FINAL SET OF RECOMMENDATIONS FOR A USER-FRIENDLY HOLISTIC ENERGY EFFICIENCY ACCREDITATION FOR BUILDING PROFESSIONALS

ECCoPro Final Project Report

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IRISH GREEN BUILDING COUNCIL

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ACKNOWLEDGEMENTS

Thanks to all the organisations and individuals who have contributed to the ECCoPro project. In particular, we would like to thank those who joined us for some of the workshops. We would also like to thank those who took part in the initial consultation process in November 2016 as part of the Build Upon project, as well as our workshop facilitator, Chris Chapman.

EccoPro workshop participants are listed page 14 of this report.

DISCLAIMER

The views expressed in this report are the Irish Green Building Council staff's interpretation of the workshops' outcomes and feedback received over the consultation period. These may not necessarily reflect the views of all other parties listed page 14.

CONTENT

INTRODUCTION

Building-related emissions will play a critical role in achieving the goal stated in the Paris agreement to remain between 1.5 and 2 degrees above the preindustrial level. In Ireland, our homes alone account for 25% of energy-related CO2 emissions (1). Although new dwellings built today are highly energy efficient (2), as many as one million Irish homes are considered significantly energy inefficient and require upgrade work between now and 2050 (3).

Yet, skills gap at all levels of the construction supply chain represents a barrier to large scale deep renovation (4). In fact, lack of skills could lead to a lack of coherent advice, poor quality work and ultimately to a general loss of confidence in energy renovation as cases of building and health problems from inappropriate upgrading works emerge.

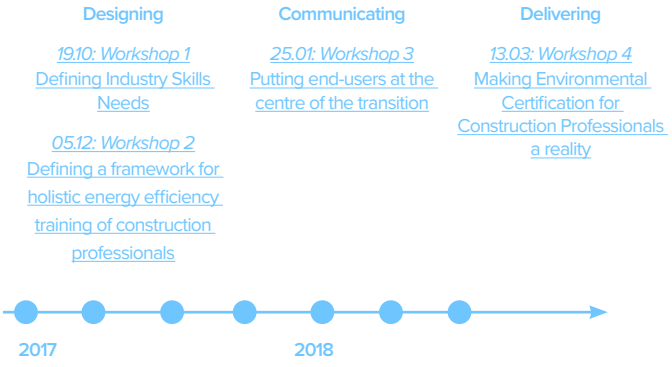
Against this background, some of the stakeholders involved in co-designing Ireland's national renovation strategy suggested to explore the opportunity of introducing a user-friendly holistic energy efficiency accreditation for building professionals. The objective of the scheme would be to support closer alignment between professionals and to allow end-users to clearly identify building professionals who have up-skilled in energy efficiency related skills. This in turn should incentivise professionals to up-skill in the area.

Method

The ECCoPro project was launched in July 2017 with support from SEAI.

Literature, document, and website reviews were initially conducted to investigate current renovation knowledge among building professionals in Ireland, as well as best practice in relation to education, training and accreditation. The findings are summed up in the first project report: Construction Professionals' Energy Efficiency Knowledge and Upskilling - A Short Review.

From October 2017 onward, energy, construction, building users and education experts were invited to participate in a comprehensive consultation process for designing recommendations for a user-friendly holistic energy efficiency accreditation for building professionals. The process was split into 2 parts: Defining key industry's skills needs and designing a successful user-friendly framework. This diagram shows how the recommendations for a user-friendly holistic energy efficiency accreditation for building professionals were developed.



The four workshop reports are available at www.igbc.ie.

Report Structure

The aim of this report is to present the results of the ECCoPro consultation process. The findings presented in this report are based on extensive desk research, a series of roundtables mentioned above and more than 50 one-to-one meetings with key stakeholders.

The first part of the report presents an attempt to define key energy renovation skills for building professionals, and a description of the framework. The second part describes how a successful accreditation scheme should be communicated to users.

Information on current challenges and a suggested action plan are included in the conclusion section.

Some of the more unusual but important words used are explained in the glossary of terms and acronyms.

SUMMARY

To keep global warming below 2 degrees, we need to renovate as many as 1 million homes across Ireland by 2050. This represents a huge opportunity for people, businesses and the planet.

Ambitious approaches are needed to remove the barriers to deep renovation. Building owners face multiple barriers to improve the energy performance of their buildings. Together with difficulty to access finance, one of the most often quoted barriers is the lack of knowledge about what to do, where to start, and which measures to implement and in which order. Users only interact with BER assessors at a specific moment in time and when the home needs to be formally assessed for legal transactions or grants. Furthermore, the approach may be too narrowly focused to provide quality holistic renovation advice (4). Building professionals on the other hand are at the interface with end-users and well placed to advise them on renovation at key trigger points. Building owners rarely engage building professionals just for an energy upgrade, but usually as part of an overall upgrade to the home or building. Yet, depending on training and engagement, building professionals can act as "trusted advisor" or as negative influencer; hence the necessity to better incentivise them to up-skill in renovation.

As the industry is picking up and as most building professionals work in small organisations, it can be challenging for them to find time and/or resources to upskill. The objective of the framework is to create demand for highly qualified building professionals and to incentivise them to upskill in energy renovation.

Although there is no agreed definite list of built environment professionals, a list of professions who should be targeted as part of this project was established. These are architects, architectural technologists, contract managers, site managers, civil and structural engineers, building services engineers, mechanical and electrical engineers, property and facilities managers, building surveyors, clerks of works, valuers, estate agents and quantity surveyors.

Key Renovation Skills for Building Professionals

Energy efficiency is often considered a technical field. Yet, building professionals need both hard (technical) and soft (e.g. communication) skills. A holistic approach to renovation upskilling is key in ensuring potential risks associated with deep retrofit (e.g. moisture and radon) and co-benefits of renovation are part of the picture. Building professionals are interdependent specialists but the construction industry is highly fragmented. As retrofits often go wrong at the corners, junctions, edges and interfaces between systems and people, multidisciplinary skills and cross-sector approaches are critical.

For these reasons and to keep the system simple and manageable, the 14 professions previously listed were clustered into 3 groups: Registered architect, chartered engineer and chartered building surveyor; Other construction professionals and property professionals. A list of key energy efficiency skills identified for each of these 3 groups is available in the "key renovation skills for building professionals" section below.

A simple and trusted framework

To incentivise building professionals to upskill in renovation, and ultimately to increase energy renovation uptake, it cannot just be another framework. It must be THE framework.

The accreditation system must be easy to manage from a policy and an administrative point of view. It must be simple, stable and recognised by all key stakeholders i.e. users, building professionals, professional bodies, third level institutions and the Irish construction industry in general. As confidence and trust in the framework are critical to its success, it must be supported by organisations who can provide leadership and authority.

Quality and certainty is key for all users. Membership of a professional body should be a prerequisite to apply for accreditation. Proof of theoretical knowledge and experience should also be required as part of the

accreditation application. Finally, all accredited professionals should sign off to a code of practice. Yet, accreditation is only one part of the equation. Policing is equally important.

To avoid confusion, the accreditation system should be centralised and structured. Users' trust in the framework would increase if it was endorsed by a neutral, nationally trusted organisation such as SEAI. Public bodies' endorsement is particularly needed if the framework is to become a framework of reference. A public body is also more likely to have the resources to maintain, promote and police the system.

Professional bodies have extensive experience in upskilling building professionals. As they are trusted by building professionals and have access to them, they should be highly involved in developing, promoting and operating the framework.

It must be easy for building professionals to engage with the accreditation process. Based on key skills identified to date, a clear pathway to accreditation should be developed. This should recognise prior learning and allows for modular and flexible training. There is little appetite among professional bodies to develop new training courses. Where training gaps were identified (e.g. communication skills, whole building approach, renovation of non-residential buildings) it is anticipated that training and education providers will cover these gaps when it becomes a requirement for accreditation.

Initial education

Although this project targeted primarily working building professionals, it is hoped that the findings of this work will be used to better inform higher education institutions, so that within 4 to 5 years all graduates emerge from third level institutions with the right skillset.In the longer term, one suggestion made during the workshops is for professional bodies to only accredit academic courses which fully cover topics listed in the "Key Renovation Skills for Building Professionals" section or to make that accreditation mandatory as part of the chartered process."

Supporting measures

Supporting measures are required so that the scheme achieves faster and greater impact. The accreditation system will need to be extensively promoted among building professionals and users to gain societal recognition. It is suggested to launch the register as part of a broader renovation awareness campaign, highlighting the benefits of renovation and of using accredited building professionals. With that regard, it may make sense to link the register to the new BER Advisory Report.

In many areas of sustainability, construction firms are now looking to policymakers for more guidance (5). To create a momentum around upskill, government could mandate the use of competent building professionals as part of public procurement, social housing procurement, planning process, SEAI grants and/or other home renovation tax incentives. In the private sector, extra points could be awarded under certification schemes such as BREEAM, LEED and the Home Performance Index (HPI), based on the number of certified professionals in the design team. The use of competent building professionals may also be mandated as part of energy efficient mortgages applications.

> *"Most practices across Ireland are small. Their objective is to keep their clients' happy and to comply with legislation. That's as simple as that and that's why I believe a pathway to compliance is the best option" – Building Professional, October 2017.*

Towards an open and collaborative framework

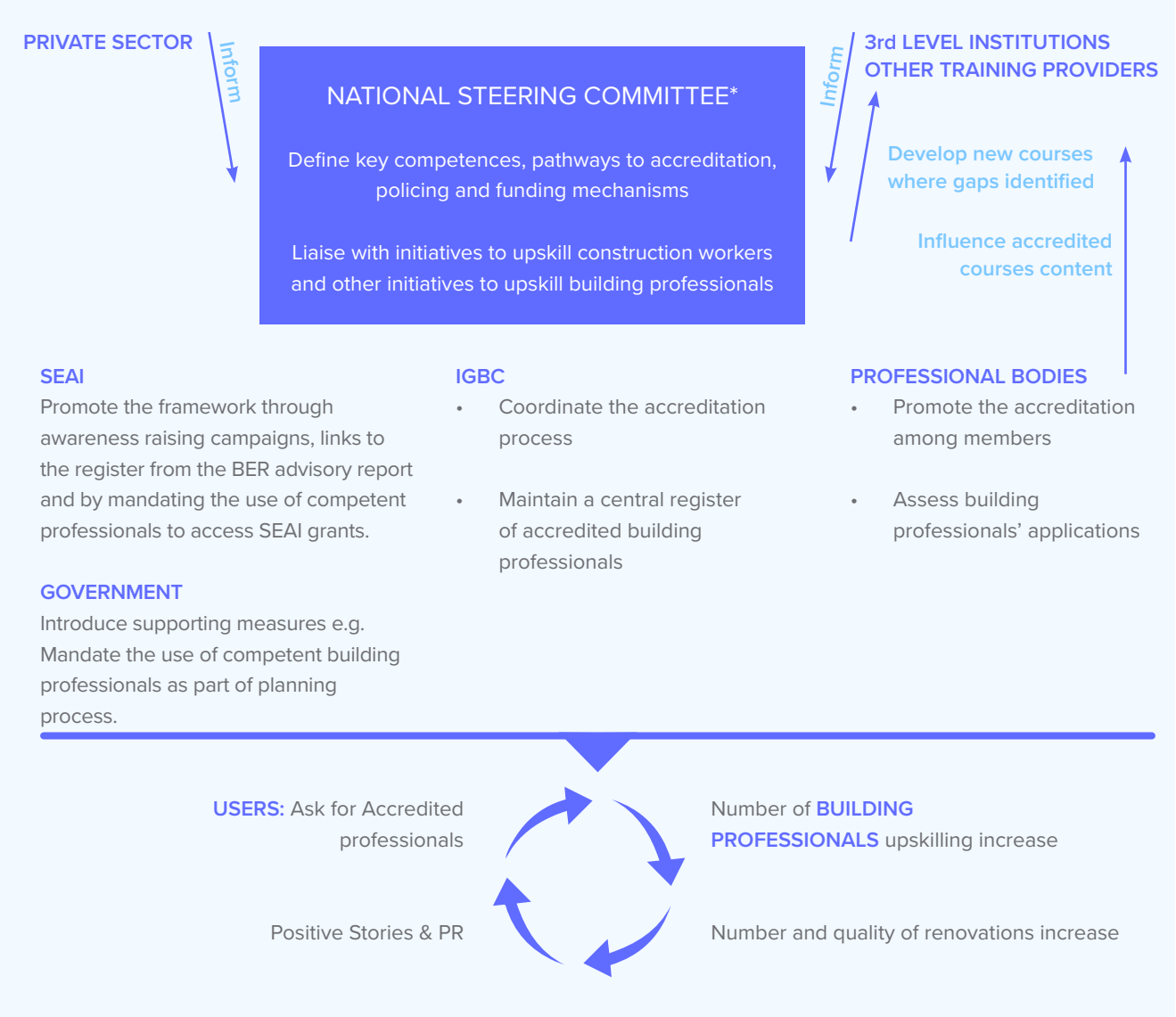
To address weaknesses and to keep up with best practices, continuous improvements of the accreditation system will be needed. This could be achieved through central coordination by an independent body such as SEAI or through a steering committee involving the various professional bodies. In line with the new Energy Performance of Buildings Directive (EPBD) (6) and Ireland's National Renovation Strategy (7), mechanisms should also be in place to facilitate stakeholders' engagement in the implementation phase. In particular, coordination with existing initiatives to

upskill construction workers and building professionals is required to maximise impact. Although the focus is on energy efficiency, the accreditation scheme should be designed to be compatible with other programmes such as LEAN Construction Ireland, BIM and the conservation accreditation. Furthermore, it is hoped that in the longer term, sustainability in its wider sense would be covered as part of this accreditation process.

Challenges and Next Steps

Further work is required to finalise how the framework should be administrated and funded. However, the recommendations included in this document represents an important commitment by the industry to upskill building professionals in energy renovation. As of April 2018, all professional institutes listed p. 14 have agreed to continue their collaboration with the IGBC to move this work to the next stage if there is clear support from government.

The below graphs describe how a successful user-friendly holistic energy efficiency accreditation for building professionals could potentially operate. A detailed suggested timeline is available page 13.



*SEAI, Professional Bodies, IGBC, DCCAE, Department of Housing, NSAI and third-level institutions

HOLISTIC ENERGY EFFICIENCY ACCREDITATION FOR BUILDING PROFESSIONALS – MAKING IT WORK FOR THE INDUSTRY

With the urgent need to reduce CO2 emissions, the importance of the built environment to society places a high level of responsibility on those professionals who plan, design, construct, manage and maintain that environment. In the residential sector for instance, building professionals have a unique opportunity to provide personalised energy advice to homeowners at trigger points i.e. when they need or wish to repair or improve their homes. Yet, to fully achieve this potential and to act as trusted advisors, building professionals need greater awareness of renovation and of their needs to upskill in the area.

This section covers key renovation skills required by building professionals and our recommendations for a holistic energy efficiency accreditation that works for the industry.

Key Renovation Skills for Building Professionals

The lack of skills at all levels of the construction supply chain represents a major risk to large scale deep renovation in Ireland (4).

A list of professions who should be targeted as part of this project was established in October 2017. These are architects, architectural technologists, contract managers, site managers, civil and structural engineers, building services engineers, mechanical and electrical engineers, property and facilities managers, building surveyors, clerks of works, valuers, estate agents and quantity surveyors. A full profile of the 13 professions identified, including key skills and competencies required from each of them, was initially developed – The document is available here. As one of the objectives of the project was to support closer alignment between professionals and to keep the system manageable, these were clustered into 3 groups: Registered architect, chartered engineer and chartered building surveyor; Other construction professionals and property professionals.

All building professionals need a mix of hard (technical) and soft (e.g. communication) skills.

The importance of upskilling the industry in whole building thinking, risk assessments, renovation of traditionally built buildings, post-occupancy energy performance monitoring and BIM (to encourage collaborative aspects) was specifically mentioned.

Soft skills are critical for all building professionals involved in retrofitting projects. Renovations can involve many different people and roles, and the effectiveness of communications between them is key in ensuring the best results. Communication, customer care and psychology are of special importance when dealing with households who highly rely on information from building professionals. To build appetite for renovation and to support the decision-making process, building professionals should be able to provide useful, tailor-made and understandable improvement recommendations to homeowners. As environmental considerations are rarely the main motivation for renovating, all building professionals should have a good understanding of deep renovation co-benefits, costing and financing.

The divisions of responsibility often make it difficult to close the feedback loop from building performance in use to briefing, design and construction. What appears to be missing is a common understanding of the built environment and a unifying body of knowledge that ties together the different groups of professionals. Building professionals are interdependent specialists. Multidisciplinary skills and a cross-sector approach are needed, so that all of them have a broad enough knowledge to identify potential issues. They must also know what other members of the supply chain know and where to go to find solutions to any issues that may raise.

> *"All construction professionals should have a broad enough level of knowledge so that they see when a problem may arise, and they know where to go to find a solution"* – Irish built environment professional, August 2017

Based on an extensive literature review (8) and feedbacks received at workshops 1 and 2 (9, 10), a list of key renovation skills and knowledge was developed for the three groups of building professionals defined: Registered architect, chartered engineer and chartered building surveyor; Other construction professionals and Property professionals.

Skills and knowledge are set at one of four levels for each group:

- Awareness: a person should be aware that specific regulations, issues, concepts, procedures, etc. exist and should also understand where they are relevant or might apply.
- Knowledge: a person, in addition to being aware that a concept, regulation, issue, procedure, etc. exists must also have some degree of knowledge of how it applies and be able to apply it independently at a basic level.
- Understanding: means that the person has a comprehensive knowledge of a concept, regulation, issue, procedure, etc., including how it applies, and can apply it at a complex level.
- Ability / Competence: means that the person can bring all their knowledge and skills to bear in the successful delivery of that element of a professional service.

The below graph provides an overview of key energy renovation skills required for each group of building professionals identified. However, this list will need to be further refined by professional bodies and updated on a regular basis to keep up to date with policy and technology developments.

GROUP 1: Registered Architect, Chartered Engineer and Chartered Building Surveyor	GROUP 2: Other Construction Professionals	GROUP 3: Property Professionals
Building professionals who can act as design and assigned certifiers under the S.I.9. BC(A)R	*Architectural technologists, contract managers, project managers, site managers and facilities managers*	*Valuers, estate agents and quantity surveyors.*
MUST: • Be able to practice the principles of sustainability and of sustainable design. • Have an excellent understanding of the basics of building physics and construction types, including traditional buildings. • Understand building pathology and be able to diagnose and differentiate sources of damp and moisture. • Have a good understanding of energy use in existing buildings, energy reduction and energy production (including renewables) solutions, as well as of their interdependencies and effectiveness. • Be able to assess and manage risks associated with energy renovation. • Be able to interpret building standards and regulations in relation to energy efficiency and understand Building regulations compliance software. • Be able to use energy modelling tools. • Be able to assess buildings for energy efficiency and quality retrofit • Be able to cost retrofit. • Have a good understanding of energy management solutions and of post-retrofit, building operation and maintenance. • Have a good understanding of the value of energy renovation (including its co-benefits) and of the users' needs and motivations. • Have a good understanding of financing options. • Have a good understanding of sustainable materials and resources. • Be able to connect the individual performance to a team performance. • Be able to communicate and transfer all this information clearly to members of the supply chain, building users and clients. • Be able to collaborate with cross-trades.	MUST: • Understand the concept of sustainability and sustainable design. • Have a good understanding of basic building physics, building pathologies and construction types, including traditional buildings. • Have a good understanding of energy use in existing buildings and of the most common energy reduction and energy production (e.g. renewables) solutions, as well as their interdependencies and effectiveness. • Have a good understanding of risks assessment and management in relation to energy renovation. • Have a good knowledge (understanding for facilities managers) of energy management solutions, and postretrofit building operation and maintenance. • Understand building standards and regulation in relation to energy efficiency. • Understand the value of energy renovation (including co-benefits) and building users' needs. • Have a good knowledge of sustainable materials and resources. • Be aware of retrofit costing and financing. • Be able to communicate effectively with clients and other members of the construction chain. • Be able to connect the individual performance to a team performance. • Be able to collaborate with cross-trades.	MUST: • Understand the value of energy renovation, including its co-benefits, as well as users' needs. • Have a good knowledge of the concept of sustainability and be aware of climate change targets, as well as their impacts on the real estate market. • Be able to integrate energy efficiency considerations in valuations. • Have a good understanding of the cost of retrofit and of financing options. • Be aware of the risks associated with energy renovation and how to manage them. • Have a good knowledge of building regulations in relation to energy efficiency. • Be aware of building physics, building pathologies and construction types, including traditional building. • Be aware of most common retrofit and renewable solutions. • Be aware of sustainable materials and resources. • Be aware of energy use in existing buildings, energy management solutions and post-retrofit building operation and maintenance. • Be able to communicate effectively on energy renovation with clients and members of the supply chain.

With stricter energy efficiency rules coming into force in Ireland and Europe, many courses have been developed over the last decade (8). There is no appetite to develop new training courses among professional bodies, but rather to make existing training courses available and to better promote them. To facilitate building professionals' upskilling, it is suggested to develop a more comprehensive catalogue of training courses available and to map them against industry skill's needs identified.

Making it work for the industry

Renovation awareness is needed across the board. It is critical that it is not only building professionals who least need upskilling who engage with the process. As the construction industry is picking up and as most building professionals work in small organisations (11), it can be challenging for them to find time and/or resources to upskill. The accreditation system must hence be kept simple to gain traction.

Significant debates took place during workshops about the potential need to develop a system with various levels of skills and specialisations. However, to create a momentum for upskilling, it is suggested to launch the framework with a single level of accreditation for each of the 3 groups previously mentioned.

The overall framework must be simple and manageable if it is to be successful. Likewise, the accreditation process should not be too burdensome for building professionals.

The framework must be designed to allow building professionals to easily identify the skills they are missing and how they can acquire them through small incremental steps. The list of training courses put together in September 2017 (8) should be further developed to allow building professionals to easily identify steps to take. It may also make sense to develop a self-assessment tool for building professionals to help them identify their training needs and pathways to acquire these skills. This could be inspired by the Build Up Skills App developed by the Dutch Building Services Knowledge Centre – ISSO.

Further work is required to define how the accreditation scheme could be funded and what fee level is reasonable. However, the cost of accreditation must not be prohibitive.

Training and education programmes recognised as part of this accreditation process must be of high quality and highly practical. They may for instance include case studies of exemplar energy renovation project or site visits. Prior learning (including existing accreditations such as LEED AP, BREEAM Assessor, HPI Assessor or Passive House Designer) must also be recognised. As most building professionals have limited time available, training and education programmes should be delivered in a flexible way (e.g. online or with option of training in the evenings and weekend) and, where possible, tied to building professionals' work.

However, a robust and transparent accreditation process, as well as strong quality assurance mechanisms are critical in giving the system credibility and in building trust.

The accreditation should be for individuals only as company's accreditation does not guarantee all staff have the right skills and knowledge to work on specific projects.

As quality and certainty are key for users – see the Users' Recommendations section below, membership of a professional body should be a prerequisite to apply for accreditation. Proof of theoretical knowledge and experience should also be required as part of the application process. Practical experience could be demonstrated through the submission of a number of completed reference projects. To ensure integrity of the framework, all accredited professionals should sign off to a code of practice.

Accreditation is only one part of the equation. Policing is equally important. Accredited professionals should complete a minimum number of renovation related CPDs each year. It is also suggested that they submit examples of completed projects on a regular basis (e.g. every 4 to 5 years) to retain accreditation.

To address weaknesses and to keep up with best practices, continuous improvements will be needed. This could be achieved through central coordination by an independent body such as SEAI or through a steering committee involving the various professional bodies. Mechanisms should be in place to allow for building professionals' feedback to be fully integrated and hence to improve the framework.

If the user-friendly holistic energy efficiency accreditation for building professionals is to gain momentum, it must bring value to the whole construction supply chain.

Professional bodies are strong and established brands. They are trusted by building professionals and have a key role to play in raising awareness about renovation upskilling and the framework among them. Their full back-up is critical in

creating trust in the framework. In the medium term, they could only accredit academic courses which fully cover topics mentioned in table 2 or make the accreditation mandatory as part of the chartered process.

However, supporting measures may be required to create value for accredited building professionals in the shorter term, and incentivise them to upskill in the area.

It is suggested to launch the register as part of a broader renovation awareness campaign, highlighting the benefits of renovation and of using accredited building professionals. With that regard, it may make sense to link the new BER Advisory Report to the register.

To create a momentum around upskill, government could also mandate the use of competent building professionals as part of public procurement, social housing procurement, planning process, SEAI grants and/or other home renovation tax incentives. In the private sector, extra points could be awarded under certification schemes such as LEED and the Home Performance Index (HPI), based on the number of certified professionals in the design team. The use of competent building professionals may also be mandated as part of energy efficient mortgages applications.

TOWARDS A SUCCESSFUL HOLISTIC ENERGY EFFICIENCY ACCREDITATION FOR BUILDING PROFESSIONALS – USERS' RECOMMENDATIONS

Users refer to individuals and organisations that may benefit from this framework, i.e. individuals (e.g. owners, tenants, small landlords) who want to retrofit a small dwelling or an office and are looking for trusted advice, public bodies and larger organisations who procure works, as well as investors, lenders and insurers who need to ensure building professionals have the appropriate skills from a risk mitigation point of view.

This is an extremely diverse group. Yet, trust, quality and certainty are key for all users. As confidence and trust in the framework are critical to its success, it must be supported by organisations who can provide leadership and authority. Users' trust in the framework would increase if it was endorsed by a neutral, nationally trusted organisation such as SEAI. Public bodies' endorsement is particularly needed if the framework is to become a framework of reference. A public body is also more likely to have the resources to maintain, promote and police the system.

The framework must be stable and simple. It must provide users with greater certainty of the abilities of accredited professionals, hence reducing risks and facilitating high quality on budget project delivery. As users must be able to easily identify building professionals who have upskilled in renovation, the accreditation system should be centralised and structured. The list of accredited building professionals should be presented as a single register.

To avoid confusion and to ensure the framework is fully inclusive, connections with existing construction workers and professionals registers must be developed.

The accreditation system will need to be extensively promoted to gain societal recognition. It is suggested to launch the register as part of a broader renovation awareness campaign, highlighting the benefits of renovation and of using accredited building professionals. Multiple messages, strategies and routes to engagement should be used to better target various groups of users.

For instance, climate targets and quality are the main drivers for local authorities. Most homeowners on the other hand have a relatively low level of knowledge of renovation and may feel overwhelmed by the process. As this may lead to inaction, the first step is to engage with homeowners, and to break down barriers to speaking to building professionals. It is suggested to use the BER Advisory Report to direct users to an online wizard such as Warm Up Bristol. The platform would provide homeowners with information on the first steps to take to renovate their home, a list of questions to ask to contractors (see Qualibuild e-Book), clear information on when they need to contact a building professional and a link to the register. For further details on how this could work please see Workshop Report III - page 5.

Although some initial research on branding has been done (12), further work is required to ensure the framework resonates with all users. Given SEAI strong brand in energy renovation, the agency should play a central role in developing and promoting the framework.

CONCLUSION

A recent SEAI's report shows that carbon dioxide emissions from the residential sector have started to increase again, after almost a decade of reduction (1). As the residential sector alone already accounts for a quarter of the energy-related CO2 emissions, building stakeholders' capacity and appetite to act on renovation is critical in reaching our climate targets.

Almost 150 organisations and individuals have taken part in the ECCoPro consultation process. These include Ireland's main building professional bodies, educational organisations, as well as industry and building users' representatives. The recommendations included in this document represents an important commitment by the industry to upskill building professionals in energy renovation. As of April 2018, all professional institutes listed p. 14 have agreed to continue their collaboration with the IGBC to move this work to the next stage if there is clear support from government.

Together, they have already defined how a successful user-friendly holistic energy efficiency accreditation for building professionals could operate.

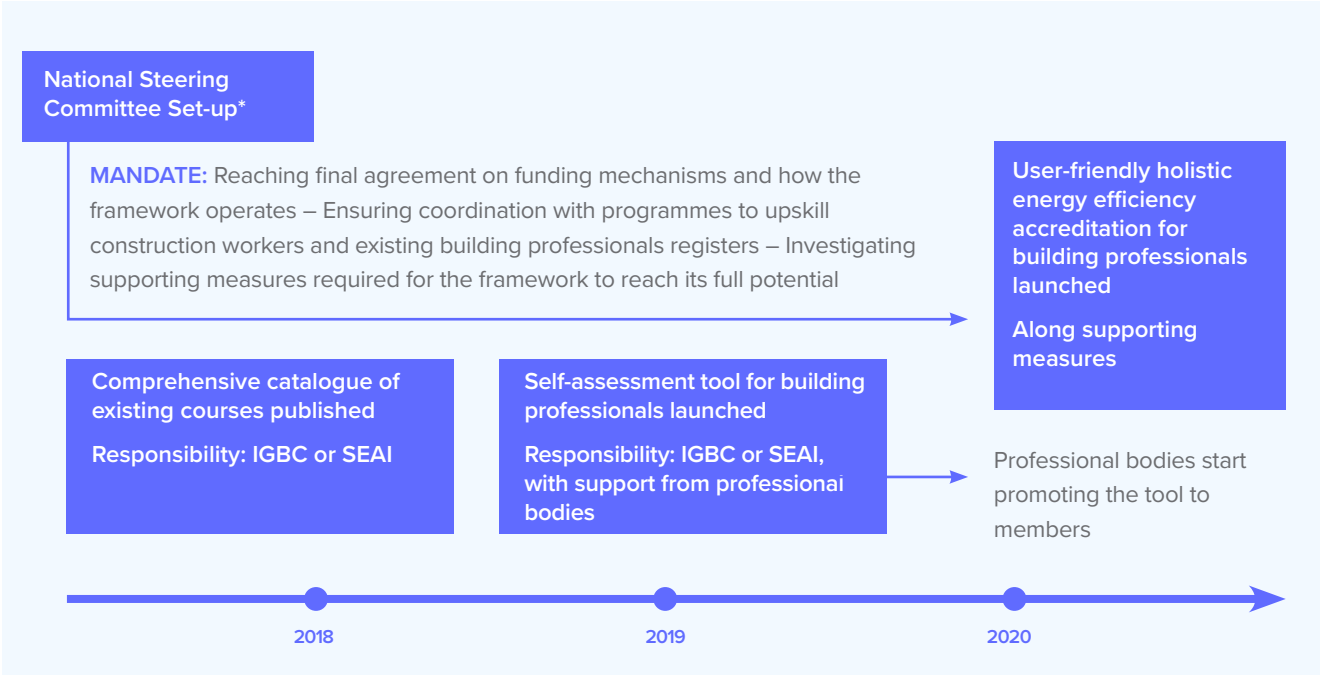
More specifically, a holistic approach to renovation upskilling is needed to ensure all building professionals are aware of the co-benefits of deep renovation and of the potential risks associated with it. To act as "trusted advisors" building professionals need both technical and soft skills. Multidisciplinary skills and cross-sector approaches are also key.

To empower users and to incentivise building professionals to upskill in renovation, the accreditation should be for individuals only as opposed to companies. The framework must be simple and easy to manage. It must be stable and trusted by all key stakeholders, from users to building professionals. This requires strong quality assurance mechanisms.

Yet, it must be easy for both building professionals and users to engage with the framework. Based on key skills identified to date, a clear pathway to accreditation should be developed. This should recognise prior learning and allow for modular and flexible training. Supporting measures should be taken to raise awareness about the register and initially to incentivise users to use it. The use of competent building professionals for renovation projects could for instance be mandated as part of public procurement and / or SEAI grants applications. Active and engaged consumers are essential for Ireland to achieve its ambitious climate targets. The inclusion of a link to the register in the new BER Advisory Report could contribute to build users' appetite and capacity to act on renovation. In brief, full support at government level is needed for the framework to be trusted and used by all.

ECCoPro was generally perceived as a great platform for joined-up thinking and action (12) and a significant amount of work has been put in by all the stakeholders listed page 14 in developing these recommendations. However, these must be developed further before the ECCoPro accreditation becomes a reality. The potential impact of the housing crisis, the consequences of the recession on the sector and the high international mobility of the workforce should all be considered when implementing the framework.

Although this is very much subject to funding and resources availability, the below timeline shows the recommended next steps.



*SEAI, Professional Bodies, IGBC, DCCAE, Department of Housing, NSAI and third-level institutions

THANKS TO ALL PEOPLE INVOLVED

GLOSSARY OF TERMS AND ACRONYMS

ACEI: Association of Consulting Engineers of Ireland

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers

Building professionals: Although the literature does not offer a definite list of built environment professionals, a list of professions who should be targeted as part of this project was established. These are architects, architectural technologists, contract managers, site managers, civil and structural engineers, building services engineers, mechanical and electrical engineers, property and facilities managers, building surveyors, clerks of works, valuers, estate agents and quantity surveyors.

CIBSE: Chartered Institution of Building Services Engineers

CIF: Construction Industry Federation

CIOB: Chartered Institute of Buildings

DCCAE: Department of Communications, Climate Action and Environment

IGBC: Irish Green Building Council

IPAV: Institute of Professionals Auctioneers and Valuers

Retrofit: Retrofit is the term used to describe measures undertaken to improve the energy and thermal efficiency of a building.

RIAI: Royal Institute of the Architects of Ireland

SCSI: Society of Chartered Surveyors Ireland

SEAI: Sustainable Energy Authority of Ireland

Users: Users refer to individuals and organisations that may benefit from this framework, i.e. individuals (e.g. owners, tenants, small landlords) who want to retrofit a small dwelling or an office and are looking for trusted advice, public bodies and larger organisations who procure works, as well as investors, lenders and insurers who need to ensure building professionals have the appropriate skills from a risk mitigation point of view.

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ABOUT THE IRISH GREEN BUILDING COUNCIL

The Irish Green Building Council (IGBC), is the leading voice on sustainable building in Ireland. With a network of over 100 member organisations, the IGBC is working to transform the Irish construction and property sector into a global leader in quality and sustainability.

To do so, the IGBC has developed several sustainable building tools, including the Home Performance Index - Ireland's first national certification system for quality and sustainable residential development – and an Environmental Product Declaration Platform. The IGBC has also developed an extensive green building education programme, which includes LEED and LCA training courses.

See: www.igbc.ie

Email Us: Marion@igbc.ie

@IrishGBC

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