Irish Green Building Council Submission

Ireland's Draft National Energy and Climate Plan (NECP) 2021-2030

I want you to act like the house is on fire… because it is! Greta Thunberg – 16-year-old Swedish school girl.

INTRODUCTION

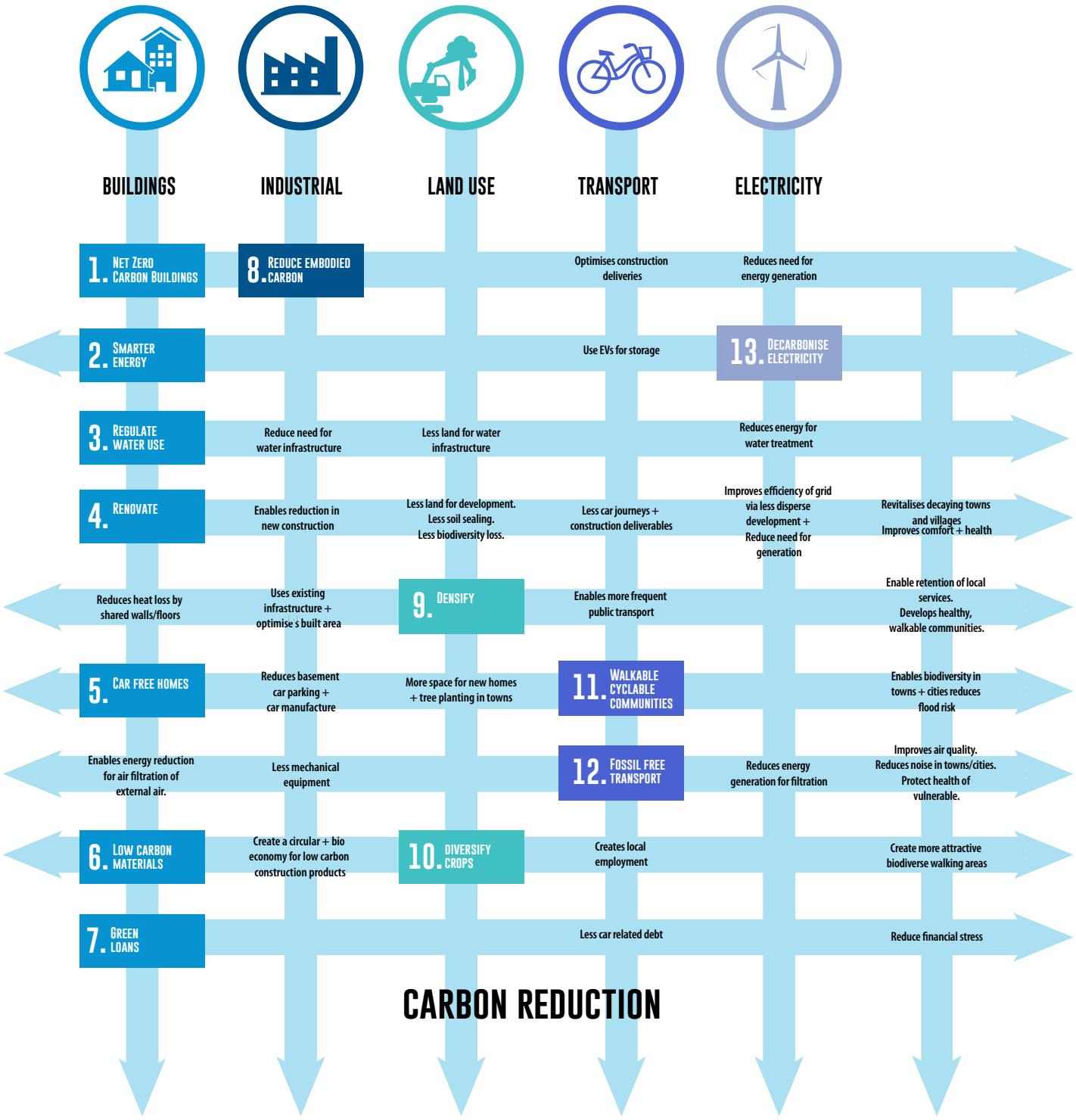
The following document is the Irish Green Building Council's (IGBC) response to the Department of Communications, Climate Action and the Environment's consultation on Ireland's Draft National Energy and Climate Plan (NECP). Our comments focus on some of the issues of greater strategic concern to our members rather than detailed editorials.

The IGBC is a unique network of over 130 organisations spanning the entire value chain of the built environment. We represent all stakeholders in the construction and property sector from building owners, developers, architects, engineers to local authorities. As a member of the World Green Building Council, we draw on best practices internationally in delivering high quality, sustainable homes and commercial buildings.

The IGBC welcome the publication of the draft National Energy & Climate Plan (NECP) and the opportunity to provide feedback on it. The plan provides a unique opportunity to evaluate where we as a country stand with regard to our commitments made under the Paris Agreement. Based on this evaluation, we can then grasp what needs to be done to compensate for existing gaps in national legislation and pave the way for the higher ambition necessary to reach our fair-share targets. Furthermore, the NECP process has the potential to catalyze widespread societal engagement in the climate challenge.

In this submission, the Irish Green Building Council offers general comments on various key areas within its remit of providing leadership in the transition to a sustainable built environment.

Cross cutting actions and outcomes for radical reduction in carbon emissions from the built environment



How actions help meet the UN Sustainable Development Goals

IGBC
Irish Green Building Council

TARGETS

A stable and long-term framework is required to provide all players with certainty and generate confidence. The Paris agreement and the EU 32.5% energy efficiency target for 2030 provide some predictability. Yet, the role of national targets cannot be underestimated: The NCEP must set a meaningful direction with a national energy efficiency target. While the first draft of Ireland's NCEP provide an estimation of the Final Energy Consumption (FEC)[1], the IGBC regrets this number is not put forward as a clear contribution towards the EU 32.5% energy efficiency target for 2030.

While the draft acknowledged that Ireland won't reach its 20% energy efficiency target for 2020 without additional measures, the first analysis of Ireland's draft NECPs show that the suggested contribution from Ireland is inadequate for the EU to reach its 32.5% 2030 target[2].

Against this background, the IGBC calls for radical energy efficiency efforts – These are described below.

CALL FOR AN INTEGRATED CROSS-DEPARTMENTAL APPROACH

IGBC welcome the publication of the NECP and the preparation of an all-of-government plan but is concerned by the piecemeal approach currently taken. It is striking that the emission challenge has been strictly divided into sectors.

For the built environment this is a sub optimal approach:

- Buildings are directly responsible for 40% of energy use in Ireland.
- But where we build them significantly impacts our transport emissions and the efficiency of the electrical grid.
- How we build them impacts our industrial emissions from the production of construction materials.

A coherent integrated approach to reducing the carbon emissions of the built environment is hence needed.

We set out 13 broad cross sectoral actions: These have magnifying impact if implemented to support each other.

Diagram 1 **Cross Cutting actions and outcomes for radical carbon emissions reduction from the Built Environment** p.2 explains how each action helps not only in reducing emissions in its own sector but has outcomes across, industrial, land-use, transport sector and electricity generation sector.

The diagram also shows how implementing these actions together has major benefits for Irish people, by improving their health and wellbeing. It also shows how these are linked to the UN Sustainable Development goals.

We also suggest that the Government looks beyond EU national targets for non ETS. A broader approach to all global emissions driven by Irish consumption patterns, ETS

[1] See scenario 2 p.90 of the draft.
[2] http://energycoalition.eu/sites/default/files/20190129_TheCoalitionForEnergySavings_2030_targets_Time_for_action.pdf

emissions, embodied carbon in all goods, products, homes and cars is more likely to also drive down the operational emissions associated with national targets.

It is more important to change behaviour rather than just focus on changing fuels and this will lead to far more radical reductions in carbon and energy consumption. Furthermore, this will drive innovation[3].

Action on climate change should not be an accountancy exercise in shifting responsibility for emissions to ETS or to other countries but a genuine attempt to radically tackle global emissions.

SECTOR: BUILDINGS

ENERGY EFFICIENCY IN BUILDINGS

Action 1. Net Zero Carbon Buildings – linked to Action 8 -Reduce embodied carbon and Action 13 – Decarbonised electricity

- Define a Net Zero Carbon standard for Ireland
- Introduce a Life Cycle Approach to carbon measurement for all buildings
- Consider total carbon benchmarks based on occupancy for all homes and buildings.

As mentioned in the NECP an increasing range of policies target operational emissions (e.g. nZEB). This is highly welcomed. But 'nearly Zero Energy Buildings' as currently implemented are not enough. We need to move to **net Zero Carbon buildings** that consider not only the energy to operate them but also to build them.

The implementation of nZEB through Building Regulations TGD Part L Conservation of fuel and energy - Buildings other than dwellings came into force on the 1st of January 2019. This is 10 years after the previous regulations from 2008 and long after the technology had already moved on.

The current definition as implemented is not ambitious enough to move towards truly zero carbon buildings. The current Irish definition of nZEB is a relative benchmark, comparing Air Conditioned (AC) buildings to AC buildings rather than an absolute energy benchmark based on function. This means the nZEB definition for AC buildings which is a 60% improvement over 2008 regulations is nowhere close to 'nearly Zero'. Ireland's mild climate means that heating and cooling can be achieved by largely passive means. We recommend a review of the current regulations and propose that a more ambitious definition of nZEB for non-residential buildings be implemented within 2-3 years.

IGBC is working with World Green Building Council to propose a net Zero Carbon definition for Ireland that covers not only operational emissions of the buildings but also embodied energy too. We call on the Irish Government to commit to net Zero Carbon buildings. 22 cities and 5 states around the world including Scotland have already committed to do this.[4]

The approach to measuring the energy efficiency of buildings by energy per square meter needs to be reviewed as the built area of many homes and buildings is not being optimised. As pointed out in action 9 the average size of detached house built in 2016

[3] For instance, the introduction of mandatory LCA requirements in the Netherlands have triggered substantial innovations in the traditional and biobased product industries in this country.
[4] World Green Building Council – Net Zero Carbon Commitment.

was 241sqm. The floor area grew by 60% since 2002 almost wiping out energy savings made by improved regulations.

Action 2. Smarter energy

- Decarbonise the heating of buildings
- Roll out smart meters to enable better energy management
- Introduce a feed in tariff for renewables

We need to decarbonise the fuels used within our homes and buildings. We welcome the acknowledgement that "To actually decarbonise the built environment, the switch from using fossil fuel as the source for the energy used in buildings to alternative energy sources will be vital". There should be a clear commitment to end fossil fuel heating in new domestic and commercial properties within 2-3 years for new buildings and by 2030 for all buildings.

We can also use our buildings to even out variable renewable energy generation. This can be via simple approaches such as storage (e.g. hot water storage) or demand response via smart meters which turn on or off non-critical equipment to match the generation demand profile. This approach will enable further penetration of variable renewables such as wind. Electric vehicles have large battery storage which can also be used to store electricity when peak renewable production. However these ideally would be in shared ownership.

Co-benefits-

- Improvements to health from ending coal, peat and wood burning.
- Eliminate risk of carbon monoxide poisoning.

Action 3. Regulate water use in buildings –

- Introduce regulations for water use in all buildings new and existing.
- Complete roll out of water meters and introduce water charges for all homes.
- Investigate whether rain water harvesting can be used as an alternative to large scale infrastructure.

Hot water is responsible for approximately 70% of all regulated energy in nZEB apartments according to the non-published Regulatory impact study carried out by SEAI. From our experience with Home Performance Index certification, there is currently no incentive for developers to integrate efficient sanitary ware into new homes as they believe that home buyers prefer high volume showers.

The new version of the DEAP software[5] will offers some credit for achieving water efficiency below 125l/person per day but this does not go far enough and even this is still voluntary. We have shown though our Home Performance Index certification that homes can easily achieve low as 90l/person a day just with the use of low cost flow restrictors and aerators on taps and showers. There is very little knowledge amongst developers and specifiers about water efficiency despite availability of data for most common sanitary ware through the European Water Label[6].

[5] Dwelling Energy Assessment Procedure (DEAP) is the compliance tool for building regulations and for generating BERs (Building Energy Rating)
[6] The European Water label.

In our experience the failure to introduce water charges in 2016 reduced interest by developers and homeowners in water efficiency. In fact, water is extremely carbon intensive to treat and to heat and this message needs to be communicated.

Co-benefits –

- Reduced energy and carbon for hot water in homes.
- Reduced carbon and resources to construct water infrastructure.
- Reduced land use for water infrastructure.
- Reduced energy generation for water treatment.

Action 4. Renovate – Energy Efficiency first approach

- Prioritise investment in under-utilised buildings in cities, towns and villages.
- Make sure we have the right skills, upskill the industry in deep renovation.
- Introduce Building Renovation Passports to map route to zero carbon for each building.
- Support investment in deep renovation, including through alternative financing mechanisms e.g. green loans.

As highlighted in the NECP "Policies and measures shall reflect the energy efficiency first principle". This is critical if Ireland is to reach its energy efficiency and renewable targets, but also improve its energy security and fight energy poverty.

Our towns and cities centres offer fantastic places to live and work. Yet, they are often blighted with abandoned and under-utilised buildings. High quality energy upgrades could bring these properties back to life and reduce our building emissions. This way we could create new space for families in good locations. This would reduce our transport emissions and avoid emissions from new construction. It would also reinforce rural hubs and create sustainable construction jobs across Ireland.

Building professionals and construction workers are at the interface with property owners, they are a source of advice, and can influence users at key decision points. Yet, depending on training and engagement, they can act as advisers or as negative influencers. As predictability of outcomes is key for property owners and investors, upskilling the supply chain in energy renovation is also a key part of the jigsaw when it comes to de-risking investment, supporting decisions and enabling action.

Over €35 billion is required to make the existing housing stock low carbon by 2050. While targeted and effective government are part of the solution, the scale of the challenge means that private investment also needs to be mobilised.

The IGBC encourages the government to explore the opportunity of introducing 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 passports could become extremely useful in addressing the barriers to consumer decision-making. By allowing a new owner to take up where a previous owner left off, it should also reduce transnational cost of retrofit where a property change hands. Finally, by improving the availability of data for valuers and lenders, passports should de-risk investments in that area and facilitate phased deep retrofit.

Co-Benefits

- Bringing homes in decaying towns and villages centres will revitalise rural areas.
- Optimisation of existing stock reduces resources and embodied carbon emissions for new construction.
- Reduce carbon emissions from transport due to better location of existing homes.
- Create sustainable construction jobs across Ireland.

Action 5. Car free homes and buildings – see linked: Action 9

- Introduce an accessibility index and a minimum benchmark for all homes and buildings as a prerequisite for planning permission.

We are extremely concerned with the National Planning Framework's[7] *National Policy objective 3a -Deliver at least 40% of all new homes nationally, within the built-up envelope of existing urban settlements.* This is a very low target which will lead to greater sprawl, increasing carbon emissions from both transport and the construction of new infrastructure – see section on industry emissions.

The National Development Plan[8] proposes to build 500,000 new homes. There must be a commitment to ensure that all are located so that the occupiers will not need to own a car. This will be a more effective policy than simply switching fuels in the car.

Co-benefits

- Reduced costs per home of between €2,000 and €36,000 for elimination of parking.
- Reduced embodied carbon of up to 16 tonnes CO2 per apartment[9].
- Increased density possible with less areas for surface parking and access roads.

Action 6. Low carbon construction materials

- Support the use of low embodied carbon materials.

The embodied carbon in the materials used to construct homes now account for 50% total life cycle carbon in nZEB homes and 35% for offices. We need to reduce this.

Beyond reducing our carbon emissions, this will enable the development of a high added value bio-economy. As a growing number of countries[10] are introducing whole building LCA, this would make Irish producers of construction products more competitive globally.

Co-Benefits

- Support diversification in Agriculture and Forestry

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[7] National Planning Framework

[8] National Development Plan

[9] Based on figure of 800g carbon/m² for 20m² of built area per car space with one car space per apartment. Basement carparks likely have higher embodied carbon per sq meter.

[10] E.g. France launched its LCA based E+C- label in 2016 to prepare for new regulations in 2020. The Netherlands established 2012 regulations requiring new buildings above 100m2 to have an environmental performance calculation report, covering life cycle emissions and resource indicators. Finland launched a public consultation in 2018 on whole life carbon foot printing in construction, which will be mandatory for new buildings by 2025.
The EU framework for Sustainable Buildings - Level(s) takes a full life cycle approach. Level(s) aims to be the foundation of Europe's future sustainable building policy.

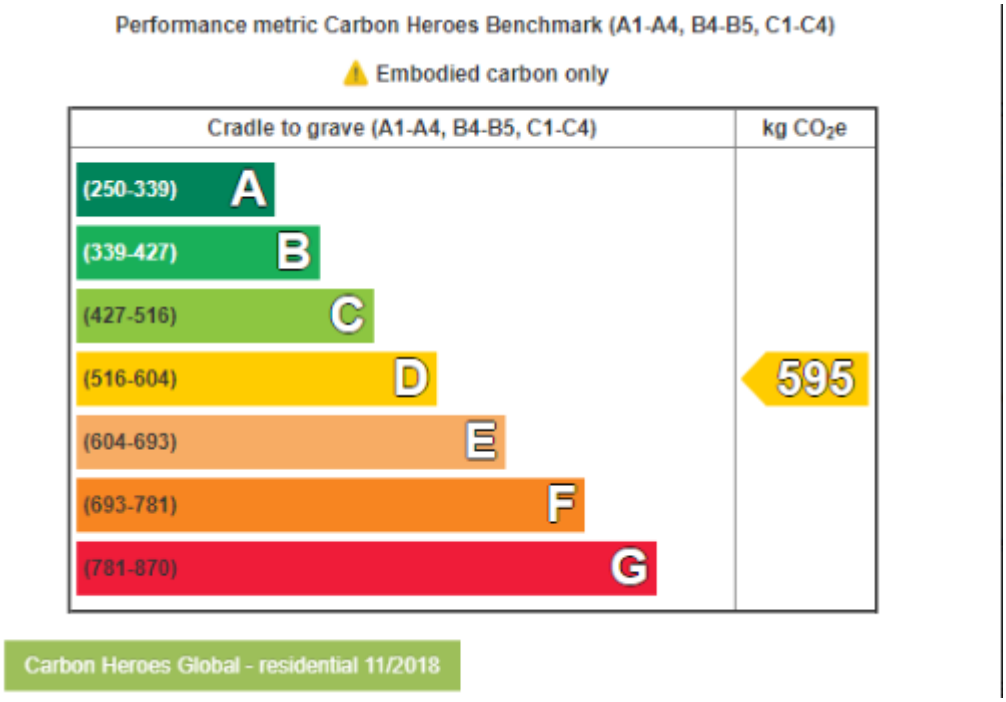
- Create rural employment opportunities

SECTOR: Industrial

Action 8 Reduce Embodied carbon - links to Action 1- Net Zero Carbon Buildings, & Action 6 – Low carbon construction materials

- Introduce regulations for full carbon life cycle assessments of buildings in public procurement.
- Require Environmental Product Declarations (EPD) for construction products.
- Develop a national environmental data base for common construction products where EPD missing.
- Target a 60% reduction in the embodied carbon of buildings.
- Require full carbon foot printing of alternative infrastructure options.
- Encourage provision of EPD to 14025 for all large purchasing decisions such as cars and trucks linked to Vehicle Registration Tax (VRT) and car tax.

500,000 homes and many other building and infrastructure will be built under the National Development Framework. Unless embodied carbon is reduced this will represent a huge expenditure of carbon over the 22 years of the plan of between 38million and 50million tonnes of carbon.



Benchmarks created from the Carbon Heroes programme run by One Click LCA.[11]

Irish construction is likely in E to G category i.e. 600kg – 800kg CO2e as there has to date been little knowledge of embodied carbon and optimisation to reduce it.

[11] These are global figures for residential for projects spread across Europe and the Americas. They will generally represent greener projects where some optimisation is carried out as part of certification schemes such as LEED and BREEAM. https://www.oneclicklca.com/construction/carbonheroes/

Optimisation is through two key strategies, reduction of materials used, and substituting carbon intensive materials with less intensive materials.

By way of context an A2 nZEB home will have an annual regulated carbon per square meter of approximately 8kg/sqm. Therefore, over the lifecycle of 60 years the operational carbon represents approximately 480kg of carbon versus 600-800kg for the embodied carbon.

We need to reduce the emissions associated with the production of buildings, goods, trucks and cars. Whilst Government may take the view that these emissions are generated outside of Ireland or are accounted for in the Emissions Trading Scheme (ETS), they are generated as a result of Irish purchasing and procurement decisions and they must be reduced.

Reducing the unnecessary built area of homes and buildings saves carbon in both the construction and operation life stages. Cars that are not purchased save carbon in the manufacturing process and operation.

IGBC runs an internationally audited[12] Environmental Product Declaration Programme for Irish Manufacturers of construction products to facilitate a move to life cycle assessment of carbon and resource efficiency impacts.[13] The construction products sector is now the leader in Ireland as the only manufacturing sector offering transparent data on environmental impacts. This approach needs to be extended to all other sectors, such as food, consumer products and cars.

Government needs to encourage all producers to provide transparent data as it is not possible to make policy decisions in the absence of data. For example, decisions on environmental benefits of moving to electric vehicles should be based on evidence such as EPD carried out to ISO 14025 provided by the car manufacturer. There is considerable variance in the embodied carbon of cars and purchasers should be encouraged through EV grant, car tax and VRT to purchase cars with lowest overall life cycle. It does not always make sense to replace an efficient petrol car with an EV particularly if used in urban area. If a small Irish construction product manufacturer is capable of producing 3rd party verified EPD for a concrete roof tile[14], then large international car manufacturers should be capable of producing data for products costing up to €70,000.

The environmental benefit of alternative options for the construction of transport infrastructure needs to be measured to decide on optimal solutions.

[12] ECO Platform the European organisation of Environmental Product Declaration Programme Operator audit the EPD Ireland Programme

[13] EPD Ireland – www.epdireland.org – EPD Ireland was launched in 2017 and has already published 17 Environmental Product Declarations covering nearly 40 construction for 5 producers. It has registered nearly 100 EPD for products used in the Irish market from international producers covering a large range of products from insulations to paints.

[14] Sample EPD for Quinn Building Products, Roofing tiles. This EPD provides data for over 10 different environmental indicators for each of 6 different roof tiles.

SECTOR: LAND-USE

9. Density– see linked action no. 11 Create walkable cyclable areas

- Provide fiscal incentives for better use of land such as land valuation tax.
- Densify existing suburbs.
- Limit or eliminate new one-off rural housing.

Housing density and a proactive approach to limiting excessive home size play a large part of reducing emissions. Emissions result not only from the energy within buildings but from excess resource consumption, displacement of land for sequestration, excess energy consumption from operation of larger sub optimal homes and transport to access them.

Low-density housing will generally have a higher carbon footprint due to combination of factors, the relationship of house size to land value and need for private transportation[15].

A detached nZEB bungalow will have up to 4 times the heat loss as an nZEB apartment of the same area with the same level of insulation. Density passively reduces heat loss via either sheltering or shared walls and floors.

The document outlines the challenges: 425,840 (96%) of one-off houses are outside the 873 towns. Yet, it makes no proposal to stop this number growing. Rural one-off housings are at one extreme end of the spectrum of low density and have an out-size carbon footprint and lock in up to 4 times the impact from carbon emissions when compared with apartments and terraced housing in accessible locations. Whilst the numbers may appear small, 4,000 one off rural houses built each year are likely to have the annual equivalent carbon emission impacts across their life cycle of 14-15 thousand reasonably scaled homes in properly planned communities of reasonable density.

Furthermore, the SEAI report from 2018 which combines BER figures and CSO figures[16] show how floor areas for detached dwellings have grown since 2000, to an average of 241 sqm in 2016 meaning that as Building regulations improved in 2006, 2008 and 2011 the energy reduction for this house type was partially wiped out by the increased floor area as the BER measures energy per square meter. Average floor area for these detached housing increased by 60% between 2000 and 2016 whilst the energy efficiency for new homes also improved by 60%. Detached housing represents 33% of all housing in Ireland whilst average occupancy of all housing is 2.7. Whilst this occupancy rate is one of the highest in Europe, it is still unlikely that houses of 241sqm ever have optimum occupation and certainly not across their lifecycle.

Finally, those living in this type of homes will always need to own one or two cars whilst those living in reasonably dense locations will have option over the coming years to transition to 'pay by use'. The transition to pay by use will allow a reduction in the embodied emissions versus privately owned cars.

Co-benefits

- Higher density dwellings have inherently less heat loss.
- Reuses or reduces existing infrastructure reducing embodied carbon and resources.
- Reduces soil sealing and biodiversity loss.
- Enables more frequent public transport.

[15] Energy Efficiency of Buildings: A New Challenge for Urban Models: Franz Fuerst and Michael Wegene
[16] Energy in the Residential sector 2018 - SEAI

- Enables walking and cycling.
- Improved health and wellbeing as denser neighbourhoods encourage walking.

Action 10. Diversify – Crops for construction products -

Linked to actions 6 & 8

- More diverse tree planting for structural and decorative uses.
- Crops such as hemp, straw or other fibres for insulations.

The development of a bio economy is dependent on supporting farmers and foresters to grow a greater range of crops that can be used for construction materials. To date the emphasis has been on growth of biomass for fuel. Projects such as Agri4valor H2020 have highlighted the potential for agriculture-based construction products. There is currently almost no production of bio-based materials for construction apart from OSB boards and MDF.

There is a wide range of materials that can be developed in the construction sector, including fibre insulation board from wood and hemp fibre, bio fibre reinforcing to replace plastic fibres, cross laminated timber construction, etc.

We need to diversify forestry which is currently concentrated on Sitka spruce which has limited use as a structural timber and can only be used for a limited range of pulp timber products. Diversifying to a wider range of softwoods and hardwoods will take time and have a longer payback but will allow a greater variety of construction uses and offers many additional benefits not least for biodiversity.

We also need to reduce our over concentration on beef and dairy production and so developing a bio economy for construction products can not only reduce dependence but offset some of agriculture's impacts.

Co-Benefits

- Create local rural employments opportunities cutting transport emissions.
- Helps create a bio/circular economy.
- Improves biodiversity.

SECTOR: TRANSPORT

Action 11. Create healthy walkable connected places.

- Radically reduce the national car fleet by 50% by 2030 via proactive incentives.
- Introduce parking charges for all car spaces, public and private.
- Progressively remove space from cars and create space for walking cycling.
- Create extensive car free areas in all cities and towns.
- Create 500m drop off exclusion zone around all schools urban and rural.

In order to create liveable safe and connected towns and cities, we must make more space for walking, cycling, light vehicles, and frequent public transport. We can only create this infrastructure by taking away space from the car.

Transport is Ireland's second and fastest growing source of carbon emissions. This is predicted to grow significantly by 2030 as highlighted in the document. While support for EVs is welcomed, we do not believe this is the single silver bullet. All urban areas should prioritise mobility solutions, in which walking comes first, bicycles second and public transport third. Cars, including EVs should only come in fourth place but preferably only

in 'pay per use' schemes such as carsharing[17]. Privately owned cars EV or otherwise should be strongly discouraged in urban areas.

Housing since the 1930 has largely been planned around the car leading to huge inefficiency in land use. Technology is now enabling a transition to shared ownership and 'pay for use' potentially allowing a 90% cut in cars numbers in urban areas if the right policies and incentives are put in place.

Current transport proposals propose to have 500,000 EVs as part of an emissions mitigation policy by 2030. However, this policy needs to avoid unintended consequences. Having invested in an EV owners will want to recoup the investment, so are unlikely to shift to alternative transport. EVs increase this danger because they have a higher capital cost and lower operational cost so even less incentive for owners to use daily public transport due to higher cost. The resultant congestion and danger then put off others who would consider cycling.

Those who borrow money for cars are logically less likely to have the capacity to also borrow for a deep energy home renovation.

It would make more sense if the current €5,000 grant for EVs was also available to those who shed car ownership altogether for five years.

To make our urban areas work effectively we must take away space from the car in order to build high quality walkways, segregated cycleways and high-quality rapid transit corridors.

All car spaces should be charged even those in out of town locations to remove a competitive disadvantage for car free areas.

Car free cities and towns

Oslo has already committed to a car free city in 2019[18], excluding cars from the entire city centre. Paris is implementing monthly car free days. This is a good way of conditioning the public to the idea of a car free city.

Co Benefits for Land use, Buildings, Industry and Health and Wellbeing.

However, the main benefit is spatial. Each car creates the need for 3 – 7 car spaces in an urban area located either in surface parking or basement/multi-storey parking. Each car space occupies 12.5 sqm meters plus additional space for access. A halving of the national fleet of cars from 2.1 million would free up 8,000-10,000 hectares of space. As a measure of the scale, this is more than enough land to accommodate the entire 500,000 home building requirements of the National Development Plan up to 2040.

Alternatively, this area would sequester 70,000 tonnes of carbon per annum if afforested. Furthermore, this will not appear on the Government's balance but cars that are not owned are not driven.

Freeing up car spaces in cities creates space for tree planting improving air quality and sequestrating carbon. It also frees space for walking and cycling paths, allowing people to safely access school and work.

There are multiple benefits for the built environment of eliminating cars. It will reduce the need for underground car parking in apartments potentially reducing costs by up to

[17] See, the impact of carsharing on car ownership in German cities.

[18] Oslo propose to exclude cars from the central area of Olso to reduce carbon but also to help bring life to downtown areas by removing space from cars. Read more.

€36,000 per apartment[19]. This approach is already supported by Dublin City Council through reduced car parking requirements where 'pay for use car sharing clubs' are available on site.

Secondly, this would reduce one of the most significant proportion of embodied carbon for built area – approx. 1 tonne per square meter of underground carparking.

Co-benefits

- Reduction in car fleet by 50% will free up land for 100's of thousands of houses from car spaces.
- Car reduction will enable extensive tree planting to occur in towns and cities creating healthier more attractive places and protecting biodiversity.
- Will radically reduce the need for green field sites for new housing development.
- Will create space for walking and cycling.
- Reduction in embodied carbon for maintenance and construction of road infrastructure for cars.
- The elimination of 1 million cars would save between 6.5 million tonnes of carbon and 10million tons of carbon from avoided manufacture of the cars.[20]
- It reduces the car related debt freeing up capital for investment in deep energy renovation.

Action 12. Fossil Free Transport.

All transport in built up areas needs to be carbon emissions free. A key benefit of this will be to improve air quality in our towns and cities making them attractive for higher density living. Higher density living is associated with lower overall carbon emissions. With certification systems such as Well[21] taking in Ireland requiring very high levels of indoor air quality it is important that this is not achieved through energy intensive air filtration.

Co-benefits

- Improves air quality in towns and cities.
- Reduced energy requirement for filtration of air in high end office buildings.
- Reduced noise levels from transition to EVs.

Action 13 – Carbon free electricity

- End coal and peat fired electricity immediately
- Transition to zero carbon electricity by 2040

We support the decarbonisation of electricity as this will assist in the move to Zero Carbon buildings. Buildings can play their part as discussed in **action 2 – Smarter Energy** in enabling greater penetration of variable renewables such as wind and solar.

[19] The Real Costs of New Apartment Delivery - Analysis of Affordability and Viability - SCSI Report sets out the cost reductions where car parking requirements are reduced.
[20] Ricardo Study – Life cycle assessment of cars
[21] There are 2 certified Well buildings and an estimated 12 registered for certification in Ireland. This is expected to increase rapidly in coming years.

Co- Benefits

- Increases competitiveness of Irish products as consumers seek verified data on carbon content through EPD.
- Improved air quality.

TOOLS AND SUPPORTING MEASURES

- **New buildings**

An integrated approach requires all factors that impact the built environment's carbon emissions to be measured. To this end, the Irish Green Building Council and its members have developed tools such as the Home Performance Index certification[22] system. This offers one coherent integrated approach to reducing households' carbon emissions. It can be used by policy makers, planners, developers and banks to procure, develop and finance low carbon homes. It includes indicators to ensure new homes are truly resource efficient and enable their occupants to lead low carbon lifestyles. Thousands of homes will enter certification with this system in 2019. The Home Performance Indicators could support government in tackling climate change under the National Planning Framework.

It also makes it easier for banks and investors to identify green investments, allowing them to offer green mortgages as over 40 banks across Europe are now doing. To this end we have been working with the European Mortgage Federation on the development of green mortgages in Ireland.

- **Embodied Carbon**

To drive the shift towards truly net zero emissions buildings, we have developed programmes to raise awareness about embodied carbon in buildings. For instance, we run an Environmental Product Declarations programme, EPD Ireland. This allows Irish manufacturers to create, have verified and publish the environmental impacts of their products.

The Irish Green Building Council participates in the Carbon Heroes programme to measure the embodied carbon of 1000 buildings across Europe including Ireland. This will help generate benchmarks for embodied carbon across Europe and for Ireland and the first results are expected in Septembers 2019.

- **Energy Renovation**

For 2 years, IGBC worked in close cooperation with the Department of Communications, Climate Action and Environment (DCCAE) to build a community of experts and stakeholders to develop Ireland's new National Renovation Strategy. Close to 200 key stakeholders took part in a process which led to the publication of a set of recommendations for a better National Renovation Strategy.

The IGBC and its members are now working on the implementation of the strategy through programme which could support the government in achieving its targets.

- *Setting the Right Standards*: As the government currently considers regulation of minimum thermal efficiency for rental properties, the IGBC with support from the SEAI, is collecting case studies from other jurisdictions on how they are trying to tackle the split incentive between tenants and landlords. The IGBC is now liaising

[22] Home Performance Index has certified or is in the process of certifying over 2000 homes in Ireland in the social housing and private sector.

with key stakeholders to gain a better understanding of what this means for Ireland and will publish a set of recommendations on same in early April 2019. Read more.

- *Investing in Deep Energy Renovation*: The IGBC has been working with the European Mortgage Federation to develop an Energy Efficient Mortgage. EEMs are intended to finance the renovation of both residential and commercial buildings where there is evidence of an improvement in energy performance of at least 30%. 40 banks across Europe are currently piloting this approach. Read more.

- *Facilitating deep energy renovation*: To avoid lock-ins and encourage phased ambitious quality retrofit, the IGBC, in partnership with LIT are exploring the role a voluntary Building Renovation Passport could play in supporting large scale deep renovation in Ireland. Based on extensive research, stakeholder engagement and a small pilot in 2019-2020, a template of a Building Renovation Passport for Ireland will be developed. Read more.

- *Making sure we have the right skills*: Building professionals and construction workers are at the interface with property owners, they are a source of advice, and can influence users at key decision points. Yet, depending on training and engagement, they can act as advisers or as negative influencers. The IGBC and LIT are now working on the development of a user-friendly holistic energy efficiency accreditation of building professionals and construction workers. This should 1. Incentivise building professionals and construction workers to upskill in the area, 2. Guarantee closer alignment between professionals and construction workers, and 3. Allow end-users to clearly identify building professionals who have upskilled in the area, thus ensuring Irish citizens are at the centre of the transition to a low carbon society. Read more.