Call for Expert Evidence – Climate Action Plan 2021

Submission prepared by students on the MSc in Climate Change: Policy, Media and Society at Dublin City University

May 2021

Contact point:
Dr. Diarmuid Torney
School of Law and Government
Dublin City University
Glasnevin, Dublin 9
diarmuid.torney@dcu.ie

Executive summary

This submission to the Call for Expert Evidence for the Climate Action Plan 2021 has been prepared by some of the students enrolled on the MSc in Climate Change: Policy, Media and Society at Dublin City University. The submission does not necessarily represent the views of all students and staff involved in the programme.

We welcome the opportunity to contribute to this Call for Expert Evidence. Our key recommendations are as follows:

- **Carbon pricing and cross-cutting issues:** While carbon pricing forms an essential part of Ireland's climate action, inherent contradictions must be acknowledged. Carbon taxation assumes market primacy, attempting to correct the commodification of nature by placing a price on a negative externality. Climate change is an unprecedented disruption; it is naïve to assume our current economic model will continue unchanged, or that consumerism can solve a crisis caused by consumption. There is no consensus on "appropriate" pricing, but fossil fuel subsidies must be removed. The Programme for Government ring-fences revenue for socially just climate efforts; this is essential to the legitimation of any climate action.

- **Electricity:** The electricity sector will play a key role in transitioning to a net-zero economy. If other industries are to meet their goals, they will be dependent on the supply of electricity decarbonising first. Electrification will play a significant role in decarbonising the energy system. Currently, electricity meets c. 20% of final energy demand. The remainder is made up of mainly imported fossil fuels. Electrotechnologies are improving and should be capable of providing more than 50% of final energy demand from electricity by the mid-2040s. To achieve such levels of electrification, many barriers will need to be removed and the initial momentum on decarbonisation needs to be nurtured.

- **Built environment:** The built environment has an important role to play in Ireland's decarbonisation process to 2030, with the bulk of the heavy lifting needed in residential – where emissions must be cut by over 50% – and to a lesser extent in commercial and public services, where emissions must fall by a third. Given Ireland's housing crisis, achieving critical mass in residential decarbonisation is both problematic and an opportunity. The scale of the effort requires widespread household participation for targets to be met. Therefore, a coherent and branded government plan, rather than a series of piecemeal initiatives, will be required.

- **Transport:** The transport sector is responsible for the second-highest share of GHG emissions, and has a long way to go to become carbon neutral by 2050. The current trajectory of depending on the transition to electric vehicles to reduce emissions is unrealistic. There needs to be a greater emphasis on making deeper changes within society by focusing on public transport and changing the public's behaviours around transport. Although technology and science are playing a major role in tackling climate change, over-reliance on them to solve the issue is naïve and will have major long-term consequences.

- **Agriculture, land use, forestry and marine:** There is an opportunity to build a more sustainable relationship with our land and seas. However, the intense commodification and financialisation of our land has set us on a path of unsustainable growth. A business-as-usual approach has created these issues and thus does not hold the answers. We need to radically rethink our relationship with nature and transition farmers from product producers to custodians of our land; this must include a reduction of the national herd, a focus on biodiversity and a diversification of crops, all within the framework of a just transition.

- **Public sector leading by example:** The public sector is large in both scale and scope, encompassing government departments, commercial semi-state companies, state bodies, and other entities. It has a unique role to play in supporting Ireland's climate transition through making a direct contribution to mitigation and adaptation activity, while also leading the way for wider society. This is an onerous responsibility which requires the public sector to recognise the climate emergency, step up its own ambition, and be accountable for delivery. A strategic, collaborative approach is needed that aligns climate mandates, appropriately prioritises resources, executes policy through action, and sets a trajectory to net zero by 2050.

- **Just transition:** The Climate Action Plan is an opportunity to create a thriving Ireland by identifying communities' needs and using the transition to a zero-carbon economy to meet them. In the absence of a strong legal definition within legislation that addresses the scale and complexity of the concept, this submission offers the following definition: A just transition is the foundation for all climate policy, requiring a whole-society approach to the creation of a zero-carbon economy that leaves no one behind. Financial sustainability, ecological protections and economic support for all should be prioritised during the transition to a zero-carbon future.

Table of contents

1. Introduction

This submission to the Call for Expert Evidence for the Climate Action Plan 2021 has been prepared by some of the students enrolled on the MSc in Climate Change: Policy, Media and Society at Dublin City University. We welcome the opportunity to contribute to this Call for Expert Evidence.

DCU's MSc in Climate Change: Policy, Media and Society was launched in September 2018. The programme examines how societies are responding to climate change, and how that response can be strengthened. It is the only Master's programme in Ireland focused on climate change that adopts a social science and humanities perspective on this challenge. It brings together DCU's distinctive strengths in the study of climate change governance and law, communications and media, societal transitions, and education. Further details of the programme are available at www.dcu.ie/dc669.

Students enrolled on the MSc in Climate Change had the option of taking a module entitled *Participation in climate change policy consultations* (module LG5053). The 20 students who chose this module contributed to writing this submission. As such, the submission does not necessarily represent the views of all students (or staff) involved in the MSc in Climate Change.

The process of formulating this submission was organised as follows. Students were allocated one of the Call for Expert Evidence topics, with 2–3 students allocated to each topic. The first step involved each student undertaking individual research on their allocated topic and writing a background research paper. The second step involved each group working together to pool their knowledge and produce draft proposals on their allocated topic, which they presented to the whole group for feedback. The third step involved each group producing draft text for the questions relating to their allocated topic. These were shared with the group as a whole for discussion, collation, and finalisation.

The submission below responds to seven of the nine topics contained in the Call for Expert Evidence. Within these seven topics, input is provided for most but not all questions. Where it was felt the group did not have the requisite expertise to provide informed input, no response is provided. The text below has been submitted to the online Call for Expert Evidence portal. The version below includes citations to relevant sources where appropriate.

The process of producing this submission was facilitated by Dr. Diarmuid Torney, an associate professor in the School of Law and Government at Dublin City University, who taught the *Participation in climate change policy consultations* module. Any questions regarding this submission can be directed to diarmuid.torney@dcu.ie.

2. Carbon pricing and cross-cutting issues

Question 1: What further opportunities exist within our taxation system, beyond measures already implemented and planned, to promote emissions reductions, either on an economy-wide basis, or in specific sectors?

It is irrational to price carbon while fossil fuel subsidies remain in place, acting as a negative price on emissions. An area requiring special consideration is indirect fossil fuel subsidies, as occurs with diesel and aviation fuel. Increased demand for diesel vehicles is due in part to the lower excise rate diesel enjoys. Excise tax parity between diesel and petrol would reduce emissions and raise approximately €500 million in revenue.[1] Commercial aviation fuel is directly subsidised in that it is untaxed; "private pleasure" aviation fuel is taxed as petrol, despite massive carbon emissions. In a recent public consultation on the Energy Tax Directive (ETD), the EU acknowledged that taxation should be based on the GHG content/joule basis, as well as consider other pollutants ($PM_{2.5}$, NOX, etc.).[2] In addition, the air travel tax should be reinstated and raised to €10. This should raise approximately €150 million a year,[3] and be allocated for research and development into low-carbon air travel. A site value tax has been proposed by the Green Party,[4] and a similar concept could be applied to farms. New taxation of land based on environmental impact would reward farmers acting as stewards, and charge others for intensive agricultural practices that affect air and water quality for the whole island. Ideally, farm subsidies would work the same way.[5] Ring-fencing this revenue for rewarding environmental stewardship should be considered.

Some of these recommendations, such as changes to diesel taxation, alterations to the ETD, and site value taxation, have been included in planning by the government and the EU. They should be moved from planning to implementation.

Question 2: What supporting policies might be required to offset the impact of any taxation changes on low income households or those most at risk from fuel poverty?

While it could be argued that fuel allowances are fossil fuel subsidies, they should remain in place. People receiving this subsidy are unlikely to have any control over their source of heating fuel; as the pace of retrofits picks up, it will increasingly come from renewable sources. Furthermore, even utilising highest-class heat pumps, electricity has a fairly low energy density relative to fossil fuels, sometimes resulting in higher operating costs. Fuel allowance support is vital to a just transition.[6]

A robust expansion of public transport will be essential to limiting the burden on vulnerable groups currently dependent on diesel cars, particularly in rural areas should diesel be taxed

[1] Morgenroth, Edgar, Martin Murphy and Kyle Moore (2018), *The Environmental Impact of Fiscal Instruments*. Dublin: Economic and Social Research Institute.

[2] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12227-EU-Green-Deal-Revision-of-the-Energy-Taxation-Directive/public-consultation

[3] https://www.irishtimes.com/business/transport-and-tourism/q-a-what-will-air-taxes-mean-for-your-pocket-1.4094198

[4] https://www.irishtimes.com/news/ireland/irish-news/greens-push-overhaul-of-property-tax-higher-carbon-tax-in-government-talks-1.4263350

[5] https://www.thejournal.ie/readme/opinion-cash-cow-subsidies-5402647-May2021

[6] https://www.seai.ie/publications/Domestic-Fuel-Cost-Comparison.pdf

appropriately. Fortunately, increased uptake of public transport accelerates reductions in a significant source of emissions.

Regarding the provision of clean energy alternatives, electric vehicle (EV) car sharing between friends, families and neighbours should be incentivised in order to provide necessary alternatives, but also reduce the overall number of vehicles on the road. Up-front state incentives could be pooled between individuals to enhance affordability of EVs. In order to implement car sharing, a scheme to enable the joint ownership of cars or similar is needed.

Renewable energy grants often favour those who can afford to invest. As such, community energy and retrofit grants should be prioritised first for those communities and groups that will still experience energy poverty as the carbon tax increases.[7,8]

Question 3: What further measures might be required in the planning system to realise the objectives of the National Planning Framework in respect of climate action?

To increase availability and uptake of public transport, especially in rural areas, a majority of the Citizens' Assembly (92%) recommended prioritising public transport spending over new road infrastructure spending at a ratio of no less than 2:1.[9] The 2019 Climate Action Plan Annex of Actions called for all National Planning Framework (NPF) funds to be reviewed and ensure that all funding prioritises spending on low-carbon investments.[10] It is unclear from the 2021 Interim Climate Actions if this review has been completed.

The NPF and the Climate Action Plan fall severely short in recognising opportunities in, and threats to, marine areas. They also fail to consider the mitigation and sequestration benefits of these areas, as well as the protection provided by Irish marine ecosystems from the impacts of climate change. The Climate Action Plan discusses marine areas only in plans for offshore renewable energy, while the NPF is entirely focused on extractive economic gains to be reaped from our oceans. This echoes findings on Irish planning policy,[11] and Ireland's underperforming status regarding marine protected areas.[12]

While the Climate Action Plan 2021 Interim Actions commit to revising the shadow price of carbon, the NPF fails to mention shadow pricing. The shadow price of carbon should be increased in line with the scale of the climate crisis and included in the NPF to send a clear signal that large-scale investment decisions must put the climate first.

Question 4: What specific additional measures might be required to promote sustainable growth in our urban centres, including to realise the potential of a "15-minute city"?

The concept of the "15-minute city" represents a real opportunity for a more sustainable framework of spatial planning in Ireland - planning that ensures that everyone's needs are met

[7] https://www.socialjustice.ie/content/policy-issues/budget-2021-carbon-tax-and-just-transition

[8] CCAC (2020). *Annual Review 2020*. Dublin: Climate Change Advisory Council.

[9] https://www.oireachtas.ie/en/debates/debate/dail/2019-04-17/32/

[10] https://www.gov.ie/en/publication/ccb2e0-the-climate-action-plan-2019/

[11] https://www.biodiversityimpactplan.ie

[12] https://europe.oceana.org/sites/default/files/oceana_2020_unmanaged_equals_unprotected_marine_paper_parks.pdf

within a short walk or cycle from their home, will reduce car use, promote hyper locality, and strengthen communities.[13] Proximity is a core element of the "15-minute city" and the ongoing Covid-19 pandemic has highlighted the need for the proximity of essential services. Proximity should be enhanced and policies should be put in place to take advantage of the reduction in car use. This could drastically reduce the number of car parking spaces in our cities to make space for safe, connected and segregated cycling routes. A curtailment of the space given to car parks and office space will create opportunities to create more green areas in the city, something that became essential to urban dwellers all over the world since the beginning of the Covid-19 pandemic.[14] Smaller communal gardens and pocket parks should be created in order to provide green space within a short distance of every resident, ensuring equal access.

Spatial planning for sustainability should go further than hyper proximity and encourage self-sufficiency in our cities. Vacant buildings and under-utilised car parks could be repurposed to provide urban community gardens, thereby improving the social cohesion of the area, increasing biodiversity,[15] and encouraging the sustainable production of food for residents.

Question 5: What specific additional measures might be required to promote sustainable growth in rural areas?

The focus on remote working as part of the Rural Development Policy is welcome. The policy mandates that 20% of public sector staff will be encouraged to work remotely and outlines the plan to provide legislation that will allow employees to request to work remotely.[16] We urge that remote-working policy measures for the private sector go further than allowing employees to request the right to work remotely, and that legislation be put in place to allow for 20% of private sector workers to also work remotely. Research carried out by National University of Ireland Galway has shown that 94% of people would like to work remotely in some capacity after the Covid-19 pandemic, 27% would prefer to work remotely every day, while only 6% said they would not like to work remotely at all.[17]

Currently, specialised and intensive farming is rewarded across Ireland. Not only does this leave farmers financially vulnerable, this approach to farming exacerbates climate change and negatively impacts biodiversity, habitats, and our water. High Natural Value (HNV) farmland is farmland in rural areas that has not historically been farmed intensively and has high biodiversity.[18] Many of these HNV areas face environmental deterioration. Given that these land types are not conducive to intensification, farmers in these areas are not rewarded for the essential ecological services this land provides. Nor are they economically incentivised by

[13] Moreno, Carlos, Zaheer Allam, Didier Chabaud, Catherine Gall, and Florent Pratlong (2021), "Introducing the '15-Minute City': Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities", *Smart Cities*, vol. 4, no. 1: 93-111.

[14] Ugolini, Francesca, *et al.* (2020), "Effects of the COVID-19 Pandemic on the Use and Perceptions of Urban Green Space: An International Exploratory Study", *Urban Forestry & Urban Greening*, vol. 56, https://doi.org/10.1016/j.ufug.2020.126888.

[15] Baldock, Katherine C.R., *et al.* (2019), "A Systems Approach Reveals Urban Pollinator Hotspots and Conservation Opportunities", Nature Ecology & Evolution, vol. 3, 363–373, https://doi.org/10.1038/s41559-018-0769-y.

[16] https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/#our-rural-future-rural-development-policy-2021-2025

[17] McCarthy, Alma, Katerina Bohle-Carbonell, Tomás Ó Síocháin and Deirdre Frost (2020), *Remote Working during COVID-19: Ireland's National Survey - Phase 2 Report*. Galway: National University of Ireland Galway, Whitaker Institute and Western Development Commission.

[18] http://www.high-nature-value-farmland.ie/what-is-hnv-farmland/

existing agricultural subsidies. These farms and farming families are essential to the vitality of urban villages across Ireland. Policies must be put in place to reward these farmers for the environmental benefits they provide and safeguard the viability of their farms and their produce.[19]

Question 6: Are there further measures that the Government should take to channel private finance into low-carbon investments in Ireland?

While the updated EU Institutions for Occupational Retirement Provision (IORP)[20] Directive's focus on disclosing the environmental impact of pension funds is welcome, it still provides people with the ability to "opt out" of learning more. A better approach could be tailored domestically to label pensions with the ecological and climatic risks, not unlike the nutrition labels on food or health warnings on cigarettes.

The Programme for Government mentions leveraging capital gains tax incentives to further low-carbon innovation, an admirable but vague goal. If the government intends to encourage the use of capital gains incentives, guardrails should be placed on such a scheme. A firm definition of what constitutes "low carbon" should be established and codified. Innovation that produces opportunities for vulnerable or disadvantaged groups should be given special consideration.

To signal the risks of further fossil fuel investment, the government should consider making explicit the parties liable for emissions and/or stranded assets, on either a one-off basis per project, or codified as a comprehensive policy.[21]

Question 7: Are any changes required in Ireland's research policy to channel research funding into climate action-related topics?

Community groups should be fostered to empower citizen scientists. For example, public funding could be provided for "hardware libraries" to enable monitoring of local air or water quality. The feasibility of the development of climate-friendly DIY kits, (e.g., EV motor/battery retrofits for legacy diesel vehicles) should be investigated.[22]

Research should be conducted to verify an appropriate carbon price, given Ireland is currently missing its emission targets and the ambition in the Climate Action Plan is not necessarily consistent with the EU Green Deal (e.g., the Green Deal calls for retrofitting buildings to "A" BER ratings[23]). Similarly, research should give insight into investment decisions that have the potential to create carbon lock-in and stranded assets. For example, investing in Liquefied Natural Gas will incur costs that could be redirected to climate goals, and avoid further emission increases.

---

[19] https://www.stopclimatechaos.ie/news/2021/04/27/towards-a-new-agricultural-and-food-policy-for-ire/

[20] https://ec.europa.eu/info/law/institutions-occupational-retirement-provision-iorp-directive-2003-41-ec_en

[21] Stech, Radoslaw (2013), "Review of *Climate Change Liability: Transnational Law and Practice* by Richard Lord, Silke Goldberg, Lavanya Rajamani and Jutta Brunnée", *Journal of Environmental Law*, vol. 25, no. 1, 168-171.

[22] Pritchard, Helen, Jennifer Gabrys and Lara Houston (2018), "Re-calibrating DIY: Testing Digital Participation Across Dust Sensors, Fry Pans and Environmental Pollution", *New Media & Society*, vol. 20, no. 12, 4533–4552.

[23] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1603122220757&uri=CELEX:52020DC0662

The economic cost of failing to reach emissions targets and failing to take action early on critical areas should be used to expedite action. As well as the end-point target for GHG emissions reduction, the trajectory is also important.[24] Early decarbonisation is required to decrease the burden of implementation post-2030, a period that will require steep emissions reductions.[25]

The Climate Action Plan places a strong emphasis on research pertaining to climate science and new technologies. While there is no doubt that technological and scientific research is incredibly important, as we emerge from the Covid-19 pandemic, priority research areas should be expanded to include the humanities and the arts to ensure we are equipped to achieve both the technological and societal change necessary to avert the worst of the climate crisis. Research should also be carried out to establish a mechanism in which investment decisions are not only guided by the price of carbon, but by the value of natural capital.[26]

Question 8: Is there any additional information you would like to submit in relation to Carbon Pricing and Cross-Cutting Issues?

Current policies assume continued growth, but growth is at odds with climate action. Carbon pricing alone is insufficient to address the climate crisis; by focusing on the allocation of carbon allowances,[27] it can distract from the sharp reduction and elimination of emissions required.

While ambitious, the carbon price trajectory requires further increases to meet 1.5°C of warming guidelines.[28] This brings with it many implications for use of revenues and availability of supporting mechanisms to encourage behaviour change and provide adequate support to all. Current welfare payments are inadequate for the lowest-income households based on current carbon prices.[29] Carbon tax revenues should be distributed on a differentiated basis to assist those most vulnerable.

The use of carbon pricing tools should not result in negative impacts on other areas of environmental concern, by placing a carbon equivalency on all "tradable" commodities. The ability to use offsets from afforested land, deforested land, managed cropland, managed grassland, managed forest land and managed wetland, when considering compliance with emissions targets, is problematic. It allows the postponement of action to reduce emissions, and therefore reduces ambition regarding emissions reduction in this area.[30] Promoted solely as a means of sequestering carbon, 70% of afforestation projects will consist of short-rotation monoculture conifer plantations,[31] with disastrous habitat and biodiversity impacts. Additional mechanisms, such as natural capital valuations, are needed to ensure other areas of environmental concern are not crowded out by a fixation on carbon pricing.

---

[24] https://www.climatecaseireland.ie/climate-case/

[25] CCAC (2020). *Annual Review 2020*. Dublin: Climate Change Advisory Council.

[26] Costanza, Robert, *et al.* (2014), "Changes in the Global Value of Ecosystem Services", *Global Environmental Change*, vol. 26, 152-158.

[27] Gowdy, John M. (2008), "Behavioral Economics and Climate Change Policy", *Journal of Economic Behavior & Organization*, vol. 68, no. 3–4, 632-644.

[28] https://openknowledge.worldbank.org/bitstream/handle/10986/33809/9781464815867.pdf

[29] https://www.climatecouncil.ie

[30] O'Gorman, Roderic (2020), "Climate Law in Ireland: EU and National Dimensions", in David Robbins, Diarmuid Torney and Pat Brereton (eds.), *Ireland and the Climate Crisis*. Cham: Palgrave.

[31] https://greennews.ie/urgent-overhaul-forestry-needed/

3. Electricity

Question 1: What options are available to increase the penetration of renewable electricity beyond the 70% committed to the Climate Action Plan 2019?

Small Modular Reactors (SMR) are small-scale nuclear fission reactors that would address the issue of intermittency and energy security associated with wind and solar energies. Pursuing this technology could contribute to a just transition by providing employment for workers in industries that are becoming more redundant as we transition to a low-carbon society. As modular units, they can be built in a controlled factory environment and at a lower investment than a nuclear power plant.[32] In terms of waste, opportunity exists to utilise products (such as plutonium) from existing plants, such as Sellafield, which are no longer in use. SMRs would require an amendment to Ireland's Electricity Act 1999 which prohibits electricity being generated through nuclear fission.

At present, there are few battery facilities operational in Ireland, meaning that the state will struggle to have the storage capacity needed to go beyond 70% penetration of renewable electricity.[33] Battery facilities would address intermittency issues as surplus energy harnessed during times of peak output could be stored and used at times of lower output. To encourage the investment in battery facilities, there is a need to provide incentives like those that have been used to encourage investment in solar and wind.

To see an increase in the uptake of microgeneration, the process of selling electricity back to the grid needs to be made more straightforward. For homeowners and small businesses to be motivated to micro-generate, potential caps introduced by energy suppliers should not be permitted and a market price, reflective of cost of unit of electricity, needs to be paid.

If Ireland implemented a Green Hydrogen strategy, the state could potentially become a world leader in the production of an increasingly important renewable.

Question 2: What can be done to increase the uptake of offshore wind and solar PV in particular, in the context of the Programme for Government ambition?

To increase the uptake of offshore renewable energy, a further planning regime is required, setting out connectivity to the grid and a process for participating in the electricity market. The Department of Housing, Local Government and Heritage staff will require sufficient training and expertise to meet the processing of applications efficiently.[34]

The east coast is increasingly under electricity-demand pressure. Developing more renewable sites in this region is essential for an efficient national grid, and must be incentivised. Policy should require large electricity users, such as data centres, to locate close to sources of renewable energy. Such an approach would entail corporations utilising the existing grid infrastructure and locating in the west and south. These companies would sign CPPAs with renewable providers, which would entice more investment in renewables in those regions.

[32] https://policyexchange.org.uk/wp-content/uploads/2018/01/Small-Modular-Reactors-1.pdf
[33] https://windenergyireland.com/images/Article_files/Final_Baringa_70by30_Report_web.pdf
[34] https://www.windpowermonthly.com/article/1683761/ireland-fast-tracks-seven-offshore-wind-farms

To reduce energy wastage, improvements to the grid's capabilities are needed.[35] This would increase investor confidence and therefore the likelihood of more renewable development.

A scheme to promote the conversion of farmlands to solar farms would offer those involved in agriculture another source of revenue. As solar farms can simultaneously allow land use for other purposes, like grazing livestock,[36] such a scheme would increase the uptake of solar and support rural business.

Tax relief should be provided for electricity derived from solar that is both self-consumed and self-produced. Grants or a payment scheme should be reintroduced.

With CPPAs limited to corporations, large companies could dominate the participation in these projects. There should be governmental oversight and regulations around limiting participation. Policy should be drafted to provide access for individual/collective participation in these schemes through a regulation specifying that a certain percentage of CPPAs have to be reserved for smaller players.

Question 5: What other opportunities exist to support the decarbonisation of the electricity sector?

Green Hydrogen can support Ireland's transition to a low-carbon economy and society. It can provide large-scale storage of renewable energy over long periods of time and act as a mechanism to transport it from regions of supply to centres of demand. Green Hydrogen can be developed in Ireland to meet our needs and beyond. However, it will need governmental support to facilitate its development, including an investment agenda, integration strategy and detailed policy.

Wave and tidal energy, unlike other renewable energy sources, are predictable over long timescales. With a coastline approximately 7,500 kilometres in length, Ireland is ideally located to benefit from marine energy resources. This significant wave and tidal energy resource could substantially contribute to the island's national energy plan. However, with engineering to capture wave energy still posing considerable challenges, the government should invest in the research and development of the potential for such renewable technologies in Irish waters. Ireland could benefit from monitoring the progress of China, which is planning to establish a support framework for the development of ocean energy.

Biomass could be used to provide some backup to Ireland's power supply; however, this is unlikely to be a sustainable solution for more than a small part of our electricity system. Biomass also has sustainability limitations.

Unlike large hydropower plants, smaller hydropower plants can be sourced at a lower cost. These hydroelectric developments have the potential for providing remote areas with electricity.

[35] https://www.seai.ie/publications/Energy-in-Ireland-2020.pdf

[36] Meneses, Lisandra (2016), "Solar Energy in Ireland – A Position Paper", *Current Journal of Applied Science and Technology*, vol. 18, no. 3, 1-16.

Question 6: What measures might be taken to improve the resilience of the electricity system to the impacts of climate change?

The government should develop policy and regulation on grid power-sharing / local development plans, smart grids, development of infrastructure, planning and location, as well as tariff structure. Policy should balance Ireland's economic and security needs with the decarbonisation targets and should operate, where possible, in collaboration with other sectors.

The government could develop a corporate licencing process in conjunction with the IDA to include a requirement for businesses, such as data centres, to seek a licence to operate within the state. In addition to this, data centres could be required to source their own renewable energy with a commitment that any excess be sold back to the grid at a pre-agreed price.

A detailed planning regime for offshore wind is required if we are to meet our targets. Such a regime will need to include policy, targets, infrastructure, and a system for connectivity to the grid as well as a process for participating in the electricity market.

Renewable energy resourcing for electricity in Ireland is highly dependent on climate-related factors and alternative solutions will need to be considered to support the country's energy transition. The government should invest in research into better methods to predict the weather and how energy technology may be impacted by climate change.

To reduce the risk to the provision of electricity during weather events, the government should consider moving power lines more vulnerable to the effects of climate change underground. Ireland could avail of funding from the EU climate change fund or funding from the Carbon Fund could be made available to cover the cost.

4. Built environment

Question 1: Can Ireland exceed the target of retrofitting 500,000 homes by 2030? If so, how?

This target is extremely challenging given current demand levels for retrofits in Ireland. The immediate focus should be on delivering a demand and supply infrastructure capable of building and delivering an annual run-rate in excess of 50,000 by 2025. Measures aimed at demand stimulation could include tapping household preference for savings[37] with a socially progressive SSIA-type scheme as floated by Credit Union Development Association;[38] the introduction of green bonds to finance schemes;[39] and / or by tax incentives similar to the Ecobonus in Italy.[40,41,42]

Further measures are also needed to ensure a uniform upgrading to BER B2 and prevent piecemeal household adoption of lower standards. Such measures could include the development of a national branded campaign on retrofit to B2 standards and a national 'Green Corp' type body to lead same.

Research in the UK has demonstrated that the "hassle factor" is a blockage to retrofits and that end-to-end services that combine funding with project management could help overcome this resistance to act.[43] Here, initiatives such as that provided by An Post's Green Hub should be reviewed and, if seen to be successful, could be built upon and expanded to other providers.[44] Further information on One Stop Shop is provided by Sustainability Works[45] and a report by the International Energy Research Centre.[46]

Consideration could also be given to pay-as-you-save models with utilities leveraging scale to secure cheap financing via entities supported by the European Investment Bank. Headline interest rates well below current market rates of 5–8% for green loans would help incentivise adoption.

Question 2: How should Ireland's training and education system scale to meet the skills requirements to achieve this target?

Measures here are aimed at increasing supply and include an expansion of the climate-related skills programmes launched and run by Skillnet Ireland.[47] Ireland could also look towards the German model which produces well-trained workers in substantial numbers, through a dual

[37] https://www.aviva.ie/content/dam/aviva-public/ie/pdfs/aviva-family-finance-july-2018.pdf
[38] https://www.rte.ie/news/business/2021/0313/1203854-energy-costs-going-up-is-a-retrofit-worth-the-expense/
[39] https://www.ft.com/content/61195ec8-2488-4f6d-9806-efaaecc6c2b5
[40] https://igees.gov.ie/wp-content/uploads/2020/11/SEAI-Energy-Efficiency-Grant-Schemes.pdf
[41] https://taxing.it/tax-relief-for-a-new-air-conditioner/
[42] Zuhaib, Sheikh, *et al.* (2017), "Attitudes and Approaches of Irish Retrofit Industry Professionals Towards Achieving Nearly Zero-Energy Buildings", *International Journal of Building Pathology and Adaptation*, vol. 35, no. 1.
[43] Climate Change Advisory Council (2020). *Annual Review 2020*. Dublin: Climate Change Advisory Council.
[44] https://www.anpost.com/Green-Hub/Home-Energy-Upgrade-Service
[45] https://superhomes.ie/new-handbook-financing-energy-efficiency-retrofit-in-the-residential-sector/
[46] http://www.ierc.ie/wp-content/uploads/2021/04/IERC-Retrofit-Co-Benefits-Paper_Final_Digital.pdf
[47] https://www.skillnetireland.ie/skillnet-ireland-and-cif-join-forces-to-tackle-skills-shortages/

vocational education and training system, or Dual Vet.[48] The Dual Vet system is made up of three-year training programmes equally split between in-class learning and on-the-job training under the supervision of skilled mentors.

Question 3: Should Government consider bringing forward a phase out of installation of fossil fuel boilers?

Consideration should be given to bringing forward the phase-out of installation of fossil fuel boilers for new builds, citing examples from multiple cities in California.[49] New builds with Nearly Zero Energy Building standards have ready-to-go energy performance standards suitable for heat pumps.

Banning fossil fuel boilers in existing buildings is more problematic and is contingent on replacing them with heat pumps, which are only cost effective for households with higher BER ratings. Given the slow early pace of B2 retrofits, forcing households to install heat pumps between 2021 and 2025 when their homes may have poor energy performance will lead to much higher electricity bills. While this may act as an incentive to some to upgrade their BER rating, others may not be in a financial position to do so, having to invest in the more expensive heat pump and pay higher electricity bills. This could prompt antagonism and backlash to the climate action agenda. As an alternative measure to deter long-life carbon emissions from fossil fuel boilers installed over the next four years, an incentive scheme could be put in place to offer a 50% state contribution to heat pump installation before 31 December 2025, with a sliding scale thereafter.

Over the longer term, Ireland could look to Italy, which leads the way in the EU for heat pump installation, and examine tax incentives similar to the Ecobonus.[50,51,52]

Question 4: Should further specific changes be made to Ireland's building standards be introduced to support the decarbonisation of Ireland's private and commercial building stock?

Yes. Measures could include making solar PV mandatory on all commercial and public services buildings (with a sliding annual incentive scheme and a future fixed mandatory adoption point for existing stock).

Question 5: What emerging technologies (e.g., in relation to heating, lighting, and/or building fabric) should be considered for use in Ireland's construction industry to promote further decarbonisation?

Solar power is an underdeveloped technology in Ireland. In a 2018 report for the Irish Solar Energy Association entitled, '*A Brighter Future: The Potential Benefits of Solar Energy in*

[48] https://www.dw.com/en/germany-exports-a-secret-of-its-success-vocational-education/a-38114840

[49] https://www.nationalgeographic.com/environment/article/gas-heat-and-stoves-are-warming-the-climate-should-cities-start-banning-the,

[50] https://igees.gov.ie/wp-content/uploads/2020/11/SEAI-Energy-Efficiency-Grant-Schemes.pdf

[51] https://taxing.it/tax-relief-for-a-new-air-conditioner/

[52] Zuhaib, Sheikh, *et al.* (2017), "Attitudes and Approaches of Irish Retrofit Industry Professionals Towards Achieving Nearly Zero-Energy Buildings", *International Journal of Building Pathology and Adaptation*, vol. 35, no. 1.

Ireland', KPMG held that "Ireland has significantly underexploited solar resources, especially in the south".[53]

The wider rationale for an enhanced solar market is its visibility. Operating to the principle of "seeing is believing", the widespread presence of solar panels on buildings across the country would arguably do more to drive awareness of renewable energy and climate action than other forms of climate action.

Consideration should be given to prioritising solar and accelerating this transition under the Smart Metering Programme. This will enable micro-generation at household level and provide for those households to sell surplus electricity back to the grid. The ability of households to become 'prosumers', where they have equity and financial return, in generating their own energy would be a change towards active citizen participation and would help deepen commitment to climate action in Ireland.

Consideration should also be given to the range of incentives as itemised by the 2018 KPMG report cited above.[54] The incentives should aim to make solar PV an essential part of the B2 retrofit package.

International evidence highlights a positive demand response to proactive public policies. In Spain, the removal of the so-called 'sun tax' in 2018 stimulated demand with household consumption of solar PV almost doubling in 2019 to 19% of the overall market.[55]

Question 6: What supports can we provide to assist the greater use of low-carbon building materials? How much consideration should be given to embodied carbon in construction materials?

Awareness among builders should be increased by creating an educational module for the state's retrofit training programme[56] on the various low-carbon building materials available. The price of low-carbon materials should also form part of this training module given that perceived higher costs are a barrier for many builders.[57] Where high costs *are* an issue, builders should be incentivised by providing tax relief or rebates on these materials.

The Circuléire website[58] is an ideal hub to showcase construction companies using low-carbon or recycled materials, while innovation and support among Irish producers of new low-carbon alternatives should be fostered. These innovations include Terratonics, an alternative to concrete foundations. A disruptive green technology, it produces 90% less emissions, uses 100% less water and requires 70% fewer site deliveries.[59]

---

[53] https://irishsolarenergy.org/wp-content/uploads/2019/11/A-Brighter-Future.pdf
[54] Ibid.
[55] https://www.pv-magazine.com/2021/01/29/solar-for-self-consumption-keeps-growing-in-spain/
[56] https://www.gov.ie/en/press-release/16253-minister-harris-announces-four-new-retrofitting-centres-of-excellence/
[57] Giesekam, Jannik, John R. Barrett and Peter Taylor (2016), "Construction Sector Views on Low Carbon Building Materials", *Building Research & Information*, vol. 44, no. 4, 423-444.
[58] https://circuleire.ie/
[59] https://www.irishtimes.com/business/innovation/not-just-another-brick-in-the-wall-1.4364423

While embodied carbon can account for anywhere up to 80% of whole-life carbon emissions,[60] these emissions are not currently regulated in Ireland.[61] France and Finland are moving towards legislation around life-cycle assessment (LCA) requirements for the construction industry, while regulations in the Netherlands and Germany already require whole-life carbon assessments on many projects.[62, 63] With these developments expected to increase momentum for wider market penetration of environmental product declarations,[64] Ireland should follow suit.

The use of the Embodied Carbon in Construction Calculator (EC3) in all public sector builds and renovations should be explored. This cloud-based, open-source tool uses data to choose low-carbon materials. By using EC3, Skanska US has reduced embodied carbon in its projects by up to 30% without increasing costs.[65]

Question 7: Are there specific technologies that should now be prohibited?

There should be a gradual phase-out of traditional cement, which accounts for up to 8% of global CO_2 emissions annually.[66] It is also a key ingredient of concrete, which requires vast amounts of water for its production. In 2012, concrete production was responsible for 9% of global industrial water withdrawals. By 2050, it is estimated that 75% of the water demand for concrete production will likely occur in regions experiencing water stress.[67]

Construction companies should be encouraged to use lower-carbon alternatives to traditional cement (CEM I), which has an estimated carbon footprint of 850kg of CO_2 per tonne. Next-generation CEM II is produced by substituting CEM I's 95% clinker content with fly ash and limestone. However, even the newer CEM II products have an estimated carbon footprint of 750kg of CO_2 per tonne.[68]

One of the latest cement iterations, Ecocem GBBS, is made from Ground Granulated Blastfurnace Slag (GBBS), a by-product from the manufacture of iron. There is no quarrying required for this product, it requires very little energy to produce,[69] and can be used as a direct replacement for ordinary cement to produce lower-carbon concrete.[70]

---

[60] Ibn-Mohammed, T., *et al.* (2013), "Operational vs. Embodied Emissions in Buildings—A review of Current Trends", *Energy and Buildings*, vol. 232-245.

[61] https://www.igbc.ie/what-is-embodied-carbon/

[62] https://ec.europa.eu/environment/eussd/pdf/LEVEL(S)%20CONFERENCE%20REPORT.pdf

[63] Giesekam, Jannik, John R. Barrett and Peter Taylor (2016), "Construction Sector Views on Low Carbon Building Materials", *Building Research & Information*, vol. 44, no. 4, 423-444.

[64] https://www.worldgbc.org/sites/default/files/WorldGBC_Bringing_Embodied_Carbon_Upfront.pdf

[65] https://www.mckinsey.com/business-functions/operations/our-insights/data-to-the-rescue-embodied-carbon-in-buildings-and-the-urgency-of-now%23

[66] https://essd.copernicus.org/preprints/essd-2019-152/essd-2019-152.pdf

[67] Miller, Sabbie A., Arpad Horvath and Paulo J. M. Monteiro (2018), "Impacts of booming concrete production on water resources worldwide", *Nature Sustainability*, vol. 1, 69–76.

[68] https://www.engineersireland.ie/Covid-19-information-base/low-carbon-cement-and-its-role-in-sustainable-construction

[69] https://www.igbc.ie/wp-content/uploads/2018/06/IGBC-Report-Web-Final-21.06.18.pdf

[70] https://www.engineersireland.ie/Covid-19-information-base/low-carbon-cement-and-its-role-in-sustainable-construction

Ecocem GBBS already had a 95% lower carbon footprint of 42kgCO_2 per tonne than traditional cement, but in 2019, the company revised its environmental product declarations by approximately 24%, achieving a carbon footprint value of 32kgCO_2 per tonne.[71]

Question 9: Are there specific household behaviour changes that should be considered? Should such changes be mandated by way of regulatory changes?

The massive disconnect between the demand for retrofit and the stated annual targets strongly indicates a motivation problem among the general public.[72] The following is a first-step proposal designed to help build greater national awareness and understanding of the B2 retrofit to assist motivation:

- Mandatory BER assessments for all properties (currently only selling or renting);
- Revised BER assessments for all properties with BER certificates older than 10 years (to capture improvements made subsequently);
- Run via Revenue LPT national register (in place and co-ordinated with SEAI register);
- Flat fee per house size via Revenue rebate (to discourage BER price inflation);
- New BER assessment to include go-to list to achieve B2 rating;
- State support for additional BER assessor pool / upskilling for existing pool as brand ambassadors for B2;
- New BER register to provide more accurate analysis;
- New national BER B2 campaign to drive awareness.

Separately, the 'split incentive' problem for landlords could be helped by an incentive / push policy response to include a sliding scale annually of tax incentives plus a mandatory B2 by a fixed date.

Question 10: What specific further measures should be considered to promote decarbonisation of Ireland's existing commercial buildings?

A roll-out of tax incentives should be undertaken, as outlined in previous answers.

In addition, the promotion of the importance of healthy office environments for staff (i.e., workplace wellbeing based on areas such as air quality, heat and humidity) could be developed by the HSA. A 'Best Buildings for Work' list ought to be established, potentially piggybacking on the Great Place to Work initiative.[73] Competition could be created within the private sector to improve built-environment standards and make their buildings more attractive to staff.

Consideration should be given to the establishment of an awareness-raising programme for SMEs on the benefits of smart technology to regulate heating, lighting and humidity when work

[71] https://www.irishbuildingmagazine.ie/2019/04/26/ecocem-ireland-revises-environmental-product-declaration/
[72] https://assets.gov.ie/90215/288fca06-a376-4110-87e5-5cfa45917f03.pdf
[73] https://www.greatplacetowork.ie/

spaces are not in use.[74] Currently, small Irish companies are lagging behind their EU counterparts even on the adoption of basic technologies such as e-invoicing and cloud computing.[75]

Question 11: Is there scope to further develop and deploy district heating opportunities in Ireland?

Ireland is somewhat of an anomaly in the EU in terms of district heating, which remains an unexplored and underdeveloped way to decarbonise the heating sector of towns and cities across the country.[76] Examples across the EU demonstrate how the technology provides low-carbon heating to cities and towns.[77,78,79] An accelerated exploration of the potential of district heating in Ireland is merited,[80] including opportunities to utilise zero-carbon heat currently not being captured and recycled.

Question 12: What specific approaches should be taken to accelerate decarbonisation of Ireland's public sector building stock?

Already-proven decarbonisation methods and technologies should be used where possible to save time and money. Some public sector bodies are already leading by example. For instance, Dublin City Council (DCC), the country's largest local authority in terms of population and number of councillors, improved its energy performance by 36.5% between the baseline year (an average of 2006-2008) and 2019, representing a saving of 75 GWh (17,315 tonnes) of CO_2. DCC successfully achieved its 2020 energy efficiency target ahead of schedule.[81]

Elsewhere, one Dublin fire station – in Kilbarrack – implemented its own Green Plan which is now being rolled out across the Dublin Fire Brigade network. Some of the energy-saving initiatives included the installation of a new heat-management system, which has reduced electricity consumption by 80%. The station was also retrofitted with sustainably sourced doors, windows and panels, reducing emissions from the building envelope by 10 tonnes per year while 80% of the station's hot water needs are produced by thermodynamic panels.[82]

To that end, a central public sector database should be created where the state's approximately 4,400 public bodies (of which 4,000 are schools)[83] can register the successes and challenges they faced, and learnings gained from their decarbonisation journey. This would enable the sharing of knowledge across the public sector as a whole. It would also provide momentum to any entities which have not yet considered the existing decarbonisation technologies available.

---

[74] https://www.ukconstructionmedia.co.uk/features/smart-technology-buildings/

[75] https://www.irishtimes.com/business/technology/irish-small-businesses-still-behind-on-adopting-technology-1.4491051

[76] https://www.districtenergy.ie/images/files/irdea-dh-policy-framework-submissionfinal28220.pdf

[77] Connolly, D. *et al*. (2014), "Heat Roadmap Europe: Combining District Heating with Heat Savings to Decarbonise the EU Energy System", *Energy Policy*, vol. 65, 475-489.

[78] Hast, A. *et al*. (2018), "District Heating in Cities as a Part of Low-Carbon Energy System", *Energy*, vol. 152, 627–639.

[79] Lake, A. *et al*. (2017) "Review of District Heating and Cooling Systems for a Sustainable Future", *Renewable and Sustainable Energy Reviews*, vol. 67, 417–425.

[80] https://www.districtenergy.ie/images/files/irdea-dh-policy-framework-submissionfinal28220.pdf

[81] https://councilmeetings.dublincity.ie/documents/s30966/2019_DCC_Energy_Review_Web.pdf

[82] https://www.codema.ie/think-energy-home-hub/think-energy-at-work/neil-mccabe/

[83] Climate Change Advisory Council (2020). *Annual Review 2020*. Dublin: Climate Change Advisory Council.

A similar database of green public procurement service providers should be created which could be accessed by all public bodies.

Question 13: What other opportunities exist to support the decarbonisation of Ireland's building sector?

Several new and existing technologies could be employed.

Mass timber – large structural panels, posts, and beams glued under pressure or nailed together in layers – is superior to concrete and steel. Proponents insist that using mass timber would avoid the associated CO_2 generated by the production of concrete and steel, while huge amounts of carbon could be sequestered in these buildings for decades. However, there are also concerns about the sustainability of this building material, particularly around forest management and how much carbon would be emitted in the logging, production and transportation of the wood products.[84]

Perhaps the most significant potential is in smart office buildings. Smart systems allow lighting, heating, air conditioning and ventilation to be monitored and adjusted according to usage and occupation. Energy wastage is minimised by turning off heating and lighting when an office is empty. Intelligent building facades can also be used to control the heat and light entering the building in response to changing weather conditions.[85] The next generation of energy-efficient smart buildings have their own sources of power generation and some are even able to generate more energy than they consume, with the extra energy being returned to the grid.[86]

Elsewhere, new developments in 3D printing should be explored. A 1,000 sq ft home in France was printed in 54 hours as a model for social housing,[87] while Project Milestone – the world's first 3D printed housing complex – is being built in the Dutch city of Eindhoven.[88]

Question 14: Are there further specific measures and policies, including through planning and building regulations, that might improve the resilience of our building stock to climate change?

There should be increased focus on urban green infrastructure (GI). GI supports biodiversity while also helping to combat climate change-induced stresses.[89]

Food produced through urban gardens, clean air, climate regulation, flood prevention, pollination, and recreation are among the many ecosystem services provided by GI. These are particularly important in urban areas which have the highest population densities.[90]

---

[84] https://e360.yale.edu/features/as-mass-timber-takes-off-how-green-is-this-new-building-material

[85] https://www.ukconstructionmedia.co.uk/features/smart-technology-buildings/

[86] https://www.openaccessgovernment.org/smart-technologies-help-commercial-buildings/71639/

[87] https://www.businessinsider.com/french-family-is-first-to-live-in-3d-printed-home-2018-9?r=US&IR=T#yhnova-was-printed-in-54-hours-and-contractors-spent-the-next-four-months-adding-windows-doors-and-the-roof-1

[88] https://3dprintedhouse.nl/en/

[89] Pamukcu-Albers, P. *et al* (2021), "Building green infrastructure to enhance urban resilience to climate change and pandemics", *Landscape Ecology*, vol. 36, 665–673.

[90] https://www.eea.europa.eu/themes/sustainability-transitions/urban-environment/urban-green-infrastructure/what-is-green-infrastructure

Homeowners and businesses in Ireland should be encouraged to replace hard paving with permeable and vegetated surfaces that reduce surface runoff – this will be vital for the more intense rainfall events and flooding that Ireland will experience in the future as the climate changes.[91] Green roofs and walls are especially beneficial for buildings which are exposed to the sun because they improve insulation and increase energy savings.[92]

Local authorities should be tasked with creating awareness-raising programmes for householders and businesses on the benefits of transforming even the smallest areas into green spaces.

[91] https://www.epa.ie/climate/communicatingclimatescience/whatisclimatechange/whatimpactwillclimatechangehaveforireland/
[92] https://doi.org/10.1007/s10980-021-01212-y

5. Transport

Question 1: What further policy measures might be required to enable Ireland to meet the CAP 2019 target of 936,000 electric vehicles on the road by 2030?

The uptake of electric vehicles (EVs) in Ireland is relatively slow, and a recent study[93] shows that there are psychological and financial barriers preventing people from buying EVs. To help meet the target, dealerships should be incentivised to always have EVs readily available for test driving. An EV roadshow would help consumers to become familiar with the vehicles, while green registration plates could assist in overcoming the status quo bias. The purchase of EVs should be made more accessible financially to drivers under the age of 25 as young drivers are more likely to embrace the technology. Therefore, implementing grants or subsidies for this age group would encourage the sale of EVs.

Research and funding for retrofitting electric engines into vehicles could further assist Ireland to reach its 2030 target. Many consumers do not feel comfortable buying a brand-new car if their current internal combustion engine (ICE) works well. If retrofitting became a viable and feasible choice, it would give consumers the option of reducing waste, and still lead to more EVs on the road by 2030.

Question 2: Is there scope to increase this target for 2030? What should the new target be?

No, the target for 2030 is sufficient. There should be more emphasis placed on people *not* always using their cars or buying new cars. Instead, the emphasis should be on public transport. As public transport is improved, people will need to use their cars less and less. Furthermore, there are many ethical and environmental flaws within the production line and supply chain of EVs. The mining of the raw material lithium for EVs has depleted water tables in the mining region, which affects farming and creates water insecurity.[94] Cobalt extraction also has many environmental impacts and there have been reports of ongoing child labour within the supply chain.[95]

As EV uptake is being encouraged, a proper scrappage and disposal system should be formed and implemented to deal with the expected rise in ICEs being scrapped. We would like to take this opportunity to highlight our concern that the Climate Action Plan has a strong focus on EVs, and perhaps overlooks other options to reduce our GHG emissions in the transport sector.

Question 3: What specific measures might be required in the commercial transport sector to encourage a change to EVs or other zero carbon alternatives?

As cars are used less as a means of getting to and from cities and towns, there will be an abundance of empty car parking spaces left unused. These car parks have the potential to be transformed into social hubs consisting of restaurants, rooftop community gardens, art galleries and so on. Underground car parks could be converted into storage units, solving the last-mile logistics problem for delivering cargo into city centres. Deliveries could be made to the storage

[93] https://www.seai.ie/publications/Driving-Purchases-of-Electric-Vehicles-in-Ireland.pdf

[94] Harper, G., *et al.* (2019), "Recycling lithium-ion batteries from electric vehicles", *Nature*, vol. 575, no. 7781, 75-86.

[95] https://www.dol.gov/agencies/ilab/resources/reports/child-labor/congo-democratic-republic-drc

units overnight and picked up by cargo bikes in the morning to distribute supplies across cities. This could reduce congestion and allow for more car-free zones in cities.[96] This shift from delivery trucks to cargo bikes took place in Berlin during a year-long trial through the "KoMoDo" project. The results were promising, as the delivery process ran smoothly and there was a reduction in the number of trucks in the city centre.[97]

Question 4: What additional measures should be considered to promote greater use of public transport or active mobility options?

Interconnectivity of services: Mobility-as-a-service (MaaS) makes travelling without a car more convenient as multiple forms of transport are combined under the one service. A successful example is the Whim app which allows people to plan, book and pay for a trip using all modes of public and private transport available in the city.[98] In Dublin, this would involve connecting Irish Rail, Dublin Bus, Dublin Bikes, taxis, carpooling and the Luas. An increase in shared bike and e-scooter services would help the service reach its full potential. Smart Dublin is researching the possibility of MaaS in Dublin.[99]

Improved Bike Sharing Scheme: Despite the success of the Dublin Bike scheme, the Coca-Cola Zero shared bike scheme in Cork, Limerick and Galway has not been as successful. The poor condition of the bikes has led to a decrease in their usage in recent years.[100] Improving current infrastructure and expanding bike sharing schemes to towns and suburban areas will increase active travel.

Lower fare prices: In Ireland it is usually more convenient to use a private car for travelling. Passengers need to be incentivised to leave their car and take public transport. Lowering fares will not be enough; a reduction in prices will need to be coupled with improved infrastructure and service frequency.[101]

Active mobility incentive scheme framework: Employees should be rewarded for taking active travel to work, while the positive impact that increased active travel will have on business productivity due to physical and mental health benefits of employees should be highlighted.

Question 5: What specific policies might be introduced to reduce overall passenger kilometers driven within the private car fleet?

Carpooling: The introduction of a policy that allows high-occupancy vehicles to use bus lanes, as well as a reduced toll charge for these cars, may encourage passengers to make journeys by carpooling. A 2017 study carried out on the potential for carpooling in the greater Dublin area found that there was an opportunity for an increase in carpooling with the help of state

[96] http://www.davidmcwilliams.ie/we-need-to-reinvent-our-empty-city-car-parks/
[97] https://www.velove.se/news/komodo-city-hub-project-in-berlin-it-works-its-fun
[98] https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/consumer-business/deloitte-nl-cb-ths-rise-of-mobility-as-a-service.pdf
[99] https://smartdublin.ie/smart-dublin-and-city-possible-host-maas-gap-analysis-workshop-to-determine-a-way-forward-for-better-mobility-in-dublin/
[100] https://irishcycle.com/2020/04/16/nta-claims-bicycle-share-use-down-due-to-switch-to-bus-but-users-report-system-in-disrepair/
[101] https://cities-tody.com/what-benefits-can-cities-expect-from-fare-free-transport/

incentives.[102] Once journeys took less time and were cheaper, there was increased demand for carpool services. Increased carpooling will reduce the number of kilometres driven.

Remote working incentive: The Covid-19 pandemic has highlighted how it is possible for many people to productively work from home. A continuation of remote working post-pandemic brings with it the potential to reduce car usage in the long run. Working from home can have a knock-on negative effect on emissions reductions due to people leaving urban areas and increasing their energy use at home. Policymakers need to consider options that will encourage remote working to such a degree that there is an overall reduction in emissions.[103] A mixture of in-person working and remote working is a suitable option.

Funding and policy to develop community stations: Support should be provided to communities and businesses to reopen old railway stations and turn them into social hubs. The regeneration of stations creates local jobs and increases community engagement in towns and villages.[104] Increased activity in rural communities will reduce car dependency.

Question 6: Is there scope to effect a change in the composition of the private car fleet to shift the vehicle mix away from higher emitting classes?

To build on the suggestions already mentioned, we would suggest providing the total cost of ownership of EVs rather than just the upfront cost when buying new cars. ICEs should be compared to EVs in terms of reliefs and incentives, fuel and electric costs, battery length, range, and charging time. This would allow people to compare and evaluate the true benefits of EVs.

Furthermore, emissions-linked congestion charging should be considered for certain locations, but only when public transport is further developed and efficient. This is a fee charged on most cars and motor vehicles being driven within a Congestion Charge Zone at certain hours of the day, usually rush hour. Implementing a congestion charge in suitable locations could increase EV adoption rates and the number of passenger journeys using public transport. To promote ICEs with lower emissions, Ireland could raise the price of higher-emitting ICEs to discourage the sale of these cars.

Question 7: Is there scope to further increase biofuel blends rates beyond those already planned under the 2019 Climate Action Plan?

No, increasing the biofuel blend rates beyond what is already planned will not guarantee improved air quality or reduced emissions globally. At present, there is a lack of sustainable safeguards for biofuels, meaning any targets which seek to increase biofuel blend rates can open the gates for unsustainable biofuels, namely, crop biofuels such as used cooking oil (UCO) and palm oil. In 2019, 67% of palm oil imports were used for EU energy production[105] despite a landmark study commissioned by the European Commission four years earlier highlighting the negative land use change impacts of such oil production and consumption.[106]

---

[102] http://www.tara.tcd.ie/bitstream/handle/2262/81983/Car-shedding%20Transport%20Policy%20paper%20FINAL.pdf

[103] https://www.ucc.ie/en/media/projectsandcentres/srerc/SRERCWP2020-4.pdf

[104] https://communityrail.org.uk/wp-content/uploads/2018/02/ACoRP-Community-Stations-Document-web.pdf

[105] https://www.transportenvironment.org/sites/te/files/Vegetable%20oil%20data%20briefing%202020%20%282%29.pdf

[106] https://ec.europa.eu/energy/sites/ener/files/documents/Final%20Report_GLOBIOM_publication.pdf

Furthermore, the origins of UCO remains dubious, with approximately one-third of Europe's ostensible 'waste-stream' oils being virgin oils.[107] The issue of marrying scalability with sustainability is not unique to Ireland, but the focus should shift from increasing blend rates to the quality of the fuels.

Question 8: Are there any specific obstacles in the planning system preventing greater modal shift?

The National Planning Framework (NFP), National Development Plan (NDP), and the Land Use and Transport Outlook (PLUTO) all recognise the pressures that Ireland will face in terms of population growth and demand for transport services and infrastructure. However, a recent study has demonstrated that the road schemes proposed by the NDP will yield negligible reductions in commuting times and road traffic volume.[108] To thwart this potential outcome, there should be increased ambition with regards to the levels of accessibility (both physical and financial) for public transport in tandem with segregated cycling infrastructure.

Question 9: Are there specific further measures that should be undertaken to increase the availability of electric vehicle charging points, whether in public areas or on private property?

We suggest raising awareness around availability of charging infrastructure through an online app. The app would show the proximity and availability of charging stations across Ireland, thereby eliminating a build-up of drivers waiting for the same charging station. We suggest more access to off-street parking for charging purposes, and existing pay-and-display parking locations to be fitted with charging infrastructure. Workplace charging stations would increase the availability; companies and organisations could be incentivised to implement infrastructure for employees with private parking. Public areas such as parks, shopping centre car parks, and coastal attractions should have accessible charging infrastructure, with information on available charging stations, just as available parking spaces are displayed. Charging infrastructure should also be built at park-and-ride stations, train and Dart stations, and areas near public transport to increase interconnectivity in Dublin city. This could also facilitate and encourage public transport use. Rural hubs such as train stations, villages and towns, should all be equipped with EV charging points.

However, there may be issues around implementing charging infrastructure in private property due to the unaffordability of housing. The number of renters in Ireland has increased over the years, and they might not want to personally invest in private charging infrastructure in a property they will only be occupying for a short period of time. Shared charging infrastructure could be more suitable.

[107] https://www.euractiv.com/section/all/news/industry-source-one-third-of-used-cooking-oil-in-europe-is-fraudulent/

[108] Carroll, Páraic and Peter O'Sullivan (2020), "Forecasting the impact of the Planning, Land Use and Transport Outlook (PLUTO) Project – a 2040 Ireland case study", *Transportation Research Procedia*, vol. 49, 70-82.

Question 10: What could be done to make the public sector transport fleets more climate friendly?

There needs to be a greater level of consideration around how necessary it is to carry out hedge cutting and removal along train lines. Under the Wildlife Act 1976, hedge cutting is banned from March 1st to August 31st.[109] Under the Transport (Railway Structure) Act 2001, Irish Rail is exempt from this rule and is allowed to cut hedges if they are a safety hazard or obstruct operations. Better planning is needed to carry out hedge cutting in the winter and autumn, reducing the need to cut during the nesting season.

In May 2019, Irish Rail updated its approach to vegetation management and stated that it will carry out risk assessments before carrying out hedge cutting during the nesting season. This updated approach is a step in the right direction, but further improvements still need to be taken to protect hedgerow biodiversity. Even during hedge-cutting season, further considerations are needed regarding the severity of cutting that takes place. Complete hedge removal often takes place, with long sections of hedges, that are neither an obstruction nor a safety hazard, removed.[110] This has devastating consequences for the habitats of these areas.

Question 11: What changes should be considered in relation to the management of Ireland's road network (e.g. reducing speed limits, additional road pricing, or restrictions for specific vehicles in urban areas) to promote emissions reductions?

Trial areas for geofencing in cities could be implemented to enhance sustainable urban mobility. Geofencing is a virtual fence where travel is digitally controlled within its perimeters. These areas could, for example, include schools and city centres. Geofencing would involve defining geographical areas and applying digital regulation to these zones. These digital traffic regulations would then be shared with vehicles connected to cloud services, with the vehicles autonomously adhering to the zone regulations. Such regulations may involve hybrid-electric cars switching to electric mode in emissions-sensitive areas, or vehicles switching to the appropriate speed. EVs would have unrestricted access to these zones.[111]

Gothenburg's test pilot results demonstrated better use of shared urban spaces, decreased emissions, improved air quality and road safety, as well as better traffic management. Nevertheless, there are disadvantages to geofencing, namely, the requirement for cars to have the technology which allows them to connect to the digital infrastructure. Secondly, without adequate security measures in place, geofenced areas could be sensitive to external interference.[112]

Test piloting geofencing in Ireland would require the establishment of a research and innovation network to aid the development of digital infrastructure for smart zones; the creation of legislation and regulation that would support the implementation of geofencing; cooperation between the relevant authorities, and public support.

---

[109] https://www.gov.ie/en/press-release/db268-reminder-in-relation-to-hedge-cutting-in-2021/

[110] https://www.irishtimes.com/news/environment/anger-as-irish-rail-removes-hedgerows-along-limerick-junction-waterford-line-1.4160504

[111] https://civitas-reveal.eu/wp-content/uploads/2020/08/Note-on-Geofencing-for-UVAR_Lucy-Sadler-Sadler-Consultants-1.pdf

[112] https://www.eltis.org/resources/case-studies/geofencing-new-tool-make-urban-transport-safer-and-more-sustainable

Question 12: What other opportunities exist to support the decarbonisation of the Transport sector?

The logistics sector will require guidance and support from the government. Most operators are small-to-medium businesses working in a competitive market where the environmentally optimal option is not always the most cost effective. Several measures can be taken to help decarbonise freight transport:

- ***Reduce demand:*** The move to a circular economy may help reduce demand for products within closed loop supply chains.[113] As such, this will help towards a reduction of overall freight demand.

- ***Vehicle loading****:* Improved digitalisation can aid the sector in optimal vehicle loading, i.e. ensuring no half-empty freights are on the road causing congestion and pollution.[114]

- ***Modal shift to rail:*** Due to a lack of cost competitiveness, rail accounts for a trivial amount of freight transport. In line with the overall EU smart and sustainable mobility strategy,[115] Ireland should move its freight to rail where possible. This will require a considerable investment in the form of an expansion of the rail freight network. However, when weighed against the external societal costs of road transport, rail is an economically favourable option.[116]

- ***Renewable energy:*** While the technology for electric heavy goods vehicles above a 400km range is still a few years away,[117] hard-to-decarbonise sectors should benefit from financial support for research and development.[118] Such investments could include government-supported research and innovation programmes for the logistics sector.

Question 13: What specific measures could be undertaken in transport infrastructure to address existing and future locked-in climate change impacts?

Flooding will be the most significant climate risk to Ireland,[119] so our high levels of car dependence and reliance on the road network will prove to be an economic vulnerability.

Cooperation between Transport Infrastructure Ireland, the Climate Action Regional Offices, and local authorities should be established to create a database of flood events on roads. The information gathered, i.e., cause, damage, and traffic impacts could be used by local authorities when carrying out flood damage control procedures. If flooding hotspots are identified, seasonal drain checks could be carried out in these areas alongside action plans to prevent future disasters.

---

[113] McKinnon, A (2015), "Introduction", in A. McKinnon, M. Browne, A. Whiteing and M. Piecyk (eds.) *Green Logistics: Improving the Environmental Sustainability of Logistics* (3rd ed.). London: Kogan Page.
[114] Ibid.
[115] https://ec.europa.eu/transport/sites/transport/files/legislation/com20200789.pdf
[116] https://www.epa.ie/media/EPA-Ireland's-Environment-2020-Chapter11.pdf
[117] https://www.transportenvironment.org/sites/te/files/publications/202102_pathways_report_final.pdf
[118] https://www.energy-transitions.org/wp-content/uploads/2020/08/ETC_MissionPossible_ReportSummary_English.pdf
[119] http://www.epa.ie/pubs/reports/research/climate/researchreport339/

Whether aging infrastructure is being replaced or the existing road network is being expanded, porous surfaces should be considered as adaptation measures to prevent flash flooding. Although porous asphalt has been proven to reduce surface runoff,[120] its GHG emissions across its lifecycle are considerable due to the heating required during production. Instead, permeable polyurethane should be considered as it reduces runoff and is environmentally friendly across its life cycle.[121]

Finally, the Irish railway network is located primarily upon engineered slopes which have a lower rainfall threshold and are vulnerable to rainfall induced slope failures. There is scope for Irish Rail and Met Éireann to work together to develop specific rainfall thresholds for landslides to aid infrastructure managers in identifying potential hazards.[122]

[120] Zhu, H., Yu, M. Zhu, J., Lu, H. and Cao, R. (2019). "Simulation study on effect of permeable pavement on reducing flood risk of urban runoff", *International Journal of Transportation Science and* Technology, vol. 8, no. 4, 373-383.

[121] Lu, G., Wang, Y., Li, H., Wang, D. and Oeser, M. (2019), "The environmental impact evaluation on the application of permeable pavement based on life cycle analysis", *International Journal of Transportation Science and* Technology, vol. 8, no. 4, 351-357.

[122] Martinović, K., Gavin, K., Reale, C. and Mangan, C. (2018), "Rainfall thresholds as a landslide indicator for engineered slopes on the Irish Rail network", *Geomorphology*, vol. 306, 40-50.

6. Agriculture, land use, forestry and marine

Question 1: What are the opportunities to increase take-up of measures identified in AgClimatise and encourage adoption of other practices which reduce emissions?

There needs to be a government-led approach to ensure rewilding of selected plots of agricultural land should we wish to prevent ecosystem collapse. Without rewilding, our natural resources are dwindling and the legislative onus must resolve to protect our biosphere. The work of Dun Laoghaire-Rathdown County Council can be seen as a successful example of this approach, which could be utilised in other urban and rural areas that would benefit greatly from planting native trees and wildflowers.

To continue land diversification, we must look to pulse crops which are well-suited to the Irish climate and are far more environmentally sustainable. As of 2019, only 8,100 hectares of Irish soil was used to produce legumes.[123] Diversifying crops will help maintain biodiversity and help protect against market shocks to animal agriculture. If subsidies to diversify land use are provided, the onus can be shifted from increasing the herd, enabling a transition to a more profitable and sustainable sector. Investment in feed additives such as red seaweed to reduce methane is needed. If this path is pursued, however, it will be important to ensure that industrial-scale harvesting of this additive does not have adverse environmental impacts.

Question 2: What policies and measures would be needed to support farmers diversify their farm activities to include opportunities such as bioenergy, vegetable growth, forestry, organic farming, etc.?

First and foremost, farming communities need an end to quotas, which will give them the time, energy and resources to diversify their land. The majority of farming activities surround their quantitative output. We know through extensive studies[124] that agriculture exclusively based on extractivist practices for extractivist outputs are not compatible with solutions to our changing climate. By lowering or abolishing these quotas, it will allow the farmer to explore other options for their farm. Alongside an end to quotas, we need to provide agricultural communities with the necessary capital to transition to other sectors. The diversification of grants for farming communities would provide them with much-needed capital to diversify their land.

Educational and training support for farmers would provide them with the knowledge necessary for this agricultural diversification, resulting in an increase in ecologically beneficial activities. A public body should also be created to help farmers adapt to a just transition. Its work could include initiatives (financial, educational) around biodiversity activities or answering queries on how to contact companies and organisations who can help to further green the agricultural sector.

[123] https://www.cso.ie/en/releasesandpublications/er/aypc/areayieldandproductionofcrops2019/

[124] Bambrick, H. (2018), "Resource extractivism, health and climate change in small islands", *International Journal of Climate Change Strategies and Management*, vol. 10, no. 2, 272-288.

Question 3: What can be done to maximise the use of manure and silage as feedstock for biomethane generation in closed digesters and inject into the gas grid to offset natural gas?

In order to maximise the use of manure and silage as feedstock for biomethane generation, two key recommendations set out by Rajendran, Ó Gallachóir and Murphy in a 2016 EPA research report on the subject should be implemented.[125] These include (i) setting clear goals for use of biomethane in the thermal/transport sectors, and (ii) incentivising infrastructure schemes to the same degree as renewables and electric vehicles (EVs) have been, via market incentives. As suggested by the EPA research report, increased incentives at this early stage would improve competitiveness and would eventually lead to reductions in government incentives. This has proven to be a successful model in the uptake of EVs.[126] This should be focused at both the consumer and producer level; a biomethane obligation scheme could be directed at gas suppliers while natural gas-powered vehicles, such as high intensity hauliers, could be given carbon tax and toll relief.

Question 4: What specific measures can be taken in agriculture, forestry and land use to adapt to climate change?

There should be a reduction in the national herd and specialised subsidies for small-scale farmers to ensure they are supported within the framework of a just transition. There is ample opportunity to diversify and grow more environmentally sustainable crops such as legumes, which are less carbon and water intensive. Diversification will ensure more food security and less reliance on imports, making Ireland more resilient to international political, economic and climatic shocks.

The Council of Forest Research and Development (CORFORD) must have renewed funding for forestry research as a means of adaptation. This will enable the organisation to conduct both primary and secondary research on Ireland's relationship with its tree species and location practices. Building upon this research, the need for a Citizens' Assembly on the future of the Irish relationship with nature and biodiversity has never been more important. Our communities' insights are the greatest tool when it comes to consensus building for long-term and stable climate adaption.

Across all sectors, there must be renewed community engagement initiatives, targeting from primary school level up. These will ensure that rural communities are properly represented in the discourse and a symbiotic relationship with nature is given to our younger generations.

Question 5: What can be done to increase sequestration through forestry (afforestation, extended rotations, and improved forest management)?

The Climate Action Plan 2019 referenced soil management as a means of carbon abatement. However, no clear mechanism was outlined for how this would look. It is understood, through rigorous study,[127] that carbon sequestration is reliant on nutrients such as phosphorus and

[125] https://www.epa.ie/researchandeducation/research/researchpublications/researchreports/Research_Report_279.pdf

[126] https://www.irishtimes.com/news/environment/electrified-vehicles-see-sharp-rise-in-sales-under-new-tax-scheme-1.4492165#:~:text=There%20were%20986%20EVs%20sold,per%20cent%20in%20January%202020

[127] https://www.westernsydney.edu.au/hie/stories/dont_look_to_mature_forests_to_soak_up_carbon_dioxide_emissions?fbclid=IwAR3TY1BRGAcG08r_-gfcrVudhiIQHY1p42ir8fRsq9VoRnMFQTu2WNQWlKs

nitrogen. These nutrients enable a tree to absorb carbon when converted into the relevant sugars. We suggest the establishment of a national soil nutrient management programme, alongside training for those involved in both the climate and afforestation discourse.

An evaluation of Ireland's forestry practices is also imperative to increasing sequestration on our island. This should take two forms: (1) Forestry location, moving away from the current practice of planting on carbon-rich peatland soils, as in the case of Co. Leitrim.[128] Carbon-rich soils are not preferable for carbon sequestration. (2) Species diversity: within current practice, sequestration and biodiversity are being pursued independently. However, this is a misuse of land. All organisms store carbon, and by promoting a diverse range of species in our forests, we can eliminate this mutually exclusive system. In the Climate Action Plan 2021, integrating biodiversity alongside sequestration could allow for an exceptional rebuilding of Ireland's forest ecosystems.

Question 6: What opportunities are there to rehabilitate our peatlands and wetlands, and what can be done to realise these opportunities?

In order to rehabilitate our peatlands and wetlands, we must first ensure that bogs are fully rehabilitated and not simply decommissioned. EPA licences should provide clear distinction as to what is defined as rehabilitation so the highest standards are met, including setting biodiversity and climate criteria for rehabilitation.[129] As a means of support, the €108 million funding for Bord na Móna's peat restoration should be an annual payment, rather than a one-off, similar to the subsidies given to peat plants in the past.[130]

Rehabilitated peatlands offer an incredible opportunity to sequester carbon. However, the exact numbers are difficult to calculate. Investment is needed to allow monitoring and verification to calculate exact emissions and sequestration from our peatlands and wetlands. This should be coordinated with the Irish Natural Capital Accounting for Sustainable Environments team. The concept of natural capital accounting should be incorporated into this monitoring, as the UK and the Netherlands have done successfully. This would allow data to be standardised on a platform and used in a multi-disciplinary fashion.[131]

Afforestation is an important part of our sequestration strategy but it should not be done at the expense of our peatlands. Therefore, licences for conifer plantations should not be granted on biodiversity-rich areas such as peatlands and wetlands.[132] Not only is this practice counterproductive from a sequestration perspective, requiring us to drain peat lands to enable afforestation, it is also harmful to biodiversity.

Question 7: What measures would support increased sustainable management of grasslands, including those areas on drained organic soils?

The constant grazing of grass to very low residuals is resulting in a degradation of the soil. This overgrazing means that soiled grass that is returned gets broken down by bacteria and released

[128] https://www.teagasc.ie/media/website/crops/forestry/advice/Forest-Statistics-Ireland-2020.pdf

[129] https://www.irishtimes.com/news/science/bord-na-m%C3%B3na-s-big-shift-how-the-peat-giant-pivoted-to-bog-restoration-1.4438767

[130] https://greennews.ie/4bn-environment-damaging-subsidies/

[131] http://www.epa.ie/pubs/reports/research/biodiversity/Research_Report_322.pdf

[132] https://www.noteworthy.ie/spruced-up-5241271-Oct2020

into the atmosphere much quicker. This leads to a degenerative system that puts too much reliance on fertilisers.[133] Reliance on chemical fertilisers that hinder the stem-forming stage of grass should be reduced, and soil carbon should be developed through sustainable practices like building the "humus-flywheel".[134] This could be done through introducing a cost-effective re-seeding scheme[135] for small farmers in combination with guidance on mob-grazing[136] to improve soil fertility. Additionally, practices such as agroforestry and precision farming should be incentivised via direct payment schemes to increase biodiversity and prevent monocultures. Our system of awarding direct payments on "Good Agricultural and Environmental Condition" needs to be reassessed to allow for the benefits agroforestry could bring in terms of soil protection[137] and carbon sequestration.[138]

Question 8: What opportunities exist for increased use of cover crops, incorporating straw into tillage and for the application of regenerative agriculture practices? How can farmers be supported to take up these practices?

Building upon pre-existing measures, such as the Straw Incorporation Measure (SIM), nutrient recycling initiatives can take multiple forms. Some common examples from our European counterparts include phosphorus recovery from sewage (Denmark, Germany, Finland),[139] and reducing organic waste (Denmark, Estonia & Latvia).[140] Such initiatives would comprise training, financial assistance and the establishment of an overview system. Lowering yields is also of utmost importance within climate mitigation. Current agricultural practice is controlled by quotas. This ensures agriculturally intensive practices, disincentivising the implementation of regenerative policies.

Education and training support for farming communities are essential for regenerative practices and a just transition. Farmers need to be shown how to engage with past and future regenerative initiatives. Education is the most important tool in combating climate change. Ireland's current farming practices are heavily reliant on generational practices. This needs to be corrected, with educational and financial resources made available to bring agricultural communities into a modern, eco-conscious Ireland. A point of inspiration could be the previous GLAS scheme, building upon previously established educational schemes.

---

133 https://www.agriland.ie/farming-news/are-we-managing-our-grassland-correctly/

134 https://www.agriland.ie/farming-news/opinion-building-soil-fertility-sustainably/

135 https://www.agriland.ie/farming-news/farmers-plan-reseeding-part-expansion-plans/

136 https://www.soilassociation.org/our-work-in-scotland/scotland-farming-programmes/mob-grazing/what-is-mob-grazing/

137 https://en.reset.org/knowledge/agroforestry-and-its-benefits

138 Schafer, Luke J., Marin Lysák and Christian B. Henriksen (2019), "Tree layer carbon stock quantification in a temperate food forest: A peri-urban polyculture case study", *Urban Forestry & Urban Greening*, vol. 45, https://doi.org/10.1016/j.ufug.2019.126466.

139 https://www.oecd.org/greengrowth/sustainable-agriculture/agri-environmentalindicatorsandpolicies/33913449.pdf

140 https://helcom.fi/media/publications/Overview-of-nutrient-recycling-in-the-Baltic-Sea-countries.pdf

Question 9: What sort of role could Ireland's marine environment (lakes, seas) have in delivering climate mitigation? What are the building blocks that need to be put in place to support the role of the marine environment in climate mitigation (e.g. a regulatory framework, measurement and accounting rules)?

The sea is our greatest asset in terms of carbon sequestration and we must ensure a healthy environment if it is to operate to its full potential. The creation of a marine protection framework is central to maintaining carbon sinks and preventing ecological collapse. Marine Protected Areas must be "no-take" marine reserves with no anthropogenic activity. Current protected areas are not sufficiently managed nor monitored and renewed controls are needed to manage the new areas.

Outside protected areas, enhanced regulation is also needed on the types of commercial fishing methods used, specifically prohibiting bottom dredging, bottom trawling and other environmentally disastrous methods. The quota system must be renewed, with a specific focus on supporting smaller fisheries. The system itself needs to be transparent, with allocations readily available as public knowledge. A return to traditional fishing methods is needed in localised settings, and subsidies must be provided to support fishing on a smaller scale. These methods will safeguard our largest carbon sink – our seas – without which ecological collapse will mean ruin for our economy and livelihoods.

Question 10: What other opportunities exist to support the decarbonisation of the agriculture, land-use and marine sectors?

In terms of agriculture, a reduction of the national herd is needed along with explicit reference to a just transition for small farmers and a rethink of supply chains in tandem with the Farm to Fork initiative for public bodies. There is an opportunity to shift away from animal agriculture. Ireland has the perfect climate for pulses and legumes, which as of 2019, constituted just 2% of our cultivated land.[141]

As regards forestry, we need to utilise CORFORD to its full extent, carry out new impact assessments of forestry locations and species, and establish community engagement initiatives. For the marine sector, a scientific basis for the quota system is needed with renewed controls on fishing methods, overfishing and bycatch. Working in tandem with this, legally defined protection for endangered species is needed, along with a shift in support away from commercial fisheries to smaller operators fishing sustainably. We need to promote community engagement across all of these producer sectors to allow society to reconnect with the products and services provided. The nature/society relationship needs to be reconfigured; this can be done with community-based engagement, ownership and educational initiatives, utilising public bodies like schools, libraries and county councils at the local level.

[141] https://www.cso.ie/en/releasesandpublications/er/aypc/areayieldandproductionofcrops2019/

7. Public sector leading by example

Question 1: What opportunities exist for the public sector to step up its climate ambition?

The public sector, as part of the governance of the climate challenge, has a vital role to play. We have seen how, in its response to crises like the Covid-19 pandemic and Brexit, the government has mobilised extraordinary resources and promptly implemented interventions to support and protect society in the adaptation process.[142] We recommend adopting the same approach with the climate crisis, accelerating crucial interventions such as the retrofitting of all public buildings and allocating extra resources and autonomy to local authorities. As key stakeholders in the delivery of climate change commitments,[143] these local authorities should be allowed to quickly kick-start climate action policies and projects in their areas of competence.[144]

Climate action mandates for public bodies can be strengthened following the Scottish model, including a legal requirement for all state entities to produce one, accompanied by the legal obligation to reduce their emissions and report on results and adaptation strategies.[145] We reiterate Friends of the Earth's recommendation on the need for public bodies to carry out climate stress tests and issue climate-financial disclosures.[146]

We also highlight the need to overcome institutional fragmentation,[147,148,149] since more ambitious climate action requires the alignment, commitment, and cooperation of multiple sectors and across state actors (through the creation of a task force, for example) to be able to deliver urgent responses.[150] This certainly constitutes an area for further urgent improvement for the public sector.

Question 2: What sort of practical changes would you expect the public sector to make in leading and delivering Ireland's climate ambition?

The full implementation of existing policies could deliver significant emission reductions along with reinforcing policy credibility. Areas where practical changes can be implemented include:

---

[142] Torney, Diarmuid (2020), "The Politics of Emergency? Ireland's Response to Climate Change", *Irish Studies in International Affairs*, vol. 31, 12-26.

[143] https://www.lgma.ie/en/publications/local-authority-sector-reports/a-profile-of-local-government-climate-actions-in-ireland.pdf

[144] Dekker, Sabrina (2020), "Responding to Climate Change: The Role of Local Government in Ireland", in David Robbins, Diarmuid Torney and Pat Brereton (eds.), Ireland and the Climate Crisis. Cham: Palgrave.

[145] https://www.foe.ie/assets/files/pdf/fixed_role_of_public_bodies_in_driving_irelands_decarbonization_report_10092020_.pdf

[146] Ibid.

[147] Climate Change Advisory Council (2020). *Annual Review 2020*. Dublin: Climate Change Advisory Council.

[148] Devaney, Laura and Diarmuid Torney (2019), *Advancing the Low Carbon Transition in Irish Transport*. Dublin: National Economic and Social Council.

[149] https://www.foe.ie/assets/files/pdf/fixed_role_of_public_bodies_in_driving_irelands_decarbonization_report_10092020_.pdf

[150] Devaney, Laura and Diarmuid Torney (2019), Advancing the Low Carbon Transition in Irish Transport. Dublin: National Economic and Social Council.

Energy efficiency of public buildings: While signs of improvement were registered in 2019 (29% energy efficiency improvement against the 33% 2020 NEEAP Target), SEAI also reports that some departmental groups are currently underperforming, limiting the potential to achieve 2020 and the 2030 targets.[151] Supporting these public bodies in the identification of the causes of inefficiency, and the relevant corrective measures, is an imperative that cannot be delayed further.

Cohesive work of State agencies on energy system integration and transport infrastructure planning: There is potential to increase the collaboration ambition of commercial semi-state companies in the electricity and gas sectors towards the realisation of an integrated energy system. Such integration could support the trajectory to net zero in 2050 and is envisaged by the EU as a pivotal tool for climate action.[152] Similar collaboration and coherence are recommended for the planning of an integrated, low-carbon, and efficient transport infrastructure that could support different modes of transport, prioritising the public one.[153]

Green Public Procurement (GPP) Mandates for all public bodies: The introduction of a GPP mandate for all public bodies would strengthen the leadership role of the public sector, could boost the uptake of green technologies and products in the private sector, and may increase the presence of market suppliers offering sustainable solutions.[154]

Question 3: How can the public sector support wider society to change? In the short-term, medium-term, long term?

In the short term, attention should centre on immediate actions which can have a direct impact. Recommendations here include the following:

- Incorporate climate expertise on the boards of key state bodies/companies:[155] this would provide the requisite skills for an enduring focus on climate issues and would also send an important signal to society of the value placed on climate action.

- Focus available resources on priority needs: a clear example here is the requirement for improved SEAI funding incentives for residential retrofitting.[156]

In the medium term, infrastructure delivery should be a key objective, with specific focus needed on the following areas:

- Having developed climate adaptation plans, local authorities must move swiftly to full implementation. This may also encourage private households and businesses to undertake their own adaptation measures.

[151] https://www.seai.ie/publications/Public-Sector-Annual-Report-2020.pdf
[152] https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1259
[153] Devaney, Laura and Diarmuid Torney (2019), Advancing the Low Carbon Transition in Irish Transport. Dublin: National Economic and Social Council.
[154] https://www.algoodbody.com/insights-publications/greening-of-public-procurement
[155] https://www.foe.ie/assets/files/pdf/the_role_of_public_bodies_in_driving_irelands_decarbonisation_-_executive_summary_-_final.pdf
[156] https://igees.gov.ie/wp-content/uploads/2020/11/SEAI-Energy-Efficiency-Grant-Schemes.pdf

- Critical public transport projects such as BusConnects and Metrolink must be delivered by Ireland's public transport authorities. These investments are crucial to reducing transport emissions and should be accelerated if possible.[157]

In the longer term, cohesive planning is a key requirement. The public sector should play a lead role in supporting society to move to a new model of sustainability, integrating transport and housing and leveraging the advantages offered by remote working.[158]

Across all time horizons, the public sector must lead by example and meet its own targets for decarbonisation. Delays cannot be accepted; the public sector must act as the exemplar for action.

Question 4: What are the biggest barriers for the public sector in reducing greenhouse gas emissions and how can they be overcome?

While many more exist, four main barriers are identified below, with proposed responses in each case.

Barrier 1: Lack of a strategic approach: While the Climate Action Plan 2019 envisaged publication of a Public Sector Decarbonisation Strategy in 2020, this has since been delayed to 2022. In recognition of the climate emergency, this strategy should now be accelerated and should include an approach to prioritising public sector actions in order of their decarbonisation and/or adaptation potential.

Barrier 2: Slow delivery of existing actions: Within the Climate Action Plan quarterly progress reports,[159] multiple public sector actions are confirmed as delayed. This should be addressed through instituting greater public accountability for quarterly delivery and exploring financial incentive and/or penalty mechanisms aligned to performance.

Barrier 3: Lack of integration and collaboration: The need for greater collaboration across the public sector in pursuing climate action is clear.[160] Progress is achievable through aligning the climate mandates of key public sector bodies (particularly in the energy sector[161]) and sharing best practice both nationally and across the EU, for example, in fleet decarbonisation.[162]

Barrier 4: Poor visibility of the long-term pathway: To provide clarity on the actions needed now to enable emission reductions beyond 2030, the Climate Action Plan should either set out the long-term pathway or, alternatively, a process to confirm this in the short term. This is particularly important in areas of the public sector that need large-scale infrastructure to deliver net-zero emissions.

---

157 Ibid.

158 https://www.epa.ie/media/EPA-Ireland's-Environment-2020-Chapter11.pdf

159 https://www.gov.ie/en/publication/55fde-climate-action-important-publications/

160 https://www.epa.ie/pubs/reports/indicators/SOER2020_HiRES.pdf

161 https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1259

162 https://tda-mobility.org/

Question 5: What other opportunities exist to support the decarbonisation of the public sector?

Three key opportunities are set out below:

Generate public support: The public sector has a key role to play in educating and informing the public. Among other avenues, this is enabled through the EPA's climate lectures,[163] the SEAI's work on sustainable energy communities,[164] and An Taisce's promotion of environmental action through the Green-Schools programme.[165] However, more can be done and the full power of public sector influence must support the climate cause across all sectors of society.

Decarbonisation of the public fleet: Decarbonisation of the public sector fleet can play an integral role in reducing emissions and leading by example. The Programme for Government sets a target of only allowing public bodies to procure low- or no-emissions cars and light goods vehicles by 2025.[166] However, this target fails to mention heavier vehicles and should potentially be accelerated given the national emissions reduction target of 51% by 2030. The shortfall between ambition and reality is evidenced by the fact that 99% of state-owned vehicles are still fossil-fuelled.[167] Structured cross-sectoral sharing of research and best practice may help close this gap.

Remote working: The Programme for Government included a commitment to mandate public sector employees and bodies to move to 20% remote working in 2021.[168] Although this target represents a good start, consideration should be given as to whether this could be increased by 2030.[169]

Question 6: What practical steps should the public sector take to adapt to climate change?

A continuing focus on adaptation measures is required. Three key steps are discussed below:

Cross-sectoral co-ordination: The Covid-19 pandemic has demonstrated the resilience of communities when faced with an emergency. In response to the Covid-19 pandemic, the government launched "The Community Call" which linked local and national government with the community and voluntary sectors.[170] It offered co-ordinated support for the most vulnerable people throughout the lockdowns. Although the health emergency differs in nature to the climate emergency, a similar framework could be adapted to support those who may be more vulnerable in times of extreme weather.

---

[163] Climate Change Advisory Council (2020). Annual Review 2020. Dublin: Climate Change Advisory Council.

[164] https://www.seai.ie/community-energy/sustainable-energy-communities/start-an-energy-community/

[165] https://assets.gov.ie/10207/c8f59b1734af460fa310ddbe20e01388.pdf

[166] https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/

[167] https://www.irishtimes.com/news/environment/only-25-of-state-s-6-000-strong-fleet-of-vehicles-electrically-powered-1.4521094

[168] https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/

[169] https://www.climatecouncil.ie/media/climatechangeadvisorycouncil/contentassets/publications/CCAC_AnnualReview2020FINAL.pdf

[170] Anne-Marie McGauran (2021), *Community Call: Learning for the Future*. Dublin: National Economic and Social Council.

Invest in research and development: The government's innovation strategy for 2015-2020 has highlighted the importance of public funds towards research and development, innovation, and a knowledge-based economy.[171] The mid-term review of Innovation 2020 highlighted that stronger efforts and investment are needed to further promote innovation in the public sector and make Ireland a leader in this area. Investment in research and development could mitigate the risk of over-reliance on one type of technology that may prove inefficient down the line.

Adapt public buildings: Public buildings should be adapted to better cope with more extreme weather conditions while simultaneously demonstrating the sector's support for the green transition. Green roofs offer a host of environmental benefits, including reduced storm-water flow, increased biodiversity, and improved air and water quality in surrounding areas. Blue roofs are another option which offer a way to regulate drainage of rainwater, reducing the risk of over-burdening the drainage system.

[171] https://enterprise.gov.ie/en/Publications/Publication-files/Innovation-2020.pdf

8. Just transition

Question 1: Which regions, sectors, or industries do you believe will be most adversely affected by climate policy in Ireland and over what timeframe?

With properly aggressive policies that address the enormous urgency of the climate crisis, every region, sector and industry in Ireland should be impacted. Just transition aims to render redundant the question, "who or what will be most adversely affected by climate policy?" All climate policy should be written with just transition as its backbone, answering the questions raised by the required profound changes.[172] In a just transition, it could be argued that the only "adversely affected" group should be those high earners whose wealth is based on carbon-intensive practices, or those whose accrual of wealth is only possible through exploitation of others. Just transition is not built merely on a principle of not further disadvantaging affected workers and communities, it mandates improving the lives of all.

To name all of the challenges that will be created by climate policy is impossible. In the shortest term, agriculture;[173] rural Ireland;[174] fossil fuel workers[175] (including petrol station employees); homeowners/landlords;[176] construction workers; vehicle owners or drivers,[177] and the tourism sector[178] will very soon experience shifts and upheaval. Fishing,[179] energy,[180] asylum seekers[181], tech workers,[182] and companies that rely on plastics for either their own products or for packaging will be challenged in the medium term, both from policy and as the locked-in warming becomes more tangible. Without radical action now, biodiversity – including the marine environment – will see irreversible damage in the medium to long term.

Question 2: What types of supporting interventions should be considered by the Government to address the specific areas identified?

The following interventions should be considered:

Agriculture: Reduction in herd[183] accompanied by yearly payment for reasonable losses up to maximum lifespan of culled livestock; afforestation grant for permanent forest management, with regular carbon storage payments; fuel allowances where no electric alternative exists;

---

172 https://www.greengrowthknowledge.org/research/employment-impact-climate-change-adaptation
173 https://www.irishexaminer.com/news/politics/arid-40270691.html
174 https://www.irishtimes.com/news/politics/climate-action-bill-will-be-good-for-rural-ireland-ryan-says-1.4543956
175 https://www.thejournal.ie/cost-carbon-pt2-5421615-May2021/
176 https://www.nerinstitute.net/research/investing-just-transition-realising-potential-low-carbon-economy
177 https://www.echolive.ie/corkviews/arid-40263446.html
178 https://www.gov.ie/en/press-release/2aae1-cabinet-approves-108m-funding-for-groundbreaking-bord-na-mona-bog-rehabilitation-plan-minister-ryan-also-announces-that-47-more-projects-in-the-midlands-totalling-278m-are-approved-under-the-just-transition-fund/
179 https://www.socialdemocrats.ie/must-involve-farmers-and-fishing-communities-in-a-just-transition-for-climate-action/
180 https://www.seai.ie/blog/energy-security/
181 https://www.unhcr.org/en-us/climate-change-and-disasters.html
182 https://www.nesc.ie/work-programme-archive/transition-teams/
183 https://www.rte.ie/news/environment/2021/0427/1212385-agriculture-environment-groups/

grants and training for organic, efficient farming; incentives for conversion to silviculture or vertical farming.[184]

Rural Ireland: Community-owned renewable energy; means-tested grants with scrappage payment for purchase of an electric vehicle (EV) with no minimum value; investment in reopening old rail networks, establishing new stations as community hubs with farmers' markets, charging points for EVs; affordable monthly regional or national travel passes.

Homeowners: Neighbourhood retrofit rollouts with means-tested grants, 0% interest loans with repayment based on energy savings. Climate gentrification of rail corridors can be avoided by ensuring that the whole island has access to high-quality public transportation and broadband.

Fishing: Stop all trawler fishing off the Irish coast instead of investing in fish farms.[185] Conduct assessment of risk to small fishing communities and marine health due to large trawlers. Make grants available for vertical ocean farms for food and for associated carbon sink co-benefits, paying offsets to fishing communities.

Biodiversity: Retrain and pay farmers to act as biodiversity stewards to restore agricultural land to biodiverse woodlands and wetlands.[186] Disallow clear-felling and increase percentage of broadleaf in commercial forestry to 25%.[187] Investigate bladeless wind turbines. Independent impact assessment for off-shore wind turbine proposals. No climate mitigation solutions should be implemented at an unknown cost to biodiversity.

Tourism: Tourism should be redeveloped for domestic travellers, with wide-scale redevelopment of rural rail. Support rail and road bridge investigations between Ireland and UK to protect democratisation of travel.

Question 3: What specific further measures should Government undertake in order to realise the benefits of the low carbon transition, including in relation to supporting the development of low carbon sectors of the economy, including employment in these sectors?

Focus on a circular economy model on a whole-island basis.[188] Ireland must look to becoming self-sufficient to the furthest possible extent.[189] Imports and exports are not in line with a just transition – they are not conducive to meeting emissions reduction targets, or preventing carbon leakage[190] which is a just transition issue. Nor are they conducive to the goal of ensuring food security. Overcoming political obstacles to engage in meaningful cross-border partnerships enshrined in law to protect biodiversity and enable a whole-island circular economy, with public transport options readily available between Ireland and the North, will reinforce the

[184] https://www.socialjustice.ie/content/policy-issues/just-transition-farmers
[185] https://ec.europa.eu/ireland/news/key-eu-policy-areas/fisheries_en
[186] https://www.bbc.com/future/article/20201203-peat-the-decline-of-the-worlds-dirtiest-fuel
[187] https://www.thejournal.ie/spruced-up-pt1-5241271-Oct2020/
[188] https://www.checkout.ie/retail/lidl-ireland-ni-launch-first-island-wide-supermarket-circular-economy-strategy-126312
[189] https://www.irishtimes.com%2Fbusiness%2Fpanda-owner-in-line-for-1bn-takeover-as-investors-eye-sector-1.4458630
[190] https://www.farmersjournal.ie/carbon-leakage-a-real-risk-if-irish-herd-reduces-mitloehner-618493

integrity of a just transition.[191] Pilot city programmes to implement doughnut economic models should be rolled out.[192] Existing needs should be identified in communities across the island, and the transition should look for ways to service those needs. Investment in the repurposing of all waste could offer new ways to value waste. Look to San Francisco, for example, making compost out of food waste, which can be made available at low cost to farmers.[193]

Question 4: What specific investments should be considered to support a just transition in Ireland?

Ireland must invest in rebuilding and revitalising our public transport network, ensuring that public transport is accessible and affordable to all regions and people. The rebuilding of a state-of-the-art railway system and regional bus service will incentivise the public back to public transportation from personal vehicles. Investment in rail stations as community hubs is an attractive co-benefit. Affordability and equity in access is essential to our overall transition ambition.

Residential retrofitting grants on a means-tested basis should be used to achieve equity in access to a transition to low-carbon living. A planned nationally scheduled rollout of retrofits in neighbourhoods can reduce the carbon footprint of the work itself and achieve economies of scale. This approach addresses scale, fuel poverty, equity of access, and public buy-in.

Ireland has 11% of forest cover compared to over 40% in EU member states.[194] Permanent land-based carbon sequestration goals should be set and aggressively pursued, with grants and affordable loans to prioritise domestic and community ownership of carbon sinks. Farmers should be incentivised to convert agricultural land to forestry, and investment should be made in placing more land into trust for afforestation/bog preservation, recreation, and habitat restoration. Funding carbon-focused assessment of draining bog land to plant forestry is important – afforestation does not always provide a net carbon benefit.

Research and development into new technology and innovation should be funded to identify 'Ireland-specific' technological solutions in renewable energy, solar technology advances, green hydrogen, agriculture automation, and reduction of scale solutions and healthcare as an ecosystem.

Question 5: How should the State finance just transition initiatives and investments?

The European Commission Covid-19 recovery fund is €750 billion,[195] and while Ireland is expected to receive hundreds of millions in grants and loans, it must submit a plan to the Commission for approval.[196] This "green" recovery fund comes with conditions. There are expectations on Ireland to bring corporation tax policy in line with EU partners. This has long been the assertion of the Commission and our EU member colleagues. Now is the opportunity

[191] https://ec.europa.eu/growth/tools-databases/nando/index.cfm?fuseaction=ireland.main
[192] https://doughnuteconomics.org/tools-and-stories/14
[193] https://www.epa.gov/transforming-waste-tool/zero-waste-case-study-san-francisco
[194] https://www.teagasc.ie/crops/forestry/advice/general-topics/history-of-forestry-in-ireland/
[195] https://www.irishtimes.com/business/economy/european-commission-to-pressure-ireland-on-tax-in-recovery-fund-plan-1.4552634
[196] https://www.irishtimes.com/news/politics/coalition-eyes-900m-from-eu-recovery-and-resilience-covid-fund-1.4554501

to revise the effective corporate tax rate from 12.5% to 17.5%. Ireland brought in €10.9 billion in 2019. An additional 5% on 2019 earnings forecast is €4.36 billion. The Programme for Government calls for the Just Transition Fund to be increased; this additional tax revenue should go to this fund.[197] Government intervention is required in bank lending and climate policy alignment. Banks should only lend to businesses with robust climate-risk assessments and alignment to climate mitigation and adaptation strategies. All lending should be based on climate resilience and long-term sustainability of the proposed investment. This will force top-down climate policy alignment within the private sector.

EU membership allows Ireland access to public capital at low interest rates. The state has access to the EU Just Transition Mechanism/Fund[198] and the lending arm of the EU, the European Investment Bank.[199] Climate mitigation investment and adaptation strategies are required to unlock this public capital to fund the just transition.

Question 6: What changes should be considered in Ireland's social welfare system to support population cohorts that might be more adversely affected by the low carbon transition?

It is essential for a just transition and alignment with the European Green Deal that no one is left behind as we transition to a low-carbon society.[200] Those suitable to re-join the workforce must be retrained and upskilled appropriately; the vulnerable must be protected. Social welfare should seamlessly support temporary and seasonal employment. Ireland must reimagine the social welfare system and work to remove the negative connotations associated with needing economic assistance or not having full-time or career-focused work.

Ireland must urgently improve the state and accessibility of welfare services and applications. Making the process more straightforward and simplifying the language associated with the various schemes should be a priority, up to and including a revision of the overly-complex Public Services Card programme.[201]

The Springboard+ initiative scheme[202] should be expanded to offer more places to those out of work and offer access to courses in areas relevant to the low-carbon transition. A holistic approach to reskilling should also be considered where individuals are offered the opportunity to gain experience or training in areas matched with their strengths. There is potential to make use of software systems designed to match people with jobs in newer sectors to which they may be suited. Structured dialogue should be undertaken with communities that have seen large-scale job losses as a result of the transition in their region as regards options for new industry in their area. Pilot programmes should be run based on results of this dialogue.

[197] https://www.gov.ie/en/publication/8040b7-programme-for-government-programme-for-a-partnership-government/
[198] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/just-transition-mechanism_en
[199] https://www.eib.org/en/index.htm
[200] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
[201] https://psc.gov.ie/questions/
[202] https://springboardcourses.ie

Question 7: Are there specific issues for consideration in Ireland's further education, training and skills system?

The provision, availability and promotion of skills-focused education, traineeships, and apprenticeships needs to be a priority for a just transition. It is essential that people are given the opportunity to develop practical skills relevant to developing areas in order to future-proof their skills and support those experiencing job losses as a result of the low-carbon transition. There should also be a focus placed on accessibility to training for people who intend to switch career paths, and for those for whom traditional further education is not accessible due to illness or disability.

To actualise targets in retrofitting, carbon reduction and environmentally friendly buildings, construction professionals must be trained to SEAI retrofitting standards as a matter of urgency.[203] All sectors, especially those such as manufacturing, construction, architecture, engineering, and design, must be obliged to phase out the teaching of carbon intensive/wasteful practices and encourage the use of more environmentally friendly and low-carbon design practices and materials.

Modules focused on environmental issues, green energy, green investments, sustainability, and climate change should be made more widely available across third-level education. Specific environmental degree courses are gaining popularity, but the cross-sectoral reach of these issues is essential to ensure a just transition.

Question 8: What other issues should be considered by the Government to inform just transition policy in the 2021 Climate Action Plan?

As outlined in this submission, the concept of "just transition" is vulnerable without a legal definition.[204] Such a definition is essential so that the government may be held accountable in the case of failure to meet obligations. It is essential that all sectors approach the transition with equality and a clear understanding of what that means. Just transition policy must consider social justice, equality, and human rights as cornerstones to the transition. Direct input from an informed public is essential to ensure these standards are met; tools such as citizens' assemblies and mini-publics should be implemented to facilitate this.

One of the most vulnerable groups in Irish society is those seeking asylum and relying on the Direct Provision system. To ensure these people are not left behind and put through further trauma, the Direct Provision system and asylum process must be urgently reformed. As the frequency of environmental disasters increases, it is expected that globally, climate migrants will reach up to 200 million by 2050.[205] Eligibility for refugee protection needs to be given proper consideration. Ireland must start a policy debate to determine the country's legal and moral responsibility, and the social justice and human rights of climate refugees.

A just transition across the island of Ireland also needs to seriously consider the role and status of biodiversity in our communities and how it can be supported and protected. A transition

[203] https://superhomes.ie/just-transition-boost-for-home-retrofits-and-jobs-in-the-midlands-region/
[204] https://www.tasc.ie/blog/2020/10/08/governments-new-climate-bill-falls-short-of-climat/
[205] http://probeinternational.org/library/wp-content/uploads/2011/04/14851.pdf

which further destabilises or damages Ireland's limited natural habitats[206] cannot be considered just.

Question 9: What additional supports could be considered for regions that are most at risk from the physical impacts of climate change?

Ireland's low-lying coastal areas are at high risk of sea-level rise, with 30% of coastal wetlands at risk in a 1m sea level-rise scenario. To support those who live in high-risk areas, or own land or businesses in these locations, provisions need to be made in terms of insurance for flood damage and land loss. A full analysis of at-risk areas is essential to fully understand the severity of the problem, and in response, outreach teams should be trained to ensure those who will be most vulnerable to these risks are prepared and supported. To further support these communities, it would also be beneficial to improve the accessibility of mental health services.

To help reinforce land, slow degradation, and improve drainage, a plan should be developed for widespread rewilding and afforestation, especially in coastal regions. It is important that recommendations from bodies such as An Taisce and the EPA are taken seriously and adhered to when considering new development opportunities. Environmental health needs to be placed above profit in such instances.

[206] https://www.epa.ie/irelandsenvironment/nature/