Irish Green Building Council Submission

Ireland's 3rd Long-Term Renovation Strategy

January 2020

The following document is the Irish Green Building Council's (IGBC) response to the Department of Communications, Climate Action and the Environment (DCCAE) on the Outline of "Roadmap to Renovation" - Ireland's 3rd Long-Term Renovation Strategy.

It was informed by a facilitated workshop held on the **22nd of January 2020** in the Alexander Hotel in Dublin attended by over 50 stakeholders from the entire value chain. A list is provided in Appendix I. This workshop builds on the recommendations developed from the Build Upon dialogue which engaged over 200 organisations in 2016 – 2017 through 10 nationwide workshops on developing a strong long term National Renovation Strategy.

Our comments focus on actions required to achieve key national renovation targets set in the Climate Action Plan, while ensuring Ireland achieve a highly efficient and decarbonised building stock by 2050.

In line with the indicative structure provided in the consultation paper, our submission is structured as followed executive summary, vision, policies and actions to stimulate deep renovation, expected benefits.

I. Background

The Irish Green Building Council was launched in 2011 and is comprised of organisations and businesses from the entire value chain of the built environment on both the demand and supply sides. These include educational institutions, professional institutes, NGOs, local authorities, contractors, architects, engineers, energy companies, property investors/developers as well as leading national and transnational companies. A full list of IGBC members is available here.

The Objectives of the Council are to:

- Provide a source of leadership for sustainability and quality in the built environment

- Promote and assist in the provision of credible metrics for measuring progress towards the end goal of sustainability
- Provide a source of resources to organisations transitioning their activities towards more sustainable practices
- Be central to alignment of the policies of organisations seeking to achieve sustainability in the built environment

At international level, IGBC is an established member of the World Green Building Council and is Renovate Europe national supporting partner in Ireland.

The Council has been involved in the development of Ireland's long-term renovation strategies since 2014.

On 22nd January 2014, a workshop was organised by the Council on the very first version of the strategy.

In 2016, the IGBC built a community of close to 200 key stakeholders to co-design an ambitious National Renovation Strategy (NRS) for Ireland. This work completed as part of Build Upon (H2020 project) led to the publication of a comprehensive set of recommendations for a better NRS. Since the completion of this project, IGBC has further engaged with key stakeholders to implement some of these recommendations:

- **Develop a comprehensive national framework**

As part of the Horizon 2020 funded Build Upon² project, the IGBC is working to develop and test a multi-level renovation impact framework. The multi-level framework will contain a suite of milestones and measurable progress indicators for building renovation strategies, integrating data and insights from the local authority level. The Framework will serve as a tool for Local Authorities in delivering the EPBD and ensure that local initiatives are aligned with national and European policies. In Ireland, the Irish Green Building Council will work in close cooperation with Dublin City Council, and at least 3 other local authorities ("followers").

- **Invest in deep renovation now** (Climate Action Plan – Action 53)

As part of EeMAP (H2020), IGBC has worked to develop the principles of an energy efficient mortgages for Europe. These principles are summarised here.

- **Facilitate deep energy renovation**

The council is working on two separate projects to facilitate deep energy renovation: The development of an online one-stop-shop and of building renovation passports.

  - **Developing an online one-stop-shop** (Climate Action Plan - Action 47)

The TURNKEY RETROFIT service will be developed as a home-owner-centric renovation journey, which will transform the complex and fragmented renovation process into a simple, straightforward and attractive process for the homeowner. It will include the initial technical and behavioural diagnosis, technical offer, contract development and agreement, structuring and provision of financial support, as well as the on-site coordination of works and quality assurance. It will be a service-oriented model where the homeowner is offered tailor-made solutions through the whole customer journey.

  - **Developing building renovation passports**

Building Renovation Passports are masterplans for retrofit and include a record of works. They ensure that any renovation works are planned and implemented in a holistic and technically sound manner, hence preventing "lock-ins" and facilitating a step-by-step approach to deep renovation. The IGBC, with support from SEAI, is currently piloting the i-Broad passport in Ireland. A feasibility study will be published in Q3 2020.

- **Make sure we have the right skills** (Climate Action Plan - Actions 50 & 51)

The IGBC, with support from SEAI, is working to facilitate energy renovation upskilling of building professionals and construction workers, and to better incentivise them to upskill in this area.

- **Set the right standards** (Climate Action Plan - Action 63)

In early 2019, the IGBC run a comprehensive consultation on overcoming the split-incentive issue in the private rental market. The final report is available here.

- **Collaborate and engage**

Collaboration is at the heart of all IGBC's activities. Over the last two years, IGBC has worked in close cooperation with SCSI and the Heritage Council, to develop a "green lease" template and energy renovation CPDs.

In relation to this specific consultation, the IGBC has organised two workshops to collect feedback on the next version of the strategy.

- The first workshop took place on Wednesday, 27th November and was attended by 15 key stakeholders;
- The second workshop took place on Wednesday, 22nd January and was attended by 50 key stakeholders.

The list of key stakeholders that took part in this consultation is available in Appendix I. The workshops were complemented by an online consultation of IGBC's members. The survey was completed by 28 key stakeholders.

II. Summary

This submission is based on the work completed by the IGBC on energy renovation over the last few years and on the feedback received from key stakeholders on the next version of Ireland's LTRS between November 2019 and January 2020.

1. Retrofitting our buildings to achieve a "highly energy efficient and fully decarbonised building stock by 2050" will cost between €25bn and €75bn, making it one of the largest infrastructure projects ever.

2. To achieve this vision, the next LTRS must embed the principle of energy efficiency first and deliver scale.

3. The IGBC welcome the progress that have been made over the last 3 years, including:

- The publication of the Climate Action Plan which provides clear governance structure and has set clear targets to 2030;
- The introduction of nZEB for major renovations and significant increases in state funding for renovation;

- The launch of SEAI's behaviour unit and of programmes such as the Warm & Wellbeing scheme which support the development of quality data;
- The work done to facilitate energy renovation e.g. the new BER Advisory report.

As a growing number of training courses have become available for building professionals[1] and construction workers[2], we now have a higher skillset in the industry. All these developments mean that we also have more case studies that can be shared.

4. However, this is only the beginning. Our 2030 and 2050 targets will only be achieved by a combination of incentives, penalties, awareness raising and consumer behaviour change.

5. More specifically, certainty is critical for the industry to invest in energy renovation and upskilling. The LTRS should include a clear commitment to a long-term ring-fenced multiannual 10 years investment plan for renovation.

6. Public bodies must lead by example. This could be done initially by ensuring that all social housing stock reach a BER B2 by 2030. This could also work as a testbed for projects aggregation, hence reducing costs and improving qualities.

7. Awareness raising campaigns are needed to ensure it remains clear that addressing climate change is a priority. However, these must focus on solutions i.e. retrofitting your home is one of the best ways to reduce your carbon emissions.

8. The right supporting measures must be in place. Energy renovation must be made more convenient and accessible. The one-stop-shop model and building renovation passports have a role to play, but small property owners must be able to access independent advice.

9. With that regard, transparent market information is needed so that property owners can clearly identify building professionals and construction workers who have upskilled in the area. This in turn, if associated with competency-based tenders or access to grants, would encourage more people to upskill in energy renovation.

10. But upskilling the industry isn't enough. All young architect and engineering graduates and construction workers must see there is a career in energy renovation. All construction related third-level courses and apprenticeships must fully cover the concepts of renovation.

11. More young people must enter the renovation industry. With that regard it might make sense to rebrand the renovation industry as a modern, green industry that helps tackling climate change. Providing long-term financial certainty on renovation would also show young people this is a sustainable career path.

12. Strong quality assurance mechanisms must be in place to build trust in the industry. Post-occupancy evaluation must become the norm for all state funded renovation projects.

13. Grants and tax incentives should be continued, especially for those that cannot afford renovation. However, the priority should be to develop a robust, sustainable

[1] E.g. TU Dublin MSc in Building Performance (Energy Efficiency in Design) and the Heritage Council's Fundamentals of Energy Renovation for Traditional Buildings CPDs.
[2] E.g. WWETB's nZEB retrofit

financing model so that homeowners can finance their energy renovation works at zero or very low interest rates.

14. The LTRS must be developed and implemented to leave no one behind. Any increases in the carbon tax should be used to support those that can not afford energy renovation.

15. The LTRS must be developed and implemented in a holistic way to reduce our building emissions, but also our transport and industry related emissions, while supporting Ireland's transition to a more circular economy. For instance, renovation policies must be better coordinated with policies aiming at regenerating our village, town and city centres. Likewise, all cases where demolition of substantial buildings are proposed should require comparative calculations for environmental and carbon impacts to justify demolition.

16. To reach its full potential, the LTRS must be implemented in a transparent, fair and inclusive way. We recommend that an open and collaborative approach is taken for the implementation of the strategy to provide all key stakeholders with opportunities to engage.

III. Vision

Our vision for 2050 is still very much aligned with the vision that was developed in 2017 as part of the Build Upon project: "A fully decarbonised built environment that delivers a better quality of life for all".

All 2030 targets must be fully aligned with this vision and consistent with a net zero target by 2050. More specifically, the LTRS must embed the principle of energy efficiency first and be aligned with the EU's greenhouse gas emission reductions target for 2030 set in the EU's Green Deal[3].

The LTRS must be developed to leave no one behind and to improve people's quality of life. It should also be developed in a holistic and strategic way to reduce not only Ireland's building related emissions, but also our transport and industry related emissions, and to support Ireland's transition to a more circular economy.

IV. Policies and actions to stimulate deep renovation

A. Analysis of existing barriers

Climate change awareness has increased significantly in Ireland over the last few years. However, people do not always make a clear connection between climate change and the importance of retrofitting their property. There is also a lack of awareness of the co-benefits of energy renovation across the board and a lack of confidence in information provided on payback and outcomes.

Retrofits are often perceived as complex and disruptive. Even when homeowners and small landlords want to retrofit a property, they often don't know where to start and who they can trust to deliver quality renovation. This issue is exacerbated by the lack of skills

[3] At least 50% and towards 55% greenhouse gas emission reductions compared with 1990 levels.

in the industry. The lack of skills and of dedicated retrofit teams within local authorities was also identified as a major barrier to renovation in the public sector.

The lack of sustainable, attractive financial models remains a major barrier to renovation. In the private residential sector, renovation is perceived as expensive and there is a lack of affordable finance. Commercial lending policies are complex and not calibrated to achieve the public policy objectives. Finance is also a barrier in the commercial building sector, as existing mechanisms are often perceived as unattractive. The lack of funding is also an issue for social housing as the priority is very much on new built. In the public sector, it's often difficult to make a strong business case for renovation as there is a lack of life cycle perspective in procurement policies. The ESCO model could be used to finance some of these retrofits, but the lack of ESCO experience means that it's not used as much as it could be.

Finally, the lack of building conditions data makes it difficult to prioritise which buildings to tackle first. This is particularly challenging in the commercial and public sectors as the non-residential BER dataset is not as transparent as that for residential and DECs are not widely available.

B. New policies and actions to help stimulate renovation

1. **Ireland cannot achieve its renovation targets without the full and active participation of every citizen**. The climate emergency must be clearly and constantly communicated, so that people feel it's a priority. A sustained national awareness campaign to promote energy efficiency at the same level as the drink driving and anti-smoking awareness campaigns will be required if we are to communicate and drive the acceptance and necessity of retrofits and ensure it achieves social acceptance as normal.

2. **While Climate Change is often framed in a negative way, we must better communicate about potential solutions**: Retrofitting your home is one of the most impactful actions you can take to tackle climate change. It won't only reduce your energy bills and increase your property value; it will also have a positive effect on your health and wellbeing. The good quality data and case studies that have been developed around comfort and wellbeing must be better used.

3. It cannot simply be a top-down approach. **Alternative ways to engage with citizens must be explored**. Mouth of words is extremely powerful and could support projects aggregation. For instance, a prerequisite to secure a deep retrofit grant could be to open the property to the public for one day after completion of the work. Retrofit companies could then contact all the homeowner living in that housing estate and see if they are interested in retrofitting their homes. This would reduce cost and make it easier for these companies to go to the banks and see if they can offer low cost finance.

4. Although **local authorities** should initially focus on and learn from retrofitting their own stock, they **should do more in the near future to engage with citizens** – See IV-G.

5. The LTRS must provide long-term certainty. It should include a long-term large scale ring-fenced multi-annual 10-year government investment plan for renovation, as well as clear binding targets and transparency in terms of any upcoming minimum energy efficiency standards.

The renovation industry is just finding its feet. In order to scale up deep energy renovation, businesses need to train staff, build new business models and guarantee long term work for their reskilled employees. This will only happen with **a long-term financial commitment from government**.

Clear and concise goals can help with visualizing the scale of the task ahead. In particular, the **introduction of local targets and of targets for the public sector is recommended.** In the public sector, setting 2025 and 2030 targets at organisation level would increase accountability. As the public sector must lead by example and to raise awareness, it is recommended to introduce targets for social housing. Finally, national targets should be complemented by local targets to better connect with local communities[4]

For further information on IGBC's position in relation to minimum energy efficiency standards in the rental market, please see our "Removing Barriers to Energy Efficiency in the Rental Sector" submission.

6. **Quality energy upgrades must be made more convenient and accessible**. Beyond financial support this could be achieved through various mechanisms listed below.

The **one-stop-shops** mentioned in the Climate Action Plan have a key role to play in making the customer journey clearer and simpler. However, given the diversity of the market a one-size fit all model is unlikely to work and it may make more sense to have a number of one-stop-shops targeting various parts of the market. Both energy suppliers and local authorities have a role to play in the development of these platforms and should be encouraged to get involved. In order to deliver quality retrofit, the provision of independent, trustworthy advice should be part of this model[5].

A new voluntary **Building Renovation Passport** (BRP) scheme could support step-by-step approach to deep renovation, ensuring actions are suitable for householders' needs and basic fabric energy efficiency is achieved first. The passport should complement the BER advisory report and include a masterplan for retrofit, as well as a record of work - *logbook*. The logbook offers a great opportunity to bring renovation and circular economy goals together and could be introduced as extension of safety file for new build within 5 years and for major renovations by 2030. Homeowners should be incentivised to ask for a renovation roadmap. This could be done through existing grants, whereby you would be able to access higher level of funding if you had a roadmap developed[6].

The publication of clear, comprehensive and up to date information and guidance, including high quality case studies should contribute to an uptake in energy renovation.

Access to cost effective independent advice could be made easier through a reduced VAT rate on professional services for energy renovation.

Retrofit is a specialist area within the construction sector. Building professionals and construction workers require specialist knowledge, experience and skills to deliver consistent high-quality renovation. **Property owners must be able to clearly identify**

[4] This could be supported by the work conducted by the IGBC and Dublin City Council to develop and test a multi-level renovation framework.

[5] The IGBC is currently working on the development of such as platform as part of the Horizon 2020 funded Turnkey Retrofit project and would be delighted to share its findings with the Department.

[6] The IGBC with support from SEAI is currently piloting a Building Renovation Passport on 20 single-family dwellings. A comprehensive feasibility study will be published in July 2020.

those professionals and construction workers who have upskilled in energy renovation. This is critical to establish trust in the retrofitting sector and increase the renovation rate.

7. **The lack of investment in skills at all levels of the construction supply chain remains one of the main risks to the successful implementation of the strategy**.

A number of courses have been developed over the last few years, but more competing programmes are needed[7]. More specifically, more blended, online and onsite training courses must be developed. Additional training courses for construction workers involved in retrofits of traditionally built properties are also needed.

However, it is not enough to develop training courses and to facilitate upskilling. **Actions must be taken to incentive the industry to upskill in the area**[8]. The introduction of a register of building professionals and construction workers who have upskilled in energy renovation or of some sort of accreditation could help consumers identified those who have upskilled in energy renovation. For construction workers this could be done through CIRI if it was put on a statutory footing.

Public bodies and larger private organisations could then **introduce competency-based tenders** as it is already done for heritage contractors. To create a momentum around upskill, government could also mandate the use of building professionals and construction workers who have upskilled in the area as part of SEAI grants and/or other renovation tax incentives.

8. Beyond the need to upskill the industry, we **must ensure that within 4 to 5 years all graduates emerge from third level institutions with the right skillset**. Retrofit concepts, including Indoor Air Quality and embodied carbon must be mainstreamed in all relevant third level programmes. Furthermore, all construction related apprenticeships must cover renovation concepts and a new heat pump apprenticeship[9] should be introduced.

It's also critical to raise awareness among young graduates and construction workers that there is a career in renovation and that it's not only about new build.

More people will need to work on construction projects in the next decades if Ireland is to reach its climate targets. The recent mobilisation of young people for climate (and new technologies such as BIM) may offer an opportunity to rebrand the construction industry as a green and modern industry. Energy renovation jobs should be presented to children as green jobs that can help tackle climate change.

9. In order to build trust in energy renovation, **quality assurance mechanisms must be in place**. This is critical for moisture, indoor air quality and actual energy performance. While post-occupancy evaluation is now part of a growing number of SEAI's funded programmes, post-occupancy evaluation must become the norm for all retrofits receiving state funding.

[7] E.g. TU Dublin MSc in Building Performance (Energy Efficiency in Design), the Heritage Council's Fundamentals of Energy Renovation for Traditional Buildings CPDs, and WWETB nZEB Retrofit training courses.
[8] The IGBC and LIT, with support from SEAI, are currently working on ways to incentivise building professionals and construction workers to upskill in energy renovation. This work should be completed in September 2020.
[9] The IGBC and LIT, with support from SEAI, have recently published a list of key energy renovation knowledge, skills and competences for construction workers and building professionals.

10. Retrofitting a typical Irish home to a B2 BER standard cost between €20,000 and €50,000. **Grants and tax breaks provide a good incentive and must be continued** – this could be financed through the carbon tax.

However, a robust financing model must be developed so that homeowners and businesses have access to low interest finance. The recent launch of discounted green unsecured loans by Bank of Ireland and some credit unions are welcomed but the rates remain too high. A blended public, private finance model to offer de-risked, low cost interest loans should be developed. EU and state funds could be channelled through the SBCI and low interest loans offered by Irish commercial banks. As highlighted as part of the EeMAP project, these low interest loans or mortgages must be based on high quality deep retrofit. Criteria could include pre and post BER, as well as additional quality assurance measures such as actual building performance, an assessment of the design and construction teams' skills - 7, and potentially building renovation passports - 6.

11. **The aggregation of projects can lower costs, improve quality and facilitate access to finance. It is also critical in unlocking scale. It would make sense to set up a multi-year stable fund for social housing and to start the aggregation process with this stock[10].** Focusing on social housing aggregation for the next 5 years would allow the industry to learn and would show public sector leadership. This would also allow the industry to develop more robust and cost-effective solutions.

12. The Climate Action Plan provides a clear framework for energy renovation in Ireland. However, a single entity should be responsible and accountable for achieving energy renovation targets. Given the high proportion traditional buildings, the Department of Culture, Heritage and the Gaeltacht should be invited to join the retrofit taskforce. Finally, the **introduction of local targets may also be useful in better connecting with local communities**.

13. Incentivising energy renovation should be the priority for the next 5 years. However, **government must be clear on the general direction.** With that regards, the introduction of stricter standards, including minimum energy efficiency standards within the next 10 years must be considered. Carbon tax increases also have a role to play, but these policies must be flagged well in advance and implemented in a fair and transparent way.

14. Long-term quality data are vital in dynamically informing the strategy. Although this should not lead to "analysis paralysis", **better data on the housing stock, including on empty and under-utilised buildings is needed**. Non-residential BER research tool must be published and DECs must be better enforced.

In relation to projects aggregation, technical system approaches such as 100% prefab external insulation must be tested in Ireland.

Finally, the BER default U-values menu is not sensitive enough to the fabric of traditional buildings. While historic Environment Scotland has done research on this and has found u-values as low as 0.9 for traditional masonry walls, similar research is needed in Ireland, so that more representative u-values for typical traditional wall build-ups are included in DEAP.

[10] Tools such as Retrokit could help local authorities prioritising their social housing renovation works.

C. Targeting the worst-performing segments of the building stock

Developing better quality data on the housing stock but also on the non-residential building stock is critical in better identifying and targeting the worst-performing segments of our building stock – See B.14. Tools such as Retrokit also have a role to play.

However, as it's known that the energy inefficiency issue is more acute in the private rental market - 55% of private rented dwellings have a BER of D or lower, this segment of the market should be targeted first. Improving the energy efficiency performance of the private rental sector would not only reduce our carbon emissions, it would also alleviate energy poverty – See D and F.

D. Split incentive problems

For further information on IGBC's views on ways to tackle the split incentive issue, please see our submission on the "Removing Barriers to Energy Efficiency in the Rental Sector" consultation, as well as our "Introducing minimum energy efficiency performance standards in the rental sector - A Review" report.

E. Market failure

The IGBC has identified the following market failures that should be addressed in the LTRS:

- a lack of demand – hence a need to increase awareness;
- a lack of supply – hence a need to incentivise building professionals and construction workers to work on energy renovation projects;
- a lack of joined-up thinking.

Potential ways to address the lack of demand and the lack of supply are presented in B. This section focuses on the lack of joined-up thinking which leads to higher carbon emissions.

A high number of demolitions are currently taking place in Irish towns and cities, leading to significant carbon emissions associated with the demolition process, and further embodied industrial manufacturing emissions, transport emissions and construction process emissions to replace the building with a new structure. While these demolitions and replacements may be justified from a purely economic point of view, a triple bottom line approach should be taken to assess renovation and demolition – i.e. quantifying environmental, social and economic impacts and benefits. More specifically, it would make sense to develop a template to evaluate these three aspects. This could be used by social housing providers for making the business case for renovation as part of funding applications, but also by investors willing to weigh the opportunity of renovating multi-unit buildings. At the very least, **all cases where demolition of substantial buildings are proposed should require comparative calculations for environmental and carbon impacts to justify demolition**. The IGBC, with the support of the EPA, has facilitated this by the development of Environmental Product Declarations Ireland (EPD Ireland) and the promotion of Life Cycle Assessment (LCA) and would be delighted to support the Department in addressing this market failure.

The LTRS provides an opportunity not only to reduce our building emissions but also our transport and industry related emissions, while tackling the housing crisis.

Plan led rather than market/developer led developments lead to the underutilisation of our village, town and city centres and urban sprawl with its negative environmental impacts[11]. Through the years, our members have repeatedly highlighted the need for **better integration of urban regeneration and retrofit policies**. Retrofit grants and tax incentives could for instance be better connected with other schemes such as the Living City Initiative to encourage investments in these buildings. Part of the district-based approach to renovation mentioned in the Climate Action Plan to support aggregation should also focus on our village, town and city centres, including architectural conservation areas. Finally, some changes in part B and part M may be required to make renovation of urban buildings more affordable.

F. Energy poverty

The less well off in society will be the most impacted by increasing fuel costs. They also have the least ability and resources to adapt to the changes. Our transition to a low carbon economy must leave no one behind. Retrofit grants and tax subsidies must not lead to a transfer from the poorest to the ones that can afford.

A binding 2030 BER target (e.g. B2) should be introduced for social housing. **Social housing can be used as a test bed for project aggregation and to develop exemplar projects** – See G.

Any increases in carbon tax must be used to ensure that the fuel poor are protected from the increase. Although this could be done through an increase in the fuel allowance, this would send the wrong signal. **Anyone eligible for fuel allowance should automatically qualify for a deep energy renovation paid for with the funds raised**, there should then be a pro rata reduction in the amount of fuel allowance received by the occupiers of the dwellings.

Finally, **improving the energy efficiency of the private rental market should be a priority** – see C and D.

G. Policies and actions to target all public buildings

Public bodies must lead by example. Public buildings targets must at the very least be aligned with Ireland's international commitment – Carbon neutrality by 2050, and a roadmap to achieve this target must be developed for both social housing and other public buildings.

1. **National targets must be translated into local targets.** While these local targets may initially focus exclusively on public buildings and social housing, county targets should be established for 2030 to better connect with local communities.

2. **Retrofitting social housing first to BER B2 provide an opportunity to test bed projects aggregation and to develop exemplar projects.**

3. It would also provide an opportunity to conduct post-occupancy evaluation and to gather data on co-benefits, including health[12]. This would potentially allow them to use health prevention budget for retrofit in future.

[11] E.g. high transport related emissions, altered terrestrial water cycle and biodiversity lose.
[12] This could be supported by the Build Upon 2 project.

4. However, to achieve these objectives local authorities need certainty – multi-year stable funding, clear technical guidance, case studies and upskilling.

5. More specifically, **all local authorities need dedicated retrofit teams**. It would also make sense to **better coordinate smaller local authorities at regional level** so that some people can become real experts on specific themes – e.g. Part L, B(C)AR, and share this expertise.

6. **Once local authorities have upskilled and gained strong retrofit experience with social housing, they should engage with local communities and better support private retrofits**.

7. Retrofit must be seen as a priority by all public bodies and increase support for energy managers and project officers is needed.

8. Finally, and as highlighted in E, **better business case for retrofit of public buildings must be made**. A template to take a triple bottom line approach to renovation decision-making would be useful to fully take into account environmental and social benefits.

V. Expected benefits

Ireland's LTRS must **reduce our buildings emissions inline with the targets set in the Climate Action Plan and with a view to reach carbon neutrality by 2050**. However, it can and must do more.

Beyond energy savings large scale deep renovation has **positive impacts on health and wellbeing**, as well as staff productivity, yet, these co-benefits need to be better quantified. This is even more the case if every renovation is conducted in a holistic way. Although the Home Performance Index has been developed for new homes some of the indicators can play a positive role in ensuring every renovated homes are attractive and sustainable. In particular, the following considerations should be taken into account: Good quality, healthy, bright dwellings with excellent daylighting, thermal comfort and adequate private space.

The provision of absolute long-term financial certainty on renovation would **support sustainable construction jobs across the country**, hence avoiding the boom and bust construction cycles.

Through better support for energy renovation of our village, town and city centres, the LTRS could **regenerate communities and reduce Ireland's transport emissions**.

The LTRS also offer an opportunity to address other environmental issues such as climate resilience[13] and circularity. As a starting point, the LTRS should encourage reduction in embodied carbon emissions. These "embodied carbon" emissions result from use of carbon intensive construction products and wasteful practices in the design and construction process. All cases where demolition of substantial buildings are proposed should require comparative calculations for environmental and carbon impacts to justify demolition[14].

[13] All retrofitted properties should be future climate proof.
[14] The IGBC, with the support of the EPA, has facilitated this by the development of Environmental Product Declarations Ireland (EPD Ireland) and the promotion of Life Cycle Assessment (LCA).

VI. Appendix I

List of key stakeholders who took part in IGBC's consultation process.

Counties Energy Agency – Aereco - All Shapes All Makes – Arup - Axis Engineering – BDP - BRE Global Ireland - Carr Architects - Carrig Conservation – CIF – Clancy - Cluid Housing – Colliers - DAIKIN Ireland - Darragh Lynch Architect - Dublin City University - Dublin City Council - Dulux Paints Ireland - Ecological building systems - Energy Action – ESB – Finsa - Fuinniv Independent Consulting – Greenwatt - Heritage Council - Housing Agency - IRES - JCA Architects - KORE - Marchena Management Services - McKinsey & Co - Meehan Green - Mel Reynolds architect - NUIG - Passive House Association - PM Group - Retrokit – RIAI - RKD – SCSI - SEAI – STW - Sustainability Work - Technological University Dublin - Tempo Housing – Terratonics - Trinity College Dublin – UCD - Varming Engineering - Wain Morehead Architects – Zoobox.