



IRISH GREEN BUILDING COUNCIL

IGBC

63 Lower Mount Street, Dublin 2.
Telephone +353 1 681 58 62
info@irishgreencouncil.ie

**Scoping Report on Low-Carbon
Road Mapping for the Built
Environment Sector**

Irish Green Building Council Submission – May 2014

THE IRISH GREEN BUILDING COUNCIL

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. These include educational institutions, professional institutes, NGOs, local authorities, contractors, architects, and engineers, energy companies, leading national and transnational companies. The Irish Green Building Council exists to provide a framework and the leadership to accelerate the transition to a sustainable built environment.

INTRODUCTION

We welcome the invitation to participate in the consultation on the scoping of the Built Environment Roadmap. The built environment offers the most cost effective opportunities to decarbonise Ireland's economy. We welcome this document as a good start and the maturing of the discussion on the built environment and the co-benefits it can bring for employment, health and society in the period to 2050.

We set out our comments on scoping first but otherwise set out our comments to follow the structure of the document.

SCOPING OF THE SECTORAL ROADMAP FOR THE BUILT ENVIRONMENT

The Irish Green Building Council defines the built environment as ranging from the scale of the individual building to neighbourhoods, communities and cities with their associated infrastructure.

To achieve full reduction of carbon from the built environment we should include consideration of all stages of the building lifecycle. It should also include the impacts of density and planning policy on carbon emissions as this creates cascading opportunities for faster and deeper decarbonisation.

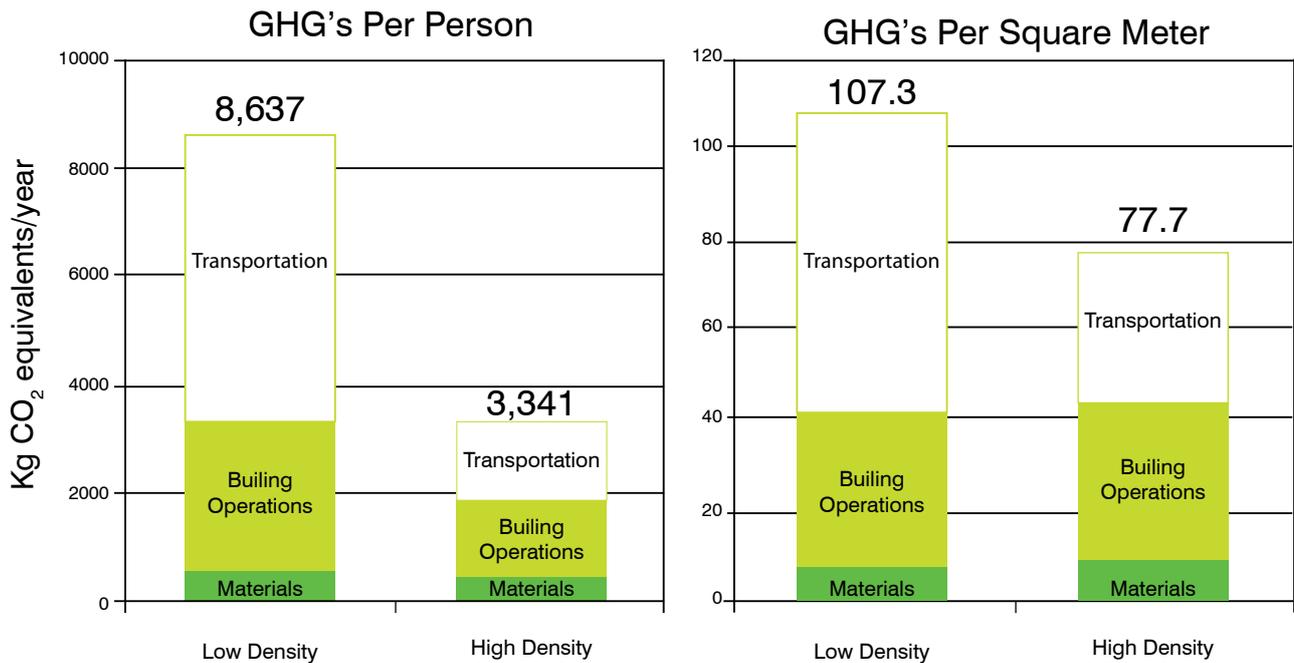


There are four sectoral roadmaps proposed, Electricity, Generation, the Built environment, Transport and Agriculture. As an 85%-90% reduction in carbon is sought by 2050 and it is proposed to increase agricultural production under Harvest 2020, the other sectors will have to compensate.

This means we need the complete elimination of carbon emissions from the built environment sectors. This is only possible if all impacts at all stages of the life cycle are considered.

The Built Environment roadmap is of key strategic importance in achieving the targets in both the Transport and Electricity sector roadmaps. One common issue to the three sectors, Electricity, Transport, Built Environment is strategic spatial planning and density. As we pointed out in our submission in December on the scoping document for the Low Carbon Roadmap for the Electricity sector, our current low density settlement patterns reduces the

efficiency in our distribution network, reduces potential for shared heating networks, and is currently creating issues for the roll out and decarbonisation of the grid. The impact on transport is obvious, as properly designed towns and neighbourhoods eliminate car dependency and create a better quality of life. This has been identified in the scoping document for the transport roadmap. However density also impacts on resource intensity per occupant and operational energy. The impacts for both are considerably higher for occupants of lower density settlement than higher density.

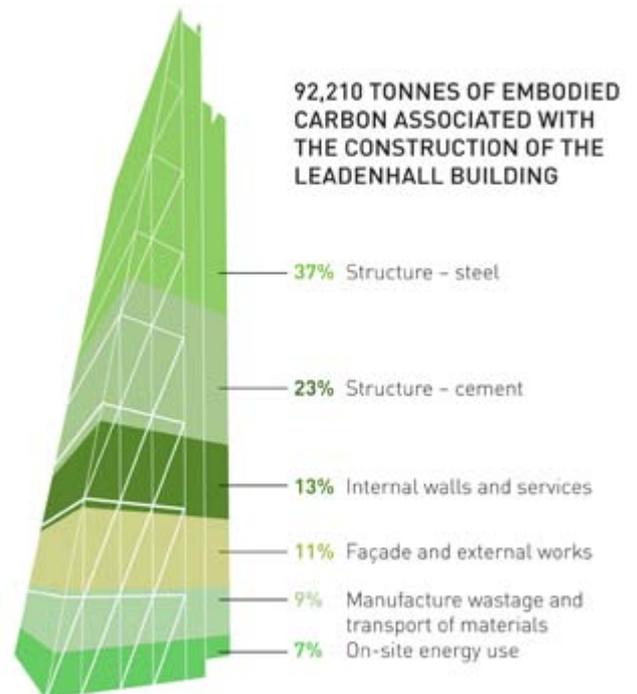


Annual GHG emissions per capita and per sqm Norman, MacLean, Kennedy (Canada, 2007)
 The study by Norman, Maclean, Kennedy shows the relationship between carbon emissions per capita and density.

The excellent Smarter Travel policy and the Government Policy on architecture, point towards compact settlement. The recent Government's strategic document on Construction 2020, proposes useful measures to encourage better use of land and buildings in towns and cities. However it also proposes to soften densities guideline in suburban areas, which combined with the 2005 Sustainable Rural Housing Guidelines, weaken the possibility of achieving critical mass for more sustainable settlement patterns. One off housing accounted for 65% of all housing in 2013, and has a disproportionate impact on carbon emissions due to much greater size, on average 80% larger than urban housing, location and loss of bio productive land. All this impacts our emissions from all stages of the building lifecycle.

This is intended as a long-term roadmap so it needs to identify issues that will arise over a longer period. For example embodied impacts will become a much larger issue within ten years as we move beyond nearly zero buildings and the proportion of impact shifts to the construction stage of the lifecycle. Decisions made on spatial planning today reverberate long into the future so are more urgent to consider.

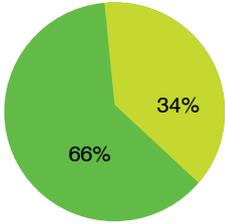
Therefore we need to backcast from a vision of low carbon built environment in 2050 that considers how we would like to live and work in quality buildings and places in 2050 and then start to work out all the cross related issues, even if we do not yet fully understand the exact relationship now.



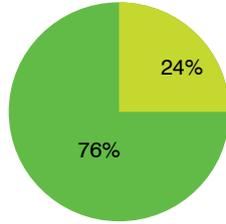
Study commissioned by British Land of the embodied carbon related to the construction of their Leadenhall building in London.

COMMENTS ON THE SCOPING DOCUMENT

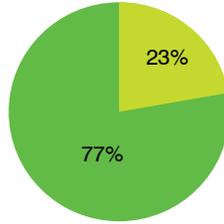
Semi-detached bungalows



Apartment Block



2 Storey House



■ Embodied Carbon (kgCO2e)
■ Operational Carbon (kgCO2e)

Irish Case Studies
Source: Armstrong A., Goggins J. (2012) 'The assessment of embodied energy and carbon of residential buildings in Ireland'. BCRI2012, Dublin.

4.0 Development of the Sectoral Roadmap for the Built environment.

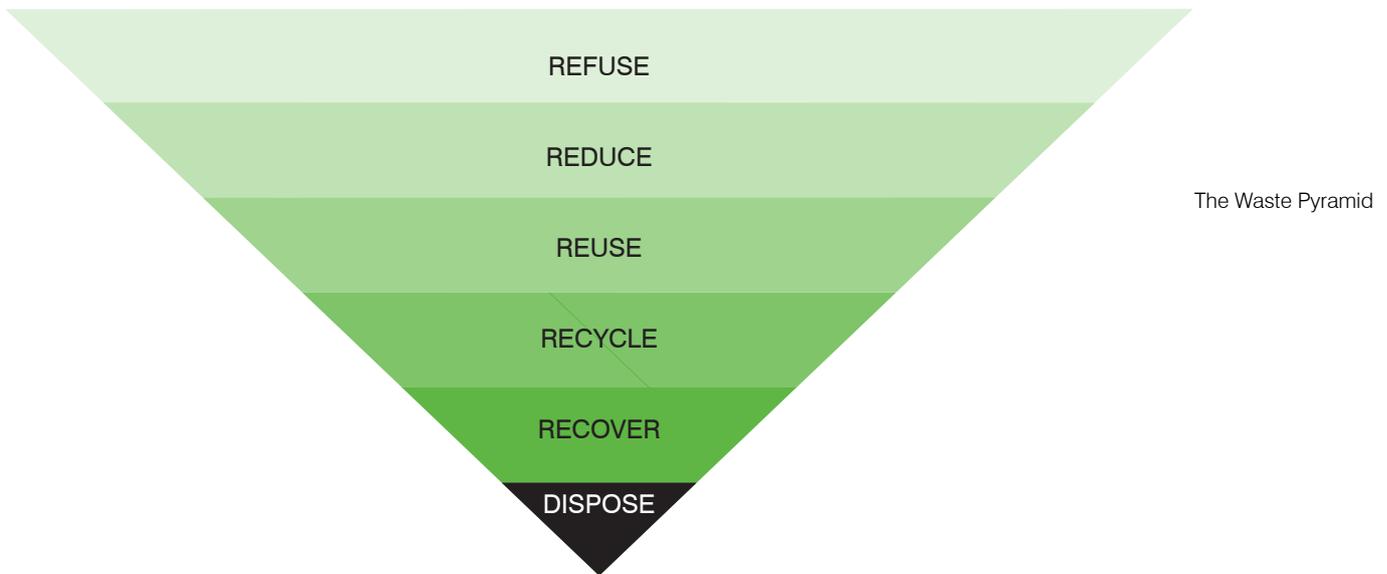
to development.

We suggest that department of Transport and Tourism, and the planning and development sections of the Department of Environment Communities Heritage and Local Government also need to be included in the Built Environment Working group. It would be useful to include representatives from some of the larger local authority planning ,architecture departments and possibly the national housing agency.

It would be a missed opportunity if we took our building stock as we find it. Some of our neighbourhoods have major design flaws so putting a blanket of insulation over them may make individuals more comfortable but will not solve underlying issues. There is little point in wasting efforts to renovate non viable buildings or areas. This needs to be tied to an overall strategy for our building stock.

4.2 The roadmap does need to consider other European frameworks and roadmaps than those outlined, including those prepared by DG Environment that are likely to impact on the roadmap. These include the EU's roadmap to a resource efficient Europe in 2050. This will impact considerably on the construction sector which uses up to 50 % of all minerals. Reduction of waste plays a key role in reducing emissions. A key part of this will be transforming the supply chain to the construction sector. It also cites competing uses for land that displace carbon storage in ecosystems which is relevant to loss of land





In addition to European commission's DG environment is preparing a communication on a *Framework for Sustainable Construction* to be published early next year. This is likely to consider additional indicators such as embodied impacts or at least encourage member states to consider them at a voluntary level. This together with CEN TC 350 which is standardising an approach to life cycle analysis are making the mandatory measurement of embodied impacts more likely in the medium term.

4.9 We suggest that more complex models that consider the spatial aspect of energy efficiency should also be considered in the long term. Such models have been proposed in the paper and presented at Better Building 2013 by Franz Fuerst Assoc Professor at the University of Cambridge - [Energy Efficiency of Buildings – A new challenge for urban models](#) „Fuerst,Wengener“ his proposes a model that combines urban land use, transport, environment, for retrofitting and new building that better predicts overall Carbon emissions of households.

5.0 Scope of the sectoral roadmap for the Built Environment

5.2 The scoping correctly points out that it is easier to implement low energy strategies in new buildings. Ireland will be adding considerably to our existing building stock in the period to 2050 due to our growing population. This needs to be modelled to consider the additional new stock and what impact this will have on the overall reduction of carbon emissions. It should consider how better use could be made of existing stock.

There is a concern about the delay in the implementation of the EPBD for nearly zero energy buildings, for the non-domestic sector. The current building regulations for non-domestic date from 2008, however the NEAP methodology introduced in 2008 uses 2005 as the reference building.. Whilst it is proposed to improve energy standards by 40% in 2014, this will not come into force before mid to late 2015 and will probably still allow transitional arrangements. This could mean that buildings could be built to the 2005/2008 standard for some years after. It is possible that new buildings could be offered for sale in 2018 built to current standards. All buildings bought or rented by Public bodies need to be Near zero by the end of 2018. We need to consider how either the improved building standards can be speeded up. IGBC intends raise awareness to investors and developers of the risk to value of their developments of not moving immediately to the near zero standard.

5.5 Barriers

Irish Green Building Council is happy to assist in the identification of barriers through its national network and develop the sharing of best international practice through the European network of 36 national councils.

Skills and Training

We agree with the importance of skills and training as a key part of enabling the transition to the low carbon economy, and in particular the Build up Skills roadmap. The Irish Green Building Council is currently working with CIF, Tipperary Institute, Blanchardstown and Dublin Institute of Technology to deliver the Qualibuild project which seeks to implement the key recommendations of the Build up Skills roadmap.

This will see the delivery of foundation modules to construction workers on the importance of systems approach to quality, so that they understand their own role in the development of energy efficient buildings. We will be launching a communications campaign to trades and householders on the importance of skilled workers to deliver quality building later this year.



5.8 Renewable energy:

The Zero Carbon Hub in the UK has carried out considerable work on allowable solutions to define what zero carbon should mean for different types of dwellings. This looks at how renewable energy should be considered for different building types. A building in a dense urban neighbourhood generally has less capacity or opportunities to provide on site renewables, than a rural or suburban situated building. This type of engagement is needed to work out what the targets for renewable energies for different building types and sites.

http://www.zerocarbonhub.org/sites/default/files/resources/reports/Zero_Carbon_Strategies_for_Tomorrows_New_Homes.pdf

7.2 Carbon Dioxide Emission Sources

We understand that the scoping relates to existing reporting and accounting mechanisms to EU. However we note that emissions from electricity are considered in this document, even though they are covered under the emissions trading scheme, whilst emissions from large industrial uses such as those from production of building materials, eg cement, (5% of global emissions) which are also covered by emissions trading scheme are not.

It would be a missed opportunity if we leave embodied impact to the ETS scheme alone. This is currently not working due to the low cost of carbon so will not influence significantly a reduction in carbon from these sources. The roadmap needs to be more than an accounting exercise to the EU but rather a genuine attempt to reduce carbon from our built environment.



9.0 Renovation strategies

IGBC carried out an initial workshop with DCENR with over 50 stakeholders from all sectors in January 2014. This looked at the three sectors – Commercial, Residential and Public Sector.

We would be happy to continue the stakeholder engagement that is required to drive a long term renovation strategy. The initial analysis carried out by Building Performance Institute –Europe (BPIE) on the roadmaps already submitted by 10 EU states, showed that many fail to meet the stated requirements of Article IV of the Energy Efficiency Directive, namely a long term perspective, and a high level of ambition.

The best roadmap was submitted by Denmark, which had the benefit of 18 months detailed dialog with over 200 stakeholders. It uniquely proposes 21 new initiatives to stimulate renovation, and provides a good example of what can be achieved by an extensive level of engagement with hundreds of stakeholders. Other roadmaps have been less ambitious and propose a continuance of existing policy and fail to take a long term perspective.

We suggest therefore that the 2014 roadmap, be the start of developing a much more detailed level of engagement to deliver a very well developed iteration for the next review date of 2017. This needs to develop a consensus on agreed policies that will provide certainty for investment, deliver ambitious targets and the co-benefits of increased employment and quality of life.

To this end we propose to work with the European Network of Green Building Councils to facilitate a much greater sharing of policies from across Europe, so see what works and what does not. We would propose to work with Government to facilitate in dept dialogue with industry on creating this roadmap.

There has already been good barrier analysis and supporting documents prepared for the Better Energy Financing which already provides a good starting point for some of this work.

11.0 Behavioural Change

We welcome the emphasis on behavioural change which has a particular impact on energy use which is not sufficiently accounted for.

12.Evaluation of Proposed Measures

Sustainability should not be seen as a barrier to competitiveness. Instead it needs to be seen as an opportunity for the Irish Economy. Ireland needs to go as fast as possible if it wants its native suppliers of construction products and services to maintain competitiveness with other European Countries. This is why a roadmap should not be seen just as an accounting mechanism but rather an opportunity.

Other countries have already started this process. The Nordic Governments have a well funded Nordic Built initiative, which is using their countries' comparative advantage of stricter energy codes, to develop an export brand based on quality, knowhow and skills.

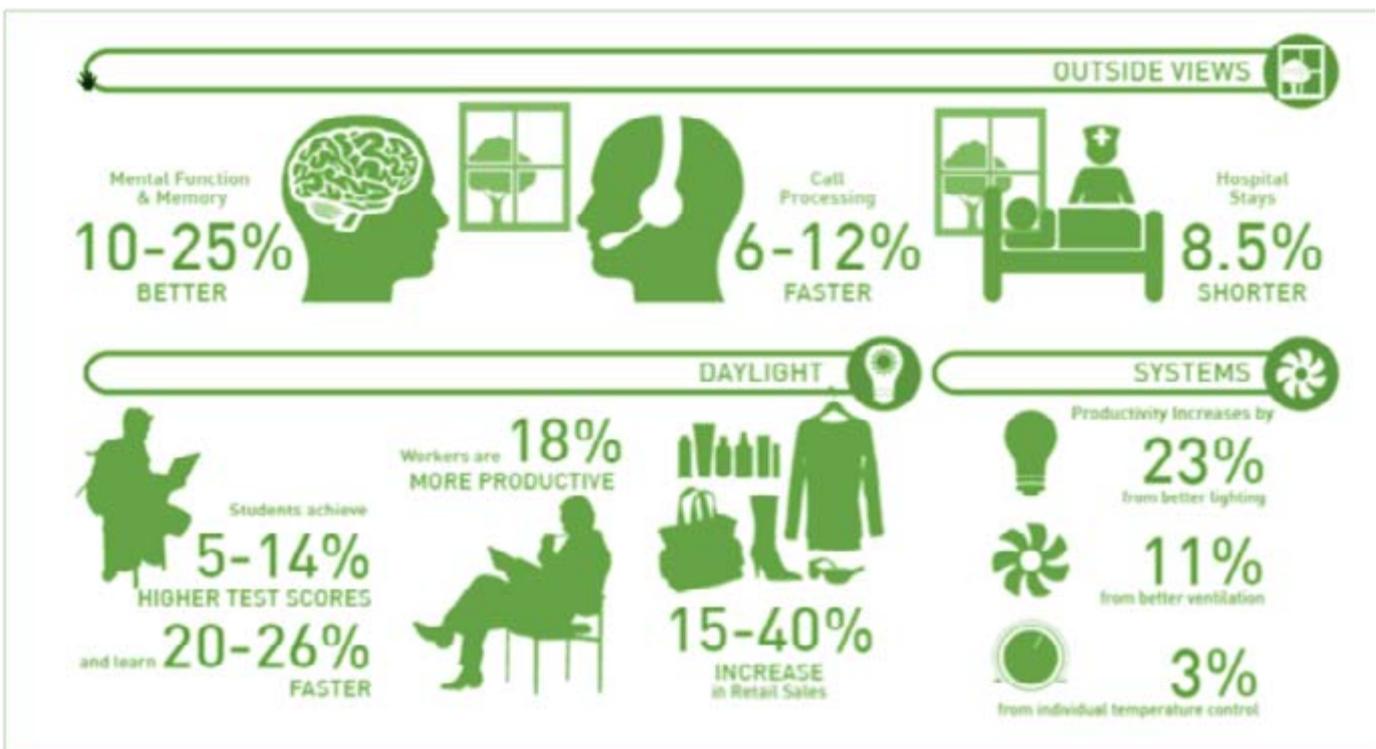
We will also be at competitive disadvantage if we fail to improve the quality of our building stock. If we want to attract inward investment and talent, we need better buildings. There is a shortage of quality certified sustainable office space in Dublin. There is also a shortage of quality residential accommodation which could restrict the flow of talent to Ireland. Young talented engineers in the technology sector expect to live in non-car dependent quality urban environments in quality comfortable housing. This is clear from the locations that the major technology firms choose to base their offices.

12.0 Health and Well Being

We warmly welcome the inclusion of the national health benefits of a retrofit programme and recognition of the potential cost savings to the health sector. These savings are so significant that they should allow the argument for much greater allocation of central government funds to renovation.

This is also important in pitching energy efficiency to the commercial sector. The tendency has been to talk about energy saving when in fact the issue they value most, is comfort and well being for their workers. 85% of office based costs are due to staff and energy only accounts for 1% of costs. Energy efficient renovation must also achieve co-benefits of better quality environments, including better air quality, lighting, and views.

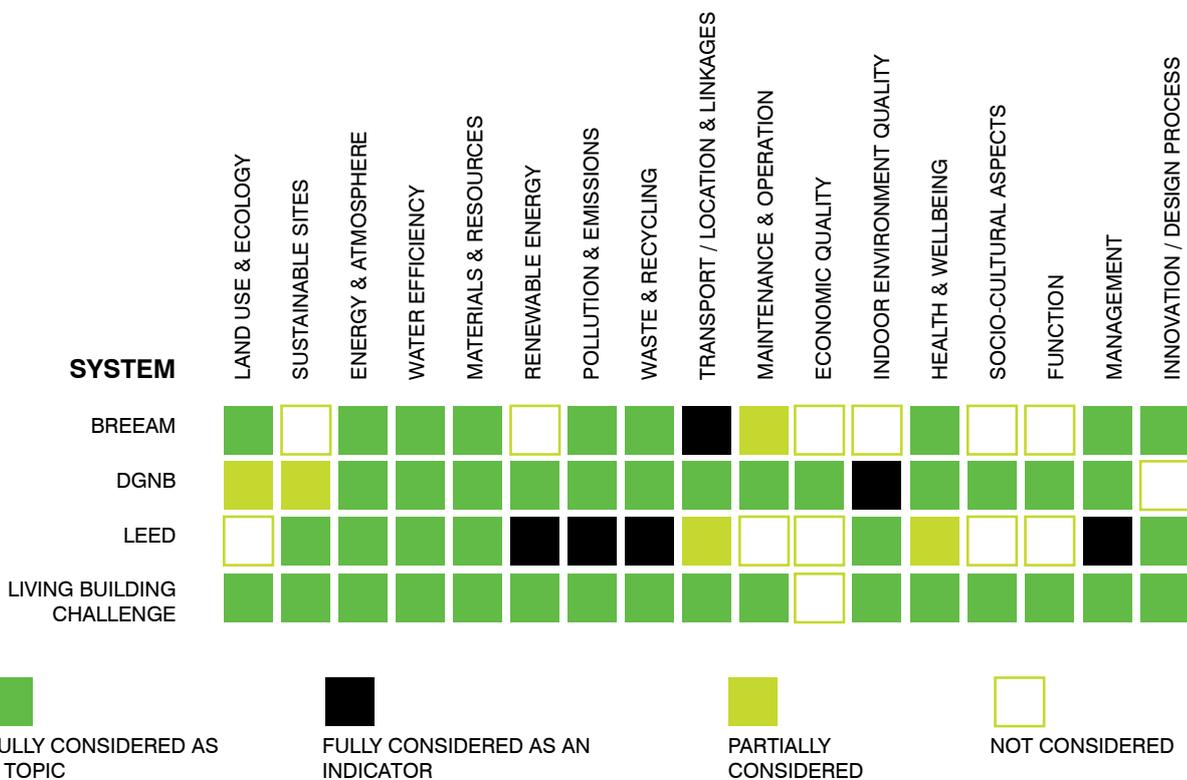
The World Green Building Council in the Business case for Green Building report published in March 2013 demonstrated the very significant productivity benefits of Green Building. This was a meta analysis of many academic reports gathered globally. A follow up report is to be published in September, which will investigate in greater detail these findings.



The health benefits and productivity benefits of certified LEED buildings – World Green Building Council – The Business case for Green Building

IMPROVING STANDARDS

Various tools have already been developed for the non domestic sector to assess the various impacts from the built environment. These have also been developed to provide standards of excellence for renovation. The Irish Green Building Council has been engaged over the past two years in bringing clarity and education regarding Building Environmental Assessment systems. These systems seek to help develop a market throughout the supply chain for low carbon technologies and materials and provide quality assurance in the design, construction and renovation of buildings. For this reason many of the leading inward investing companies demand their use for new build and retrofit as a mark of quality. The different systems have been developed by the industry in various countries and are a good indication of what industry and investors consider important.

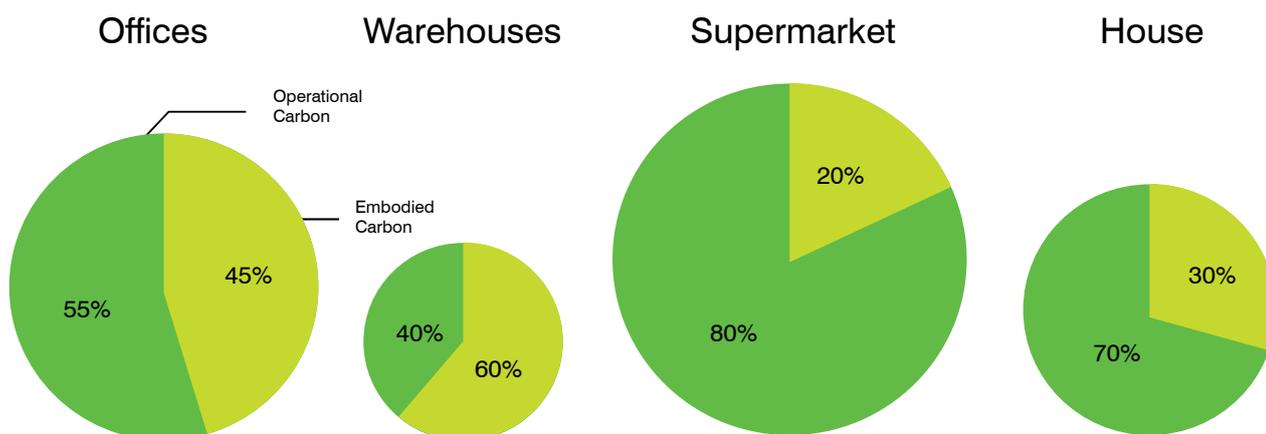


BREEAM, DGNB, LEED and LBC – topic assessed based on assessment criteria and weightings. Source: based on Alinghizadeh Kherzi, 2011 (amended to include LBC).

Important note: This reflects comparison of versions of Environmental Assessment methods available in 2011. It does not reflect revisions since.

A QUALITY/ SUSTAINABILITY RATING FOR RESIDENTIAL SECTOR

The Irish Green Building Council is also looking at creating and seeking support for a Quality/sustainability rating system for the residential sector. This would create a package of a limited number of the most important indicators that impact on carbon in the built environment and is also intended to deliver quality comfortable environments. We have been consulting with our members and the construction industry on what this should look like and will publish a short paper in the coming months. We would welcome dialogue with Government on the development of these tools to enable voluntary impetus in the market, that will facilitate increasing mandatory standards.



Source: Sturgis Associates LLP Indicative Whole Life Carbon Emissions



IRISH GREEN BUILDING COUNCIL

IGBC

63 Lower Mount Street, Dublin 2.
Telephone +353 1 681 58 62
info@irishgreencouncil.ie

**Scoping Report on Low-Carbon
Road Mapping for the Built
Environment Sector**

Irish Green Building Council Submission – May 2014