ireland, more action is critical for engagement with initiatives to meet our significant national targets.

The BUSI2030 Status Quo Analysis, published in June 2023, highlighted labour and skills shortages, emphasizing the specific expertise required to achieve the Climate Action Programme (CAP) and Housing for All (HfA) targets. Several key areas were identified where skills in energy efficiency, circular economy and digitalisation are crucial to meeting the 2030 goals. These include topics such as energy calculation, deep renovation of buildings, modular solutions, smart buildings, life cycle analysis, modern methods of construction (MMC) as well as new technologies which are essential for various construction professionals to become familiar with. New careers have also been identified which will become more in demand in the coming years. A number of existing flexible courses and micro credential have been identified which address these key areas, with providers such as DASBE, Mount Lucas training centre, WWETB, and IGBC.

It is estimated that more than 300,000 individuals will be needed in the construction sector alone to achieve 2030 goals, leaving a shortfall of over 100,000 when compared to current workforce levels and graduates. Key actions to address industry challenges include upskilling the workforce in energy efficiency, digitization, circular economy, and decarbonization, with incentives such as grants and tax exemptions. The aim is to attract 100,000 new entrants to construction over five years, focusing on younger people and women. Construction roles should be modernised to meet 2023 lifestyle expectations. The transition to low embodied carbon construction processes and technologies is also a key priority as well as prioritizing renovation of existing buildings and implementing a universal system to measure whole life carbon.

The National Upskilling Roadmap 2030 outlines practical steps we can take to gain the necessary skills for achieving our national climate action targets for housing retrofitting, renewables and the decarbonisation of Ireland's built environment.

The 2024-2030 BUSI roadmap, developed after reviewing the 2012 BUSI roadmap and a recent consultation process, builds on insights from the BUSI2030 project's Status Quo report and stakeholder engagements. A long list of over 100 proposed actions was refined through a shortlisting exercise by project partners, removing actions outside the BUSI scope. The roadmap's development involved a transparent process with key stakeholders via the National Platform. A first draft was presented in December 2023, with wider consultation set for January 2024 and final launch in March 2024 after public feedback.

Recommendations have been grouped under 'Public', 'Educators', and 'Industry' without specific responsibilities for governance or implementation. The roadmap suggests assigning oversight to the Construction Sector Skills Forum (CSSF), with the government enhancing its role to monitor and guide the roadmap's implementation.

After extensive consultations and analyses, four key recommendations have been identified to meet the training and upskilling needs for climate and housing targets:

1. Connect the Silos
2. Address Carbon Challenges
3. Construction is Exciting?
4. Climate Literacy & Training

Supporting the four top-level key recommendations are 12 sector-specific actions aimed at addressing the training and upskilling needs for climate action and housing targets. These actions target the public,

education, and industry sectors. Some are designated as 'core,' indicating their critical importance, while others are labelled 'enabler' actions, which support the achievement of the core actions.

The 2024-2030 BUSI roadmap provides a comprehensive framework for addressing our skills shortages, with its four key recommendations and supporting sector-specific actions. By prioritizing collaboration, modernization of roles, and the transition to low carbon construction processes, Ireland can work towards achieving its 2030 climate and housing goals. However, continuous engagement and oversight through bodies like the Construction Sector Skills Forum will be critical to ensure the roadmap's successful implementation.

Testimonials

In here each national team should provide statements, messages and/or letters evidencing the endorsement of relevant national stakeholders including public authorities and building and industry associations.

Platform letters of support		
DFHERIS	Skillnet Ireland	Construct Innovate
Sustainable Energy Authority of Ireland	Construction Industry Federation Education and Skills Committee	Royal Institute of Architects
		Clancy's Construction

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OVERALL

EPA Update report July 2023

[Greenhouse gas emissions and projections | Environmental Protection Agency \(epa.ie\)](#)

PROCESSES

SCIENCE BASED TARGETS

[CLEAN 150523_DRAFT_SBTi_Buildings_Guidance_v1.5.docx \(sciencebasedtargets.org\)](#)

ENERGY EFFICIENCY / IRELAND

[Reviewing the Co-Benefits of Energy Efficiency in an Irish Context | IIEA](#)

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[Minimum-standards-maximum-impact_Final.pdf \(bpie.eu\)](#)

NDP

[gov.ie](#) - Ministers Donohoe and Smyth announce package of contract reforms to build confidence in NDP delivery ([www.gov.ie](#))

HOUSING FOR ALL

Housing for all Q2 2023 Progress Report

[4e4864a8-2c31-41b6-a656-826b45a4b470.pdf](#) ([www.gov.ie](#))

Housing for all Innovation

[gov.ie](#) - Housing for All - Innovation and Productivity ([www.gov.ie](#))

PROFESSIONAL BODIES

Irish Planning Institute Survey Results July 2023

[Irish Planning Institute launches 2023 professional survey](#) - Irish Planning Institute ([ipi.ie](#))

Shortfall in Planners

INNOVATION / MMC

MMC Roadmap & Introductory Guide July 2023

DIGITAL

Causeway Beyond Basics Digital Webinar

[Webinar | Beyond the basics - construction's digitalisation journey](#) ([causeway.com](#))

BIODIVERSITY

Cluid Housing Landscape & Biodiversity Guide

[Publications - Clúid Housing](#)[Clúid Housing](#) ([cluid.ie](#))

IGBC Submission to City Assembly

[abc \(igbc.ie\)](#)

ONE STOP SHOPS

Research re BER C – Why Retrofit has NOT happened

[Heat Pumps and Energy Retrofit – a Case Study with Policy Insights. Why a sample home with a C BER hasn't upgraded to a Heat Pump – Public Policy](#)

SKILLNET Newsletters

[Welcome to the July edition of kinetic - the Skillnet Ireland newsletter \(mailchi.mp\)](#)

[Climate Ready Academy](#)

INCREASING APPEAL OF GREEN UPSKILLING

[How to increase the appeal of green skills and training | Nesta](#)

PUBLIC SERVICE LEARNING & DEVELOPMENT

[Our Public Service - Learning and Development \(ops.gov.ie\)](#)

WOMEN IN TRADES AUSTRALIA

[Current Courses | WOMEN'STEC \(womenstec.org\)](#)

[WOMEN'STEC | BELFAST | DIY \(womenstec.org\)](#)

- Supporting women in non traditional roles

- Offering Free Childcare

Jobs for those with Disabilities 2nd July DFHERIS announcement

CDP

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IEMA UK

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BIM

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CWMF: BIM Requirement in Consultant Appointments from January 2024, Contract Reforms and Adoption of ICMS Standard

MMC

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CSRD

<https://enterprise.gov.ie/en/publications/?t=Responsible+Business>

Carbon Roadmap

[Net Zero Whole Life Carbon Roadmap for the Built Environment | UKGBC](#)

SKILLS SELF ASSESSMENT

[Skills for Better Business | Online Assessment](#)

The Innovation Exchange

Connecting large businesses facing innovation challenges with ambitious SMEs that fast-track solutions

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Annex 2: Roles

CONSULTANTS	CONTRACTORS / SUPPLIERS	OTHER
Acoustician	Agricultural mechanics	Automation and Robotics
Architect (Registered)	Aircraft mechanics	Biodiversity Ecologists
	Air to Air Heat Pump Installer	
Architectural Technologist	Biomass Boiler Installer	Biodiversity Officer
Architecture and Town Planning	Bricklayer	Botanist
BIM Manager	Carpenter	Building Control Officer
BIM Technologist	Construction Plant Fitting	Conservation and repurposing officer
Building Surveyor (Chartered)	Construction Project Manager	Contract Administrator
Civil Engineer	Construction Supervisor	Documents Controller
Design Engineer	Crane Drivers	Ecologists
Development Engineers	Curtain Walling Installer	Enforcement Officer
Electrical Engineer (Chartered)	District Heating Technician	Facility Manager
Energy Assessor	Electrician	ICT Technician
Energy Engineer	Farrier	Land Surveyor
Environmental Manager	Floorers	Legal Adviser
Facilities Manager	General Operatives	Local Authority Ecologists
Fire Safety Engineer	Glazier	Logistics
Health and Safety designer	Health and Safety Contractor	Procurer
HVAC Engineers	Heat Pump Installer / Technician	Project Manager
Landscape Architect	Internal & External Insulation Installer	Quality Control Manager
Legal Advisor	Joiner	Quantity Surveyor
Mechanical Engineer (Chartered)	Landscaper	Renewable Energy Analyst
Project Manager	Machine Drivers	Safety Officer
Product Designers (Heat Pump, PV, Solar...etc0	Painters and Decorators	Site administrator
Reuse Consultant	Pipe Fitters	Site Manager
Reuse Coordinator	Plasterer	Site Supervisor
Standards and Accreditation assessor	Plumber	Town Planner
Structural Engineer (Chartered)	Production Manager	Transport and Logistics Manager
	PV and Solar Installer	
	Reuse Contractor	
	Retrofit Site Coordinator	
	Refrigeration Technician	
	Researcher and Innovator	

	Roof Tilers and Slaters	
	Roofers	
	Scaffolders	
	Service Technician	
	Site Manager	
	Steel Erectors	
	Stone Layer	
	Systems Integration eg PV&Battery connection	
	Tilers	
	Water Monitoring	
	Welders	

Annex 3: Skills Needs Assessment & Opportunities

THEMES	PROPOSED OPPORTUNITIES
Research	Diversity
BIM4D	Improved Career Guidance
Biodiversity	Specialist Registers
Bio-Materials	Off-site Technologies
Carbon Accounting	Career Supports & Pathways & Funding
Circularity,	Collaboration
Climate Adaptation	Recognition of prior Learning
Climate Mitigation	Life Long Learning
Climate Resilience	
Communication	
Community Led	
Compliance & Enforcement	
Contracts	
De Carbonisation	
Design for Manufacture and Assembly	
Development of Greenways	
Digitsation	
Digitalisation	
Ecological Impact Assessment	
End of Life	
Energy use Verification	
EPDs	
ESG Auditing	
ESG Reporting	
Green Infrastructure plans	
Green Leases	
Implementation of River Management Plans	
Increased support to community led projects	
Indoor Air Quality	

Innovation	
Life Cycle Analysis	
Modern Methods of Construction	
Nature Based Solution	
Nature first Approach	
Operational Carbon	
Post-Occupancy Evaluation	
Procurement	
Social Value	
Train the Trainers	
Waste Management	
Water Efficiency	
Whole Life Carbon Assessment	

Annexe 4: Abbreviations

Abbreviation	Description
CAO	Central Applications Office
CE	Circular Economy
DASBE	Digital Academy for Skills in Built Environment
DFHERIS	Department of Further and Higher Education, Research, Innovation and Science
EGFSN	Expert Group on Future Skills Needs
EE	Energy Efficiency
EI	Engineers Ireland
EHEA	European Higher Education Area
EmC	Embodied Carbon
EQF	European Qualifications Framework
FÁS	Foras Áiseanna Saothair
FET	Further Education and Training
HEA	Higher Education Authority
HCI	Human Capital Initiative
HEI	Higher Education Institute
IT	Institute of Technology
NFQ	National Framework of Qualifications
PLC	Post Leaving Centre
QQI	Quality and Qualifications Ireland
RES	Renewable Energy Systems
RIAI	The Royal Institute of Architects Ireland
SCSI	Society of Chartered Surveyors Ireland
SEAI	Sustainable Energy Authority of Ireland
SOLAS	An tSeirbhís Oideachais Leanúnaigh agus Scileanna
TU	Technological University
VET	Vocational Education and Training
<u>Project Partners:</u>	
TUS	Technological University of the Shannon Midlands Midwest
IGBC	Irish Green Building Council
LOETB	Laois Offaly Education and Training Board
CIF	Construction Industry Federation

*Not an exhaustive listing

