



Submission by ZWAI to the Department of the Environment, Climate and Communications in Response to the Public Consultation on Ireland's Draft National Energy and Climate Plan (NECP)

07 March 2024

Zero Waste Alliance Ireland is a member of



and



An Tinteán Nua, Ballymanus, Castlepollard, County Westmeath, Ireland An Tinteán Nua, Baile Mhánais, Baile na gCros, Co. an Iarmhí, Éire, N91 PP76. Telephone +353 44 966 2222 Mobile +353 86 381 9811 Email admin@zwai.ie

ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management

An Tinteán Nua, Ballymanus, Castlepollard, County Westmeath
An Tinteán Nua, Baile Mhánais, Baile na gCros, Co. an Iarmhí, N91 PP76.

07 March 2024

Public Consultation on Ireland's Draft National Energy and Climate Plan,
Department of the Environment, Climate and Communications,
29-31 Adelaide Road,
Dublin 2,
D02 X285.

BY EMAIL TO: NECP Consultation

necp@decc.gov.ie

Dear Sir / Madam,

Response to the Public Consultation on Ireland's Draft National Energy and Climate Plan

Submitted By Zero Waste Alliance Ireland to the Department of the Environment, Climate and Communications

On behalf of Zero Waste Alliance Ireland (ZWAI), we attach our submission in response to the Department's public consultation on Ireland's Draft National Energy and Climate Plan.

ZWAI is very pleased to have the opportunity to respond to this important public consultation; and, even though our principal interest and aim is the reduction and



Submission by Zero Waste Alliance Ireland in Response to the Public Consultation by the DECC on the draft National Energy and Climate Plan (NECP)



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elimination of every form of waste, we recognise that the more efficient use of materials and the avoidance of waste at every stage are also energy saving activities, with environmental and climate-related benefits.

While it may appear initially that waste and resources management, and the achievement of energy-related goals (including the formulation of energy policy) are not linked, it is our strongly-held belief that that the two are intimately connected. Not only must discarded materials be replaced in the continuing linear activities of production and consumption, but the processes of extraction, transformation, transport, processing, manufacturing and distribution require yet further energy which could be used more beneficially or avoided completely.

It is also our strongly held view that the term “waste” should encompass not only discarded materials, but should also cover the waste of energy; linking both the inefficient use of energy, and the amounts of energy which can be considered as “wasted” by the current necessity to process and recycle discarded materials, and to replace these by extraction and processing of virgin raw materials.

Thirdly, it is obvious that inefficient or wasteful use of energy is having damaging effects on the Earth’s climate, as a result of the emission of greenhouse gas resulting from the production and utilisation of energy, despite the growing proportion of energy derived from renewable resources. No form of “renewable or sustainable energy” is climate neutral, and in fact most forms of renewable energy require the continuing extraction and processing of raw materials from the Earth’s surface (for example, for the manufacture of solar cells, wind turbines, wave energy capture devices, energy storage batteries and other equipment); while the challenge of how to reuse or recycle end-of-life equipment from these categories of renewable energy systems remains largely unresolved.

We therefore see this public consultation as a welcome opportunity to provide feedback on a topic in which Zero Waste Alliance Ireland has a significant interest.

We look forward to your acknowledgement of the submission, and to seeing in due course the final version of the National Energy and Climate Plan. Yours sincerely,

Jack O'Sullivan.

Jack O'Sullivan

On behalf of Zero Waste Alliance Ireland

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SUBMITTED BY ZERO WASTE ALLIANCE IRELAND TO THE DEPARTMENT OF THE ENVIRONMENT, CLIMATE AND COMMUNICATIONS

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07 March 2024

1. INTRODUCTION

When the Department of the Environment, Climate and Communications announced a public consultation on Ireland's draft National Energy and Climate Plan, we might initially have considered that this consultation did not directly address the principal areas in which Zero Waste Alliance Ireland normally contributes to debate on policy issues.

Our primary areas of work are focussed on prevention of waste, and on the eventual elimination of the wasting or discarding of substances, materials, manufactured objects and products of every description; and especially their end-of-life fate by incineration or landfilling, resulting in the continuing extraction and processing of yet more raw materials to replace them. We have also, on many occasions, made observations on the waste of water, the pollution of surface and groundwater, and the need to recover from wastewater the essential and valuable substances which are currently discarded, and become pollutants as a result.

Closely allied with these area of work are our promotion of the Circular Economy, and our advocacy for a community-based and operated "deposit and return" scheme which would have the effect of increasing the rate at which materials and objects are re-used and recycled, for environmental and social benefit.¹ These activities may be summarised as promoting the transition from a wasteful linear

¹ On 12 November 2020, Zero Waste Alliance Ireland made a submission to the Department of Environment, Climate and Communications on the Proposed Introduction of a Deposit and Return Scheme (DRS) for Beverage Containers.

to a more efficient circular economy, with accompanying changes in how our society values and uses raw materials and objects.

But if we consider that the extraction and processing of nearly all raw materials are energy intensive, while re-use and recycling are energy saving, it becomes clear that the more efficient use of materials and the avoidance of waste at every stage are also energy saving activities. We can therefore establish an obvious link between these activities and energy demand, so that the more efficient and less wasteful our society becomes, less energy will be needed at many different levels. While it may appear at first glance that waste and resources management, and the achievement of energy-related goals (including the formulation of energy policy) are not linked, it is our strongly-held belief that that the two are intimately connected.

Not only must discarded materials be replaced in the continuing linear activities of production and consumption, but the processes of extraction, transformation, transport, processing, manufacturing and distribution require yet further energy which could be used more beneficially or avoided completely.

Secondly, Zero Waste Alliance Ireland has always taken the view that the term “waste” should encompass not only discarded materials, but should also cover the waste of energy; linking both the inefficient use of energy, and the amounts of energy which can be considered as “wasted” by the current necessity to process and recycle discarded materials, and to replace these by extraction and processing of virgin raw materials. It is therefore only a small additional step to consider that inefficient use of energy, and the use of energy for activities which are unnecessary and may be environmentally damaging, also fall within the definition of “waste”.

Thirdly, it is obvious that inefficient or wasteful use of energy is having damaging effects on the Earth’s climate, as a result of the emission of greenhouse gas resulting from the production and utilisation of energy, despite the growing proportion of energy derived from renewable resources. No form of “*renewable or sustainable energy*” is climate neutral, and in fact most forms of renewable energy require the continuing extraction and processing of raw materials from the Earth’s surface (for example, for the manufacture of solar cells, wind turbines, wave energy capture devices, energy storage batteries and other equipment);² while the challenge of how to reuse or recycle end-of-life equipment from these categories of renewable energy systems remains largely unresolved.

² On 20 September 2022, Zero Waste Alliance Ireland made a submission to the Department of the Environment, Climate and Communications to support and inform the preparation of the 2023 Climate Action Plan.

We therefore see this public consultation as a welcome opportunity to provide feedback on a topic in which Zero Waste Alliance Ireland has a significant interest. Furthermore, it has always been our policy that any type of wasteful activity (including the wasteful or inefficient use of energy) has the potential to have detrimental effects on the Earth's climate.

Widespread failure to use energy efficiently, and to recover, re-use and recycle discarded substances, materials and products, are symptoms of our Europeanwide and Irish failure to consider the inter-linked issues and policy areas of

“waste”, “energy” and “climate”. We have also failed to adequately implement the Circular Economy, with a resulting increase in greenhouse gas emissions, serious damage to ecosystems, major loss of biodiversity, changes in sea level, stronger and more frequent storm events, threats to the security of food supplies, damage to human health, and other adverse consequences of climate change.

As the Minister for the Environment, Climate and Communications, Mr Eamon Ryan, T.D., stated on 08 February when launching the call for submissions:

"Engagement with stakeholders is central to the success of the NECP and climate action plans. While the NECP projections are based on 2021 implemented policies, in accordance with EU Guidelines, I am conscious that this is not as ambitious as our own recent 2024 climate action plan. Therefore, I encourage all stakeholders to be ambitious and to share their valuable feedback with us to help shape a robust response to our EU targets for greenhouse gas emissions reductions, renewable energy, energy efficiency and electricity interconnection. The final NECP will reflect most recent projections and our future ambition".³

In responding to this call for submissions, Zero Waste Alliance Ireland will attempt to reflect the Minister's encouragement for a robust response, by proposing policies and targets which may be more ambitious than in Ireland's current 2024 Climate Action Plan.

We will also keep in mind that this consultation will form a key component of the NECP process, culminating with the submission of a final NECP to the European Commission in June 2024. The feedback from the Commission's assessment of the draft, in addition to the feedback from the stakeholder consultation, will be reflected in the final NECP.

However, Zero Waste Alliance Ireland are deeply concerned that this draft updated NECP was finalised and filed with the European Commission with no

³ Press release by the Department of the Environment, Climate and Communications, 08 February 2024.

public consultation whatsoever. This was a breach of the grounding EU law, the Governance Regulation 2018⁴⁵, which mandates public participation on the draft early while all options are open. There is also no Strategic Environmental Assessment of the plan, in breach of the SEA Directive 2001⁵, which would have included a public consultation fully informed by information about the alternative options for achieving the goals in the plan and the environmental impact of these choices. It is discouraging to read the statement in Section 1.3.3 attempting to justify this by saying that the NECP does not introduce any new policy that has not been consulted on previously. This idea that this plan, which is a key tool in achieving the goal of a just transition, does not introduce or add anything to the discussion worthy of consideration by the public is an extraordinary statement of how Ireland's draft updated NECP fails to engage in any actual planning, and in a process of co-producing with all of society a vision for how we move to a sustainable future. This suggests that the preparation of this document has been treated as a reporting exercise, collating existing plans and measures. This is disappointing and worrying from several perspectives, including the actual effectiveness of the measures proposed which have not been fully "sensechecked" against the lived experience of the populations which will have to live with their implementation.

The NECP documents claims extensive consultation has taken place through a variety of forums, but none of these were on this specific plan, and most of these involved consulting with public bodies and local government through a variety of "stakeholder forums" that were not open to the public. To be clear, the government consulting with the civil service or public service (while important) is not public consultation. It is effectively the Executive consulting within itself.

The consultation exercise now attempted is fatally flawed for those reasons and the reasons discussed in more detail in the relevant sections below. Nevertheless, Zero Waste Alliance Ireland considered it important to engage with the consultation to highlight these important issues and failings, and to offer some feedback on the substantive issues in the plan where it was felt possible to do so.

We hope that the Government will heed this input and revisit the plan, opening a Strategic Environmental Assessment process with a radically re-imagined approach that proactively engages with publics rather than just public servants, and provides the public with the alternative options to choose from and the

⁴ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December

⁵ on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives

necessary information and supports to be able to fully understand the impacts of those choices.

94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (as amended) ("The Governance Regulation 2018")

5

We feel that genuine public participation, in compliance with the EU, international and Irish legal frameworks, and the principles of an open and democratic society, is key to ensuring the legitimacy, effectiveness and justice of the transition needed to reach the goal of net zero GHG emissions by 2050, as stated in the Governance Regulation 2018 as amended by the EU Climate Law 2021⁶.

2. BACKGROUND TO THE NECP AND TO THIS PUBLIC CONSULTATION

In addition to the background and context which we have provided in our introductory section 1 above, the Department of the Environment, Climate and Communications has set out in a background note some essential elements of National Energy and Climate Plans (NECPs).

The EU Regulation on the Governance of the Energy Union and Climate Action, within which the NECP framework is located, consolidated the existing patchwork of planning, monitoring, and reporting obligations Member States had under the different pieces of EU legislation across energy, climate, and other Energy Union related policy areas.⁷

NECPs are the framework within which European Union Member States must plan and communicate their climate and energy objectives, targets, policies, and measures to the European Commission.

The NECP is separate from domestic climate planning framework established under the Climate Act 2015. The initial Climate Act predated the 2018 Governance Regulation, which is why there exists two parallel and not congruent systems under National and EU law. During the revision of the Climate Act there was an opportunity to streamline the legal frameworks and align the Irish and EU laws but this did not happen for reasons unknown.

This result in the following main climate planning framework on the Irish State, listed in order of the timeframe the plans cover (there are also other climaterelated

plans required under the Social Climate Fund, Just Transition Territorial Strategy, EU Energy Performance of Buildings Directives, Common Agriculture

⁶ Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')

⁷ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

Policy Plans, Energy Poverty Action Plans, as well as other instruments but these are the major dedicated climate ones):

1. The Climate Action Plan (CAP) – 1 year annual plan under the domestic Climate Action and Low Carbon Development Act 2015 as amended.
2. The National Long Term Climate Action Strategy – every 5 years, under the domestic Climate Action and Low Carbon Development Act 2015 as amended.
3. The National Energy and Climate Action Plan (NECP) – 10 year plan, under the EU's Governance Regulation 2018 as amended.
4. The Long Term Strategy (LTS) – 30 year plan under the EU's Governance Regulation 2018 as amended.

The annually updated Climate Action Plan (CAP)⁶, containing climate and energy targets and policies in accordance with the Climate Action and Low Carbon Development Act 2015 is an extremely short term plan which does not capture all of the five dimensions of the Energy Union required by the EU climate planning framework including energy security, internal energy market, energy efficiency, decarbonisation and research, innovation and competitiveness. It also does not require the same level of focus on Ireland's regional relationships, and transboundary considerations of coherent climate action on the island.

The measures in the most recent versions of the CAPs have been assessed to see if they meet the criteria for inclusion in the With Additional Measures (**WAM**) and With Existing Measures (**WEM**) scenarios that will be captured in the final version of the NECP. The outputs from this exercise are not yet finalised. While

⁶ On 12 February 2024, the Department of the Environment, Climate and Communications opened a public consultation on the draft Climate Action Plan 2024 (CAP) which was approved by the Government in December 2023, and is being subject to Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA).

the draft NECP published in December 2023 set out the measures that the State had already implemented (WEM only) by a date specified in accordance with the terms of the Regulation on the Governance of the Energy Union and Climate Action, the EU legislation which underpins the NECP process.

The WAM scenario is more ambitious. It is a projection of future energy use based on the measures outlined in the latest Government plans at the time the National Energy Projections are compiled. This includes all policies and measures included in the WEM scenario, plus those included in the latest Government plans but not yet fully implemented.

It should be noted that what can be included in the WEM and WAM scenario is strictly set out by EU Regulation, and therefore, the modelling in the NECP does not automatically align with the most recent version of the domestic policy framework set out in the Climate Action Plan, meaning there is a misalignment between Ireland's one year, five-year, ten year and thirty year plans – they are not compatible or easily comparable. Our observations on the WEM and WAM scenarios are in given in sections 4 and 5 below. There is a lack of coherence and cohesion between the measures in all these plans. There is also a sequencing issue, with the one-year plan being completed and the ten year plan being prepared in parallel and the update of the thirty year plan yet to be completed. It would make far more sense if the thirty year EU Long Term Strategy was completed first to set the framework for the ten year NECP and that this would set the framework for the shorter term domestic one and five year plans.

The Department's background note states that a final version of the NECP will be updated by the Department of the Environment, Climate and Communications in the coming months to reflect updated WEM and WAM projections, which will include policies and measures in place to the end of 2022: the most recent full inventory year available at the time of modelling and will include a range of additional polices and measures under the WAM scenario.

3. ZERO WASTE ALLIANCE IRELAND (ZWAI)

At this point we consider that it is appropriate to mention briefly the background to our submission, especially the activities, policies and strategy of ZWAI.

3.1 Origin and Early Activities of ZWAI

Zero Waste Alliance Ireland (ZWAI), established in 1999, and registered as a company limited by guarantee in 2004, is a Non-Government Environmental Organisation (eNGO) and a registered charity. ZWAI has prepared and submitted to the European Commission, the Irish Government and to Irish State Agencies many policy documents on waste management and waste elimination, and

continues to lobby the Irish Government and the European Commission on using resources more sustainably, on promoting re-use, repair and recycling, and on development and implementation of the Circular Economy.

One of our basic guiding principles is that human societies must behave like natural ecosystems, living within the sustainable flow of energy from the sun and plants, producing no materials or objects which cannot be recycled back into the earth's systems, or reused or recycled into our technical systems, and should be guided by economic systems and practices which are in harmony with personal and ecological values. Our principal objectives are:

- i) sharing information, ideas and contacts,
- ii) finding and recommending environmentally sustainable and practical solutions for domestic, municipal, industrial and agricultural waste management, and for more efficient and ecologically appropriate uses of natural resources such as scarce minerals, water and soil;
- iii) lobbying Government and local authorities to implement environmentally sustainable waste management practices, including clean production, elimination of toxic substances from products, re-use, repairing, recycling, segregation of discarded materials at source, and other environmentally and socially beneficial practices;
- iv) lobbying Government to follow the best international practice and EU recommendations by introducing fiscal and economic measures designed to penalise the manufacturers of products which cannot be re-used, recycled or composted at the end of their useful lives, and to financially support companies making products which can be re-used, repaired, recycled or are made from recycled materials;
- v) raising public awareness about the long-term damaging human and animal health and economic consequences of landfilling and destruction by mass burning or incineration of potentially recyclable or re-usable materials;
- vi) investigating, raising public awareness and lobbying Irish Government departments and agencies about our country's failure to take adequate care of vulnerable and essential natural resources, including clean water and air, biodiversity, and soil;
- vii) advocating changes in domestic and EU legislation to provide for more ecologically appropriate, environmentally sustainable and efficient uses of natural resources; and,

- viii) maintaining contact and exchanging information with similar NGOs and national networks in the European Union and in other countries, and with international zero waste organisations.

3.2 Our Basic Principles

Human communities must behave like natural ones, living comfortably within the natural flow of energy from the sun and plants, producing no wastes which cannot be recycled back into the earth's systems, and guided by new economic values which are in harmony with personal and ecological values.

In nature, the waste products of every living organism serve as raw materials to be transformed by other living creatures, or benefit the planet in other ways.

Instead of organising systems that efficiently dispose of or recycle our waste, we need to design systems of production that have little or no waste to begin with.

There are no technical barriers to achieving a “zero waste society”, only our habits, our greed as a society, and the current economic structures and policies which have led to the present multiple environmental, social and economic crises.

“Zero Waste” is a realistic whole-system approach to addressing the problem of society's unsustainable resource flows – it encompasses waste elimination at source through product design and producer responsibility, together with waste reduction strategies further down the supply chain, such as cleaner production, product repairing, dismantling, recycling, re-use and composting.

ZWAI strongly believes that Ireland and other Member States, and the EU as a whole, should have a policy of not sending to other countries our discarded materials for further treatment or recycling, particularly to developing countries where local populations are being exposed to dioxins and other very toxic POPs. Relying on other countries' infrastructure to achieve our “recycling” targets is not acceptable from a global ecological and societal perspective.

3.3 What We are Doing

Our principal objective is to ensure that government agencies, local authorities and other organisations will develop and implement environmentally sustainable resources and waste management policies, especially resource efficiency, waste reduction and elimination, the promotion of re-use, repair and recycling, and the development and implementation of the Circular Economy.

As an environmental NGO, and a not-for-profit company with charitable status since 2005, ZWAI also campaigns for the implementation of the UN Sustainable Development Goals, including (but not limited to) Goal 12, Responsible

Consumption and Production; Goal 6, Clean Water and Sanitation (having particular regard to the need to avoid wasting water, and to wasting nutrients contained in our wastewater); and Goal 15, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, to halt and reverse land degradation and to halt biodiversity loss.

In responding to many public consultations, members of ZWAI have made submissions and given presentations on:

- how Ireland and the European Union should address the problem of plastic waste (March 2019);
- addressing the problem of single-use plastic packaging by the Irish food industry (November 2019);

- transforming the construction industry so that it could become climateneutral (instead of being a major emitter of greenhouse gases & toxicants);
- the general scheme of the Irish Government’s Circular Economy Bill (October 2021);
- recovery and reuse of the phosphorus and nitrogen content of wastewater (2019 to 2022);
- proposed revision of the EU Regulation on Shipments of Waste (January 2022);
- Ireland's energy security situation (October 2022);⁷
- Ireland’s Fourth National Biodiversity Action Plan (November 2022);⁸
- Ireland’s National Bioeconomy Action Plan 2023-2025 (January 2023);⁹
- Ireland’s draft Waste Management Plan for a Circular Economy (July 2023);¹⁰
- the problem of disposable vaping devices (July 2023);¹¹
- the rapidly increasing European and global problem of waste electronic and electric equipment (WEEE, September 2023);¹²

⁷ Submission to the Department of the Environment, Climate and Communications in Response to the Public Consultation on a Review of the Security of Energy Supply of Ireland’s Electricity and Natural Gas Systems; <https://www.zwai.ie/resources/2022/publicconsultation-on-a-review-of-the-security-of-energy-supply-of-irelands-electricity-and-naturalgas-systems/>

⁸ <https://www.zwai.ie/resources/2022/submission-to-the-department-of-housing-localgovernment-and-heritage-in-response-to-the-public-consultation-on-irelands-fourth-nationalbiodiversity-action-plan-nbap/>

⁹ <https://www.zwai.ie/resources/2023/zwai-submission-on-irelands-national-bioeconomyaction-plan-2023-2025/>

¹⁰ Submission to the Regional Waste Management Planning Offices on the draft Waste Management Plan for a Circular Economy; ZWAI, 05 July 2023: <https://www.zwai.ie/resources/2023/submission-on-the-draft-waste-management-plan-for-acircular-economy/>

¹¹ Submission to the Department of the Environment, Climate and Communications in Response to the Department’s Public Consultation on Disposable Vaping Devices; ZWAI, 27 July 2023: <https://www.zwai.ie/resources/2023/submission-to-the-decc-on-disposable-vapesand-why-they-should-be-banned/>

¹² Submission by ZWAI to the European Commission on Waste from Electrical and Electronic Equipment — Evaluating the EU Rules; ZWAI, 22 September 2023. <https://www.zwai.ie/resources/2023/waste-from-electrical-and-electronic-equipment-weeeevaluating-eu-rules/>

- observations to the European Commission on a Proposed EU Directive on Soil Monitoring and Resilience (November 2023);¹³
- observations on the Irish Government's draft Green Public Procurement Strategy & Plan (November 2023);¹⁴
- observations and feedback to the European Commission on the proposed revision of the EU Waste Framework Directive (November 2023);¹⁵
- observations and feedback to the European Commission on revision of Directives 2000/53/EC & 2005/64/EC on End-of-Life Vehicles (December 2023);¹⁶ and,
- Submission by ZWAI to the Department of the Environment, Climate and Communications in response to the Department's public consultation on proposed amendments to the Access to Information on the Environment (AIE) Regulations 2007-2018.¹⁷

It will be clear that ZWAI is primarily concerned with the very serious issues of discarded substances, materials, water and energy, whether from domestic, commercial or industrial sources, how these become “waste”, and how such “waste” may be prevented by re-design along ecological principles. ZWAI is also very concerned about the effectiveness and appropriateness of Irish and EU policies, legislation, programmes and plans which are the principal determinants of how these “wastes” are managed, controlled and monitored for environmental and societal benefits; and, while we have welcome many such initiatives, we have also considered that it was necessary to evaluate them critically and forensically in the context of what is best for the environment and society.

ZWAI is represented on the Irish Government's Waste Forum and Water Forum (An Fóram Uisce), is a member of the Irish Environmental Network and the

¹³ Observations and Feedback to the European Commission on the Proposed EU Directive on Soil Monitoring and Resilience; ZWAI, 03 November 2023.

¹⁴ <https://www.zwai.ie/resources/2023/submission-to-the-decc-on-the-draft-green-publicprocurement-strategy-and-action-plan/>

¹⁵ <https://www.zwai.ie/resources/2023/observations-and-feedback-to-the-europeancommission-on-the-proposed-revision-of-the-eu-waste-framework/>

¹⁶ <https://www.zwai.ie/resources/2023/end-of-life-vehicles-observations-and-feedback-to-the-european-commission/>

¹⁷ <https://www.zwai.ie/resources/2024/submission-to-the-decc-on-the-proposed-amendmentsto-the-access-to-information-on-the-environment-aie-regulations-2007-2018/>

Environmental Pillar, and is funded by the Department of Communications, Climate Action and the Environment through the **Irish Environmental Network**.

In 2019 ZWAI became a full member of the **European Environment Bureau** (EEB); and a member of the **Waste Working Group** of the EEB. Through the EEB, we contribute to the development of European Union policy on waste and the Circular Economy. In November 2021, the EEB established a **Task Force on the Built Environment**; ZWAI is a member of this group, and we contribute to continuing discussions on the sustainability of construction materials, buildings and on the built environment.

4. IS WEM ENOUGH?

The NECP provides an opportunity for a nation to strive for a more sustainable and responsible future. It is a chance to act as a steward for future generations, other nations and the environment. Ireland has made great strides towards reducing GHG emissions through encouraging renewable energy technology and committing to align their actions with the Paris Agreement.

However, the current state of Ireland in relation to energy leaves much to be desired when it comes to ambition. Its WEM scenario (With Existing Measures) is not enough to meet the GHG emission targets necessary to meet the demands of current climate change. We argue that a revision of the NECP should focus on more ambitious WAM (With Additional Measures) pathways.

Ireland's WAM scenario should strive for leading the country to become a front runner in terms of ambitious adaptation in relation to energy and GHG reduction. Before getting to the reasons why an advantageous WAM pathway is the best way forward for the NECP, it is important to consider Ireland's current state of energy production and use.

The carbon intensity of energy production in Ireland in 2021 reveals a heavy reliance on imported fossil fuels due to limited indigenous gas supplies and already-exploited hydro potential. With a legal ban on nuclear generation, Ireland ranked eighth highest among EU Member States in terms of import dependency, reaching 80% in 2020.¹⁸ Historically, peat served as a significant fuel source for power generation and heating, but recent policy changes, coupled with Bord na Móna's initiatives, have drastically reduced peat harvesting and burning. Presently, only one peat-burning power station remains operational, supplying 2% of Ireland's primary energy.¹⁹ Gas constitutes 32%, oil 46%, and renewables 12% of the energy mix.²⁰

Bord na Móna's cessation of peat harvesting in January 2021 virtually halted industrial peat production for energy, with turf cutting remaining for residential use. The Edenderry power plant, set to cease peat burning by year-end, faces criticism for transporting peat over 80km from bogs for facility use.²¹ Despite

¹⁸ O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

¹⁹ Ibid

²⁰ Hannah Ritchie, Pablo Rosado and Max Roser (2023) - "CO₂ and Greenhouse Gas Emissions" Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/co2-and-greenhouse-gas-emissions>'

²¹ O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

plans to transition to biomass entirely, the plant's biomass sources, including indigenous wood and imports from Santana, Brazil, raise concerns due to extensive transportation distances.²²

Beyond the peat controversy, Ireland still relies on oil and coal for power generation, primarily for backup and supply security.²³ The Electricity Supply Board (ESB) intends to seek permission to prolong the life of the 900 MW coal plant at Moneypoint, County Clare, with plans to convert it to oil, indicating continued dependence on fossil fuels despite renewable energy ambitions.²⁴

In 2021, Ireland's renewable electricity share stood at 36.4%, falling short of the targeted 80% by 2030.²⁵ This shortfall is evident from the absence of new planning permissions for onshore wind in 2023 and delays in establishing offshore wind planning and consent regimes. The electricity grid comprises a mix of renewable sources like wind and hydro, alongside non-renewable sources such as gas, coal, oil, and peat-fired thermal plants.²⁶ Despite a reliance on fossil energy, Ireland boasts a notable penetration of renewables in power generation.

Onshore wind constitutes 84% of renewable electricity generated in 2021, with 4339 MW of installed capacity and an additional 78 MW installed in 2022.²⁷ However, a low wind year in 2021 necessitated increased use of coal and oil for electricity generation, leading to a 12.5% rise in the carbon intensity of electricity.²⁸

Irish dependency on gas is pronounced, with approximately half of electricity generated in the country sourced from gas, significantly higher than the EU

²² O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

²³ Hannah Ritchie, Pablo Rosado and Max Roser (2023) - "CO₂ and Greenhouse Gas Emissions" Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/co2-and-greenhouse-gas-emissions>'

²⁴ O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

²⁵ Hannah Ritchie, Pablo Rosado and Max Roser (2023) - "CO₂ and Greenhouse Gas Emissions" Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/co2-and-greenhouse-gas-emissions>'

²⁶ O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

²⁷ Hannah Ritchie, Pablo Rosado and Max Roser (2023) - "CO₂ and Greenhouse Gas Emissions" Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/co2-and-greenhouse-gas-emissions>'

²⁸ Ibid

average of less than 20%. Bord Gáis is investing €250 million in two new gasfired power plants, raising concerns about fossil fuel infrastructure "lock-in." However, the company asserts its capability to operate on a natural gas and hydrogen blend, with potential conversion to 100% hydrogen in the future. In alignment with the 2023 Climate Action Plan, the Irish government is committed to achieving an 80% renewable energy share by 2030, with targets set for onshore wind, solar PV, offshore wind, and flexible gas plant installation.

In 2021, Ireland's renewable energy share in the total energy supply stood at 12.5%.²⁹ Despite commitments to reduce CO₂ emissions by 4.8% annually from 2021-2025 under the first carbon budget, energy-related emissions instead rose by 5.4% in 2021. Provisional data from monthly surveys suggest a further 6% increase in energy-related emissions in 2022.³² Notably, the 35.5 MtCO₂ of energy-related CO₂, including international aviation, contributes to over half of Ireland's total greenhouse gas emissions.

Under the Renewable Energy Directive II (REDII), Ireland's renewable energy share in electricity (RES-E) reached 36.4% in 2021, indicating significant progress in the electricity sector.³⁰ However, renewable energy shares in heat (RES-H) and transport (RES-T) remained low, at 5.2% and 4.3%, respectively, highlighting the need for substantial improvements in these sectors to meet renewable energy targets.³¹

5. RELEVANT BENEFITS OF WAM (With Additional Measures)

Advocating for a more ambitious reduction in carbon budgets emerges as the favourable strategy across various scenarios. However, the associated expenses are contingent on neighbouring countries' actions. Govorukha et al (2023) found that should other nations delay implementing advanced policies, a proactive approach can enable a potential frontrunner like Ireland to attain their WAM (With

²⁹ Hannah Ritchie, Pablo Rosado and Max Roser (2023) - "CO₂ and Greenhouse Gas Emissions" Published online at OurWorldInData.org. Retrieved from: ['https://ourworldindata.org/co2-and-greenhouse-gas-emissions'](https://ourworldindata.org/co2-and-greenhouse-gas-emissions) ³²

Ibid

³⁰ O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

³¹ Hannah Ritchie, Pablo Rosado and Max Roser (2023) - "CO₂ and Greenhouse Gas Emissions" Published online at OurWorldInData.org. Retrieved from: ['https://ourworldindata.org/co2-and-greenhouse-gas-emissions'](https://ourworldindata.org/co2-and-greenhouse-gas-emissions)

Additional Measures) targets at reduced costs.³² Consequently, if fewer countries adopt the WAM strategy, Ireland's expenditure to achieve these goals diminishes. This principle holds true for other member states as well.

Emphasizing investments in Renewable Energy Sources (RES) within the WAM framework generally leads to decreased marginal generation costs, thereby reducing expenses for electricity consumption. Notably, countries like Germany who have positioned themselves as leading energy exporters in renewables stand to generate significant revenues from exporting electricity, particularly if they pursue more ambitious climate policies under WAM. Govorukha et al (2023) highlight that the abundance of renewable energy sources in a country can drive fossil fuel power plants in neighbouring countries out of the market, primarily due to the merit order effect.³³ Consequently, margins from renewable energy exports increase, especially in importing countries with a higher share of fossil fuel generation capacities or dependencies. However, a country such as Germany relies on imports for balancing purposes only for a few hours annually, implying that neighbouring countries may indirectly share the costs of decarbonization if one country advances unilaterally.

Govorukha et al (2023) found that stricter carbon budgets for the power sector elevate electricity prices' mean values. Should an EU country alone pursue more progressive policies, average prices in neighbouring countries rise, along with price variance. However, this effect is constrained by available interconnection capacities between neighbours. In Analysing the total cost of operating and transforming national electricity sectors, Govorukha et al (2023) reveal two key trends driving the pursuit of ambitious unilateral commitments:

- (1) Early action costs can be partially redistributed to neighbouring markets lacking the ambition for more aggressive emission reductions and power sector transformations; and,
- (2) total costs increase as more countries adopt advanced policy regimes.

The impact of these trends at the national level is heavily influenced by a country's role (net exporter or net importer) in the European electricity market, its interconnection capacity, and the structure of its generation mix.³⁴

³² Govorukha, Kristina & Mayer, Philip & Rübhelke, Dirk. (2023). The landscape of European policies in the power sector: first-mover advantages. *Mitigation and Adaptation Strategies for Global Change*. 28. 10.1007/s11027-023-10081-6.

³³ Ibid

³⁴ Ibid

Committing to more ambitious targets in Ireland's National Energy and Climate Plans (NECPs) is imperative for addressing climate change effectively and leveraging associated socio-economic benefits. By demonstrating leadership in global climate efforts and fulfilling international commitments such as the Paris Agreement, Ireland can enhance its reputation as a responsible global citizen.

Moreover, ambitious climate action presents economic opportunities for growth and job creation through investments in renewable energy and green technologies. Prioritizing a transition to a low-carbon economy not only unlocks new markets and fosters innovation but also strengthens competitiveness in emerging sectors. Additionally, ambitious NECPs contribute to enhancing energy security and resilience by diversifying the energy mix and reducing reliance on imported fossil fuels. This, in turn, leads to improved public health outcomes by mitigating air pollution risks associated with fossil fuel combustion.

Furthermore, ambitious climate action aligns with Ireland's objectives for environmental protection and biodiversity conservation, contributing to the preservation of ecosystems and ecosystem services. Finally, prioritizing social equity and climate justice ensures fairness and inclusivity in climate action, addressing the needs and vulnerabilities of all segments of society. Overall, committing to more ambitious targets in Ireland's NECPs is essential for positioning the nation as a progressive and resilient leader in the face of global climate challenges.

6. INTRODUCTION TO CARBON CAPTURE AND STORAGE (CCS)

Carbon capture and storage (CCS) is a process in which a relatively pure stream of carbon dioxide (CO₂) from industrial sources is separated, treated and transported to a long-term storage location. For example, the carbon dioxide stream to be captured may come from burning fossil fuels or biomass, or from the operation of an incinerator or cement production plant. Usually the CO₂ is captured from one of these large point sources, and it is then then stored in an underground geological formation. The aim is to reduce greenhouse gas emissions and thus mitigate climate change. The IPCC's most recent report on mitigating climate change describes CCS retrofits for existing power plants as one of the ways to limit emissions from the electricity sector and meet the Paris Agreement goals.³⁵

³⁵ IPCC (2022). Shukla, P.R.; Skea, J.; Slade, R.; Al Khourdajie, A. (eds.). Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth

6.1 Why is There a Need for CCS?

Advanced technologies are now crucial to limit global warming to below 2°C. The IPCC's Fourth Assessment Report emphasized the necessity of reducing greenhouse gas (GHG) emissions by 50-85% by 2050 to avoid the most severe impacts of climate change.³⁶ However, recent research suggests even these targets may be overly optimistic. While a strong focus on adaptive strategies and solutions to GHG reduction is necessary to limit the negative impacts of climate change, the slow and gradual transition requires that mitigation strategies and solutions must also be given more attention.

Carbon Capture and Storage (CCS) emerges as a mitigation critical technology capable of removing CO₂ from the atmosphere at large scales. This urgency is recognized internationally, highlighted in reports like the IPCC's Special Report on Renewable Energy Sources and Climate Change Mitigation and the Technology Roadmap Carbon Capture and Storage in Industrial Applications, copublished by the IEA and UNIDO. The UNFCCC and IEA have both underscored the imperative for developing more powerful technologies to capture emissions from the atmosphere. CCS stands out as a significant solution for achieving net negative emissions, combining CO₂ Capture and Storage with sustainable practices.

6.2 What is CO₂ Capture and Storage and How Could it Contribute to Mitigating Climate Change?

Carbon dioxide (CO₂) capture and storage (CCS) involves separating CO₂ from industrial and energy-related sources, transporting it to a storage location, and isolating it from the atmosphere long-term. This method is considered as part of efforts to stabilise atmospheric greenhouse gas concentrations and mitigate climate change.

Alongside CCS, other mitigation options include improving energy efficiency, transitioning to less carbon-intensive fuels, utilizing nuclear power and renewable energy sources, enhancing biological sinks, and reducing non-CO₂ greenhouse gas emissions. CCS has the potential to lower overall mitigation costs and provide flexibility in reducing greenhouse gas emissions. However, its widespread adoption depends on factors such as technological maturity, costs, diffusion to developing countries, regulatory considerations, environmental impacts, and public acceptance.

Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press; Page SPM-16.

³⁶ IPCC. (2014). IPCC Fifth Assessment Report, Working Group III.

The Third Assessment Report (TAR) emphasizes that no single technology can achieve emission reductions necessary for stabilization.³⁷ Instead, a combination of mitigation measures is needed. Despite the dominance of fossil fuels in the primary energy supply until at least mid-century, technological options exist to achieve various levels of atmospheric stabilization. However, their implementation requires socio-economic and institutional changes. The inclusion of CCS in the mitigation portfolio can aid in achieving stabilization goals by offering additional options for emission reduction.

6.3 Key Aspects of CCS

CO₂ capture can be applied to large point sources, such as fossil fuel or biomass energy facilities, industries, and natural gas production sites. Once captured, CO₂ is compressed and transported for storage in geological formations, the ocean, mineral carbonates, or for use in industrial processes.³⁸³⁹ Geological storage involves storing CO₂ in formations such as depleted oil and gas fields, unmineable coal beds, and deep saline formations. Ocean storage involves injecting CO₂ into the deep ocean floor, and ensuring that the undersea reservoir can remain sealed for millennia. Industrial fixation converts CO₂ into inorganic carbonates. However, industrial uses of CO₂ are not expected to significantly reduce emissions.⁴⁰

The effectiveness of CCS in reducing emissions depends on factors such as the fraction of CO₂ captured, energy consumption for capture, transport, and storage, potential leakage, and long-term CO₂ retention.⁴¹ Current technology can capture about 85–95% of CO₂ processed.⁴²⁴³ A power plant equipped with CCS may require 10–40% more energy than one without, mainly for capture and compression. However, it can reduce CO₂ emissions by approximately 80%-90% compared to a plant without CCS.⁴⁴

³⁷ IPCC. (2005). IPCC Special Report on Carbon Dioxide Capture and Storage

³⁸ Das, Dipa & Agarwal, Tushar & Biswal, Arun. (2023). A review on different methods of CO₂ capture, separation and utilization. Brazilian Journal of Chemical Engineering.

³⁹ .1007/s43153-023-00378-z.

⁴⁰ Ibid

⁴¹ IPCC. (2005). IPCC Special Report on Carbon Dioxide Capture and Storage.

⁴² Das, Dipa & Agarwal, Tushar & Biswal, Arun. (2023). A review on different methods of CO₂ capture, separation and utilization. Brazilian Journal of Chemical Engineering.

⁴³ .1007/s43153-023-00378-z.

⁴⁴ Ibid

6.4 What is the Current State of CCS Technology?

There are several types of CO₂ capture systems: post-combustion, precombustion, and oxyfuel combustion. The choice of system depends on factors like CO₂ concentration, gas stream pressure, and fuel type (solid or gas). **Postcombustion** capture is economically viable for capturing CO₂ from flue gases in existing power plants and in the natural gas processing industry. **Precombustion capture**, while more elaborate and costly initially, benefits from higher CO₂ concentrations and pressures in the gas stream, making separation easier. **Oxyfuel combustion**, still in the demonstration phase, utilizes high-purity oxygen to facilitate CO₂ separation but has higher energy requirements.

For transporting large amounts of CO₂ up to 1,000 km, pipelines are preferred. In the USA, over 2,500 km of pipelines transport more than 40 MtCO₂ annually.⁴⁵ CO₂ is non-corrosive to pipelines unless moisture is present, in which case it is removed to prevent corrosion. Shipping CO₂ is economically feasible under specific conditions, but currently, it's limited due to low demand.⁴⁶

CO₂ storage in deep geological formations, such as oil and gas fields or saline formations, is economically feasible under certain conditions.⁴⁷ Various trapping mechanisms prevent CO₂ migration, including caprock presence. Storage in coal beds relies on CO₂ adsorption and depends on coal bed permeability. Combining CO₂ storage with Enhanced Oil Recovery (EOR) or Enhanced Coal Bed Methane recovery (ECBM) can generate additional revenue. Technologies for drilling, injection, simulation, and monitoring are continuously being developed for geological storage projects. Various components of Carbon Capture and Storage (CCS) are at different stages of development. While individual technologies for capture, transport, and storage may be mature or economically viable under specific conditions, the integration of these components into a complete CCS system is still relatively new.

There is very limited experience in combining CO₂ capture, transport, and storage into fully integrated CCS systems, particularly for large-scale applications such as power plants. CCS offers a means to control CO₂ emissions from fossil fuelbased electricity or hydrogen production, potentially mitigating dispersed emissions from transport and decentralized energy systems. Using electricity in vehicles and hydrogen in fuel cells presents opportunities in the transport sector. Currently, gas and coal conversion with integrated CO₂ separation (without storage) is the main method for hydrogen production.⁴⁸⁴⁹ However, increasing fossil fuel or biomass-based hydrogen or electricity production could lead to more large CO₂ sources suitable for capture and storage.⁵⁰

6.5 What are the Current Costs of CCS?

⁴⁵ Madejski, Paweł & Chmiel, Karolina & Subramanian, Navaneethan & Kuś, Tomasz. (2022). Methods and Techniques for CO₂ Capture: Review of Potential Solutions and Applications in Modern Energy Technologies. *Energies*. 15. 887. 10.3390/en15030887.

⁴⁶ Ibid.

⁴⁷ IPCC. (2005). IPCC Special Report on Carbon Dioxide Capture and Storage.

⁴⁸ Das, Dipa & Agarwal, Tushar & Biswal, Arun. (2023). A review on different methods of CO₂ capture, separation and utilization. *Brazilian Journal of Chemical Engineering*.

⁴⁹ .1007/s43153-023-00378-z.

Ibid

The costs of Carbon Capture and Storage (CCS) vary widely between countries and systems. Ongoing research, technological advancements, and economies of scale are expected to lower CCS costs in the future. The application of CCS to

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biomass-fuelled facilities could lead to lower or even negative CO₂ emissions, depending on the market value of emission reductions (IPCC 2005). Over the next decade, capture costs could decrease by 20–30%, with further reductions anticipated through new technologies.⁵⁰⁵¹ Transport and storage costs may also decline gradually as technology matures and scale increases.⁵²

The economic potential of CCS for stabilizing atmospheric greenhouse gas concentrations is estimated to be between 220 and 2,200 GtCO₂ cumulatively until 2100.⁵³ This suggests that CCS could contribute significantly, covering 15–55% of the global mitigation effort, depending on baseline scenarios.⁵⁴ However, uncertainties exist, particularly regarding the technical potential for geological storage in specific regions. Actual CCS implementation may fall short of economic potential due to factors like environmental impacts, leakage risks, and legal or public acceptance challenges. Nonetheless, CCS is projected to play an increasingly important role in mitigation portfolios over the century, potentially reducing the costs of stabilizing CO₂ concentrations by 30% or more.

6.6 Legal and Regulatory Barriers to CCS

Legal and regulatory considerations for implementing CO₂ storage are complex and vary between countries. While some existing regulations for subsurface

⁵⁰ Das, Dipa & Agarwal, Tushar & Biswal, Arun. (2023). A review on different methods of CO₂ capture, separation and utilization. Brazilian Journal of Chemical Engineering.

⁵¹ .1007/s43153-023-00378-z.

⁵² Ibid

⁵³ IPCC. (2005). IPCC Special Report on Carbon Dioxide Capture and Storage.

⁵⁴ Ibid

operations may apply to geological storage, few countries have developed specific frameworks for long-term CO₂ storage. Laws and regulations related to mining, oil and gas operations, pollution control, waste disposal, drinking water, treatment of high-pressure gases, and subsurface property rights may be relevant to CO₂ storage.

However, issues such as long-term liability for CO₂ leakage and local environmental impacts remain unresolved. Some states assume long-term responsibility for similar situations, such as underground mining operations, but specific regulations for CO₂ storage are still lacking in many jurisdictions.⁵⁵

6.7 Alternative CCS Methods?

A notable alternative to technology heavy CCS methods is Biological Carbon Capture and Storage (BECCS). This is a method that employs biological processes to capture CO₂ from the atmosphere, primarily through afforestation or bioenergy production coupled with carbon capture and storage (CCS).⁵⁶ Afforestation involves planting trees on previously non-forested land, allowing them to absorb CO₂ during photosynthesis and store it in their biomass and soil.⁵⁷ On the other hand, bioenergy with CCS utilizes biomass to produce energy through processes like combustion or anaerobic digestion, with the captured CO₂ stored underground, resulting in negative emissions.⁵⁸

In Sweden, BECCS plays a significant role in the country's climate mitigation strategy, with projects like the Stockholm Bioenergy CCS Project demonstrating the integration of bioenergy production and carbon storage.⁵⁹ Similarly, in Britain, the Drax Power Station has implemented BECCS by converting coal-fired units to biomass, capturing and storing CO₂ emissions (IEA 2021); but this project has been the subject of much criticism on account of the power station's need to import large quantities of wood pellets from the USA and other countries. These

⁵⁵ Madejski, Paweł & Chmiel, Karolina & Subramanian, Navaneethan & Kuś, Tomasz. (2022). Methods and Techniques for CO₂ Capture: Review of Potential Solutions and Applications in Modern Energy Technologies. *Energies*. 15. 887. 10.3390/en15030887.

⁵⁶ Levihn, Linus Linde, Kåre Gustafsson, Erik Dahlen, Introducing BECCS through HPC to the research agenda: The case of combined heat and power in Stockholm, *Energy Reports*, Volume 5, 2019, Pages 1381-1389, ISSN 2352-4847

⁵⁷ Ibid

⁵⁸ Ibid

⁵⁹ Ibid
Ibid

projects indicate the potential of BECCS to contribute to negative emissions and decarbonization efforts.

BECCS offers various benefits, including renewable energy generation, biodiversity enhancement, and soil restoration.⁶⁰ It can also be integrated into existing agricultural or forestry practices, leveraging available land resources. However, challenges such as land availability, technological limitations, and longterm sustainability concerns need to be addressed through careful planning and ongoing research and development efforts.

6.8 How does Technological CCS Compare with BECCS?

Comparing Biological Carbon Capture and Storage (BECCS) with technological Carbon Capture and Storage (CCS) methods encompasses various dimensions including efficiency, scalability, costs, and environmental impacts.

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Efficiency:

BECCS Efficiency: Dependent on factors like biomass type, land availability, and carbon sequestration rates. Studies indicate BECCS can achieve CO₂ removal rates of 0.5 to 2 tonnes of CO₂ per hectare per year through afforestation.⁶⁰

CCS Efficiency: Technological CCS methods typically capture 85-95% of CO₂ emissions from industrial processes, contingent on capture technology and operational conditions.⁶¹

⁶⁰ Smith, P., Davis, S. J., Creutzig, F., Fuss, S., Minx, J., Gabrielle, B., ... & Kriegler, E. (2016). Biophysical and economic limits to negative CO₂ emissions. *Nature Climate Change*, 6(1), 42-50.

⁶¹ IPCC. (2005). IPCC Special Report on Carbon Dioxide Capture and Storage.

Scalability:

BECCS Scalability: Constrained by factors such as land availability, competition with food production, and sustainable biomass supply. BECCS potential estimates suggest sequestration of 5-10 GtCO₂ per year by 2050.⁶²

CCS Scalability: Demonstrated scalability in capturing CO₂ emissions from industrial sources, with potential for capturing several gigatonnes of CO₂ annually worldwide.⁶³

Costs:

BECCS Costs: Encompass land acquisition, biomass production, carbon capture, and storage expenses. BECCS costs range from \$20 to \$100 per tonne of CO₂ avoided.⁶⁴

CCS Costs: Include capture equipment, transportation, and storage infrastructure costs. Estimates vary but generally range from \$30 to \$100 per tonne of CO₂ avoided.⁶⁵

Environmental Impacts:

BECCS Environmental Impacts: Potential for positive impacts like biodiversity enhancement and soil restoration. Concerns exist regarding land use change, competition with food production, and ecosystem impacts.

CCS Environmental Impacts: May involve CO₂ leakage, storage site selection impacts, and energy requirements. Nevertheless, CCS can substantially reduce CO₂ emissions and mitigate climate change impacts.

Both BECCS and technological CCS methods offer promising avenues for CO₂ mitigation and climate change mitigation. While BECCS capitalizes on biological processes and renewable resources, technological CCS methods provide efficient and scalable options for industrial CO₂ capture.

⁶² Lackner, K. S. (2003). A guide to CO₂ sequestration. *Science*, 300(5626), 1677-1678.

⁶³ IPCC. (2005). IPCC Special Report on Carbon Dioxide Capture and Storage.

⁶⁴ Fuss, S., Lamb, W. F., Callaghan, M. W., Hilaire, J., Creutzig, F., Amann, T., ... & Götz, M. (2018). Negative emissions—Part 2: Costs, potentials and side effects. *Environmental Research Letters*, 13(6), 063002.

⁶⁵ IPCC. (2014). IPCC Fifth Assessment Report, Working Group III.

7. CLIMATE CHANGE PERFORMANCE INDEX

The Climate Change Performance Index (CCPI) 2022 report assesses Ireland's climate performance, ranking it 37th, an improvement from 46th place previously.⁶⁶

Notable progress has been observed in climate policy, marked by the introduction of legally binding carbon budgets and sectoral emissions ceilings. However, the report highlights weak government implementation, with delays and neglect observed in various areas. Particularly, agricultural policies supporting intensified livestock farming are noted for exacerbating greenhouse gas (GHG) emissions, water and air quality degradation, and biodiversity loss. While significant plans for offshore wind and various schemes in transport, microgeneration, and energy efficiency have been introduced, challenges persist.

Coal usage in power generation has increased, and initiatives such as energy retrofits and solar photovoltaics are not being implemented at the necessary scale.⁶⁷ Fossil gas infrastructure continues to be promoted, although the government has accelerated the phase-out of peat in power generation and committed to peatland restoration.⁶⁹ However, criticism arises from ongoing peat extraction for horticultural use and export.

Regarding GHG emissions per capita, including Land Use, Land-Use Change, and Forestry (LULUCF), Ireland's performance is deemed 'very low,' while exclusion of LULUCF shifts the ranking to 'high.' Overall, Ireland remains among

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the low-performing countries in climate action.⁶⁸ A significant policy development is Ireland's climate law update, which aligns well with international best practices and Paris Agreement obligations. However, challenges persist in reducing emissions in line with carbon budgets due to rising energy demand and slow sustainable infrastructure rollout, particularly in public transport and renewable electricity. The proliferation of data centres (see section 8 below), consuming a

⁶⁶ Climate Change Performance Index 2022 Report - <https://ccpi.org/country/dnk/>

⁶⁷ O'Neill, S. (2023, December). Carbon Budgeting in Selected Countries (Working Paper No. 25). Climate Change Advisory Council, Ireland.

⁶⁸ Ibid

substantial portion of Ireland's electricity, poses a challenge to meeting sectoral emissions ceilings.⁶⁹

In agriculture, Ireland faces notable challenges as a major outlier, with a large livestock and dairy processing sector contributing significantly to methane emissions. Despite its significant climate footprint, the agricultural sector has received the lowest target under sectoral emissions ceilings. Policies aimed at reducing emissions, such as changes to nitrate rules and a new fertiliser register, have had limited impact due to reliance on voluntary uptake. Resistance to discussions of herd reductions further complicates emission reduction efforts, while tillage production has decreased sharply. Ireland's heavy reliance on imported fruit and vegetables further underscores the agricultural sector's challenges in emissions reduction.

The points so far raised indicate that while Ireland is taking steps in the right direction, its action is relatively slow and unambitious. Due to their varying subject and context specific nature, specific WAM will not be recommended by us at this time. However, in section 5 above we discussed some key benefits of taking general WAM pathways rather than relying on WEM pathways.

8. ENERGY USAGE IN DATA CENTRES

Section 4.3.1 of the Draft National Energy and Climate Plan looks at the current primary and final energy consumption in the economy in various sectors. In this section it is stated:

EirGrid's analysis shows that demand from data centres could account for 31% of all demand by 2027 (in a median demand scenario). In June 2018, the Department of Business, Enterprise, and Innovation published a statement on The Role of Data Centres in Ireland's Enterprise Strategy. This statement acknowledges that, as large consumers of electricity, data centres pose particular challenges to the future planning and operation of a sustainable power system.⁷⁰

⁶⁹ Ibid

⁷⁰ Ireland's Draft National Energy and Climate Plan
Ibid

Because of its temperate climate, Ireland has attracted a significant number of data centres. The energy usage of these is quite high compared to use by residential users of power. According to the Central Statistics Office, Electricity consumption by data centres increased by 31 per cent in 2022 from 2021, accounting for 18 per cent of total consumption across the economy. This equals the total consumption by urban households in Ireland.⁷¹

A significant use for servers and custom-built machines can be the mining of cryptocurrencies (performing complex calculations to generate cryptocurrency which can be sold for money). This is a very high energy intensive task. In 2020 to 2021, Bitcoin consumed 173.42 terawatt hours of electricity - enough to rank it 27th among nations, trumping the likes of Pakistan. Coal made up 45% of its supply mix during this period, followed by natural gas on 21%.⁷² Given the high energy consumption of this task and the fact that it only produces a digital token for speculation, the mining of cryptocurrencies in Ireland should be banned to conserve energy.

The state of New York has already banned cryptocurrency mining powered by fossil fuels and several countries such as China and India have also banned this practice.⁷³ In addition, a requirement for new data centres to supply a percentage of renewable energy such as solar panels or wind energy would be a great way to mitigate their high energy consumption.

9. COMMERCIAL BUILDINGS

Improving the energy costs of commercial offices is something that would benefit greatly in terms of energy usage. To start we should look at public offices such as civil service buildings; many of these are older, less efficient buildings in terms of energy usage. Section 2.2.3 of the plan outlines:

*“The Plan sets out targets for the significant improvement of energy efficiency in our building stock with a target of 500,000 existing buildings to be retrofitted to a B2 Building Energy Rating or cost optimal by 2030”.*⁷⁴

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<https://www.cso.ie/en/releasesandpublications/ep/pdcmec/datacentresmeteredelectricityconsumption2022/keyfindings/>

72 <https://news.sky.com/story/bitcoin-mining-consumes-more-electricity-than-most-countriesstudy-suggests-12991456>

73 <https://www.nytimes.com/2022/11/22/nyregion/crypto-mining-ban-hochul.html>

74 Ireland's Draft National Energy and Climate Plan

In 2022 only one of 238 office buildings occupied by Government Departments and agencies has achieved an A rating for energy efficiency. Figures released by the Office of Public Works show the majority of public buildings have relatively poor energy ratings despite a huge policy focus on retrofitting and energy efficiency by successive governments over the past decade.

The only building owned or leased by the OPW with an A rating is the Revenue Warehouse in Limerick which scores an A2. Just 38 of the 238 buildings have a B rating and, of those, only two have a B1 rating — the Ionad an Bhlascaoid interpretative centre in West Kerry, and the Central Remedial Clinic offices in Swords, Co Dublin.⁷⁵

An energy usage review should be conducted of these buildings and small changes such as setting computers so that shutdown after a fixed amount of time would save energy, as well as procedures to turn off light and heating on floors no longer in use due to working from home.

Some older buildings might not be economical to be retrofitted to B2 standard and so a decision should be made to no longer use these buildings and move to hybrid work from home models and smaller newer more energy efficient buildings can be used to save energy and the cost of expensive retrofits. An example of this was when the Revenue offices in Sarsfield house and River house in Limerick were merged into one building and since the majority of staff work from home most of the week, much lower capacity was needed in the office, even though Sarsfield house is not energy efficient; there is a plan in place to move the staff to a new building in a few years which will be far more energy efficient.

An internal competition could be run among the departments to encourage innovative energy saving ideas in these buildings since it would likely be too costly to retrofit or rebuild them.

10. RESIDENTIAL BUILDINGS

A very significant use of fossil fuels is for heating older houses which rely on oil or solid fuels for heating (many rural homes). While there are government grants available, for many people, they cannot afford the percentage they would have to come up with for the retrofit and so do not avail of the scheme. Paying for all retrofits at once would be too costly and there likely wouldn't be enough vendors to do it. The government should look at the rural or small town areas with the highest reliance on fossil fuels and target a couple of them as a pilot for a fully

⁷⁵ <https://www.irishtimes.com/ireland/2022/10/17/just-one-government-office-building-has-agrade-energy-efficiency-rating/>

funded retrofit for the homes there. A few high profile retrofit pilots might help to get other areas or homes to be upgraded.

Section 2.2.3 states:

*“Effectively ban the installation of oil boilers from 2022 and the installation of gas boilers from 2025 in all new dwellings through the introduction of new regulatory standards for home heating systems. Progressively phase out oil and gas boilers in existing dwellings through a combination of incentives, information, and regulatory measures”.*⁷⁶

This is very ambitious and without a drastic increase in funding for retrofits many rural homes will not be able to afford the switch to a heat pump from oil or solid fuel. An increase in the grants available for this would also help if they covered a higher percentage of the cost.

11. PUBLIC PARTICIPATION

The public participation process conducted here is deeply flawed because:

1. It is not conducted early in the process while all options are open, as required by the Governance Regulation, the SEA Directive and the Aarhus Convention.
2. It was not conducted in accordance with the timeframes envisaged in the Governance Regulation 2018.
3. The plan itself lacks sufficient specificity to enable even expert engagement with its contents. The analytical basis was not provided, and many of the measures in the WAM (with additional measures) version of the plan (on which achievement of our climate targets rest) are not specified or fully detailed, some depend on technologies that do not yet exist.
4. The plan was placed on the government website for consultation as a whole with no accompanying explanatory material, non-expert summary, plain English version, explanatory videos or webinars, no real attempt to publicise the consultation, no other language versions, no accessibility enabled versions for those with visual or other impairments. No real attempt was made to make this document legible to the public concerned or to create conditions that would enable participation and engagement.

⁷⁶ Ireland’s Draft National Energy and Climate Plan.

These failures and their implications for climate policy are outlined in detail in a joint briefing compiled by EJNI, Friends of the Earth Ireland, and the Community Law and Mediation Centre for Environmental Justice in collaboration with academic experts working in the field of climate governance titled 'Ireland's Revised National Energy and Climate Plan: Does the draft revised Plan show a path to Net-Zero?'.⁷⁷

This research details five key weaknesses in the draft: the delay in preparing the draft; the non-alignment between the draft NECP and Ireland's national Longterm Strategy; outdated and incomplete information in the draft; the absence of up-to-date scenarios and projection pathways; and the inadequate public participation processes undertaken to date. This public consultation is not a useful exercise because the public and stakeholders have not been given the information required to comment or participate in the preparation of the draft updated NECP in a constructive and informed way.

This failure is even more significant in light of the fact that the Government was provided with a detailed NGO briefing in March 2023 on how the public consultation requirements could be complied with, that included a check-box list and highlighted the need to consult in advance of submission of the draft, and to conduct an SEA.⁷⁸

The failure to consult, and the failure to properly integrate just transition considerations into the plan also has important consequences for the legitimacy, effectiveness and success of Ireland's plan. The measures proposed are not equality-proofed against the experience of the life of the average citizen. They fail to examine the impacts on the most vulnerable, and lack the data about impacts that can only be obtained from people in the community who can give the Government valuable information about how what they have proposed will actually work in practice and about unintended consequences of measures. For example whether switching to a fleet of EV buses which require long charging times between runs will result in fewer buses timetabled on routes, affecting peoples ability to get to work or conduct their lives, and potentially increasing car reliance rather than reducing it. Or the impacts of climate measures on the "shadow economy" in deprived rural areas where more people survive deprivation and energy poverty by doing "nixers" or simply operate small business below tax

⁷⁷ Available here: <https://ejni.net/wp-content/uploads/2024/02/Briefing-on-responding-toIrelands-draft-updated-NECP-26.02.24.pdf>.

⁷⁸ Alison Hough and Ciara Brennan, 'Legal obligations for public participation during the 2023 updating of National Energy and Climate Plans (NECPs)' EJNI Briefing Paper, March 2023 available at <https://ejni.net/wp-content/uploads/2023/03/EJNI-Briefing-Paper-PublicParticipation-and-the-NECP-Revision.pdf>.

registration thresholds that are not counted when assessing impacts. The removal of the Peat Based economy in the Midlands was the focus of much of the reports and assessment in the preparation of the just transition territorial strategy, but despite the high rate of shadow economy work surrounding the peat based economy in the Midlands, the just transition strategy focussed almost exclusively on the economic impact of large industrial scale peat industry corporates closing down, and on reskilling their workers. There was no discussion of the large numbers of uneducated labourers working in the shadow economy of turf cutting for residential use.

Failure to consult therefore results in plans containing actions which have negative unassessed impacts for many members of the public, and for marginalised groups in particular who are already the most vulnerable to climate impacts.⁷⁹

It results in less effective measures because they are proposed in the absence of knowledge of how their implementation will work in practice, and may actually have negative climate impacts. For example, the Government recently introduced a policy of “reclaiming” bogs by planting trees on them⁸⁰, which damaged their integrity and resulted in them becoming net carbon emitters⁸¹ rather than carbon sinks. Another example is the granting permission for renewable projects like wind turbines in bogs without understanding that this would damage the bogs⁸². In Derrybrien⁸³ this famously resulted in a landslide, property damage, irreparable

⁷⁹ Sadhbh O'Neill & Ors, Environmental Justice in Ireland: Key dimensions of environmental and climate injustice experienced by vulnerable and marginalised communities, (2022) Report of the Environmental Justice in Ireland project was funded by the Irish Research Council under the New Foundations 2020 funding scheme, in a partnership between DCU, Community Law Mediation.

⁸⁰ Government to plant 600,000 new native trees over next three years, The Journal, 22nd October 2019 <https://www.thejournal.ie/trees-government-native-plant-climate-change-green4833752-Oct2019/>

⁸¹ Rewetting or reforesting peatlands: Planting trees on bogs isn't a good idea, but hands are tied, Buzz.ie, 22nd May 2023 <https://www.buzz.ie/news/irish-news/drained-peatlands-forestedreplanting-rewetting-30039150>; and Ireland's tree-planting policies are bad news for biodiversity The Journal, 25th Oct 2020 <https://www.thejournal.ie/spruced-up-pt1-5241271-Oct2020/>

⁸² Building wind farms on peatlands could undermine green transition, Farmers Journal, 24th May 2023 <https://www.farmersjournal.ie/news/news/building-wind-farms-on-peatlands-couldundermine-green-transition-765718>

⁸³ The CJEU case C-261/18 relates to Ireland's non-compliance with a prior judgment in case C-215/06 from July 2008, specifically the non-compliance of a development consent for a wind farm in Derrybrien, Co Galway with the environmental impact assessment (EIA) Directive.

habitat damage and 20 years of litigation in the Irish and EU Court, and millions of euros of fines for Ireland.

Producing measures that have unintended consequences for people who are already the most affected by climate change, and which make their lives more difficult, because of the failure to consult, undermines acceptance of climate measures. The failure to adequately consult with the actual public on the measures in this plan also feeds into anti-climate action conspiracy theory sentiment around the Governments attempts to tackle climate change, and is extremely counter productive.

12. JUST TRANSITION

As mentioned, the Government has in the main policy makers/public service staff, with limited broader public engagement. No use has been made of Public Participation Network for this. The National Climate Dialogue was not informed by the draft NECP as it was not available.

The draft NECP is not equality proofed for impacts on the marginalised, and because of lack of open consultation, has missed many important measures to alleviate poverty and energy poverty driven by rising costs.

The draft NECP recognises that people at risk of energy poverty need to access different combinations of available measures to meet their individual needs and circumstances. Ireland's strategy to combat energy poverty is laid out in the Energy Poverty Action Plan. The EPAP sets out a range of short-term and longerterm actions taken to ensure those most at risk of energy poverty can adequately heat and power their homes.

Criticism has been levelled that the EPAP has not sufficiently taken into account the experiences of households in energy poverty, and that measures are insufficiently targeted to be effective as a result. It is concerning that energy poverty continues to rise. Better quantitative and qualitative data is required, and actual input from vulnerable groups to ensure effective targeting of measures. For example, only 35-40% of all houses in Ireland have a Building Energy Rating, so the true extent of the required investment cannot be assessed without a full picture of the state of Ireland's housing stock. This also means that the true impacts of increased energy prices are unknown also.

Just Transition policy has focussed mainly on employees of large industrial peat corporates and has missed the nuanced impacts on some of Ireland's most marginalised communities.

13. CONCLUDING OBSERVATIONS

In our brief review of the national draft National Energy and Climate Plan, we have noted significant areas where the plan is best described as weak or not sufficiently detailed, and lacking in ambition.

A further problem is that this country appears to have been consistently late in meeting its EU obligations for the submission of important climate strategies and plans. Apart from the current public consultation process, there has been inadequate stakeholder or public involvement in preparation of the initial drafts or early stages of the National Energy and Climate Plan; and this inadequate consultation has led to some frustration and annoyance.

Energy and climate are inextricably connected in the real world, and these areas and activities are also linked closely with other activities such as agriculture, construction, transportation, land use, urbanisation and development control in rural areas. Particularly in Ireland, no energy and climate plan can be complete if it does not take into account land use (especially agriculture) and a planning system which has resulted in very significant energy use for transportation by private motor-vehicles, as opposed to more efficient public transport, or mobility by walking or cycling over a shorter distances.

An unusually high degree (by European standards) of car dependency necessarily results in a higher than normal consumption of fossil fuels; and, even if personal mobility becomes largely electrified, the generation of electric power for large numbers of vehicles cannot but have adverse effects on climate, even if renewable sources provide a very high proportion of power generated.

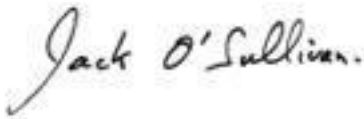
It is also unclear to us how a national energy and climate plan which aims to look ahead can do so in the absence of detailed scenarios and pathways to a zero carbon future, which is environmentally sustainable and does not breach planetary boundaries. The draft National Energy and Climate Plan provides no clear path or roadmap to such a future, and does not indicate workable or acceptable solutions to some of the most challenging problems such as Ireland's dependence on livestock-based agriculture. Changing our agricultural model from livestock to plant-based (especially organic) would significantly reduce the country's carbon dioxide and methane emissions, in total and per capita.

While preparing this submission, and before finalising it, we had an opportunity to examine the assessment prepared by the European Commission which examined Ireland's draft updated in NECP. It was instructive to see that the Commission's assessment was not too far out of line with some of the points in our own critical evaluation of the draft NECP, especially (as the Commission noted) the lack of viable scenarios and a large number of assumptions built into the plan.

We understand the difficulty of preparing a national plan of this type, given the large number of issues which have to be taken into account, and the apparent lack of data and major uncertainties which make planning difficult. Nevertheless, it is our submission that this draft NECP needs to be thoroughly strengthened, and revised to ensure a high degree of connectedness with other plans and policies. We need systems thinking, and not silo thinking!

We trust that the Department will consider our observations and suggestions as a positive contribution to improvement of the final NECP.

Jack O'Sullivan



Zero Waste Alliance Ireland

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This submission was researched and written by Craig Tobin-Dower (ZWAI member), Alison Hough (ZWAI Member) and Jack O'Sullivan (ZWAI founder member and director); with preliminary editing by Órla Coutin (ZWAI administrator and researcher), and Jack O'Sullivan, with the assistance of Dalia Smelstoriūtė, and final edit by Alison Hough BL.