CLIMATE CHANGE ADVISORY COUNCIL

ANNUAL REVIEW 2026

Agriculture and Land Use, Land Use Change and Forestry

Annual Review 2026: Agriculture and Land Use, Land Use Change and Forestry

Submitted to the Minister for Climate, Energy and the Environment on 7 September 2026

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Summary for All

Key observations

Agriculture emissions fell by 0.2% in 2025 and are now 4.7% lower than in 2018. The most recent projections, incorporating the latest research and data, indicate a 19% reduction in emissions is possible by 2030 if all the measures in the 'with additional measures' scenario are implemented. More ambitious action is required to meet the 25% emissions reduction target. The Land Use, Land Use Change and Forestry (LULUCF) sector remains a significant source of emissions in Ireland, and recent projections suggest it is likely to miss the EU LULUCF target for 2026–2030. Progress in management of wetlands and grasslands has been offset by a weakening forest sink, and the Forestry Programme is not achieving afforestation targets. Ireland is substantially off track in meeting the target of 18% national forest cover by mid-century.

Prolonged and intense winter rainfall events and summer heat stress have increased pressure on farms. Access to land for grazing has been affected by rainfall, with knock-on impacts on animal feed, housing, waste management and agricultural run-off. Soil, water and ecosystem restoration on farmland has a vital role to play in building resilience and maintaining farm productivity. Food supply and distribution are vulnerable to extreme weather in Ireland and in the other regions where Ireland sources food, particularly fruit and vegetables. This vulnerability is compounded by declining local food production and declining numbers of horticultural producers.

Key recommendations

Governance and policy design

The Government should strengthen the evidence base for climate action and implementation of mitigation and adaptation measures across the Agriculture and LULUCF sectors. This should include effective and structured dialogue with stakeholders such as farmers, rural communities and workers to inform policy design, funding and training needs. An evidence-led paper on carbon pricing is recommended to support informed decision-making on a national and EU approach to carbon pricing. A national land use framework that integrates the findings of the Land Use Review is necessary.

Progressing mitigation and resilience actions

Within the next year, the Government should resource and accelerate implementation of the key mitigation measures identified in the Climate Action Plan for the Agriculture and LULUCF sectors. The Government should also finalise a digital support tool, tailored to individual land parcels, to help farmers understand future climate impacts, risks and opportunities and to support on-farm management options. The next Forestry Programme should set clear targets for increasing forest cover and address barriers for landowners and farmers.

Renewable energy

The Government should accelerate implementation of the Biomethane Strategy to support energy security and emissions reductions, and enable diversification within the Agriculture sector. Advancing the Renewable Heat Obligation is urgently required to support investment in biomethane production. The National Planning Statement on Solar Energy should set out best practice for sustainable solar development that supports agriculture, soil health and biodiversity.

Abbreviations

Abbreviation	Definition
CAN	calcium ammonium nitrate
CBAM	Carbon Border Adjustment Mechanism
DAFM	Department of Agriculture, Food and the Marine
DCEE	Department of Climate, Energy and the Environment
DHLGH	Department of Housing, Local Government and Heritage
EPA	Environmental Protection Agency
ESABCC	European Scientific Advisory Board on Climate Change
ETS	Emissions Trading System
IGEES	Irish Government Economic and Evaluation Service
LULUCF	Land Use, Land Use Change and Forestry
MACC	Marginal Abatement Cost Curve
MGO	marked gas oil
NRP	National Restoration Plan
OPW	Office of Public Works
RHO	Renewable Heat Obligation
SEAI	Sustainable Energy Authority of Ireland
SEC	sectoral emissions ceiling
WAM	with additional measures
WEM	with existing measures

Contents

Key observations

Agriculture sector emissions and main trends

- Emissions estimates for the Agriculture sector have been updated based on the latest scientific research and improved activity data. Provisional Agriculture sector emissions in 2025 of 20.4 Mt CO_2 eq were down 0.2% relative to 2024, and down 4.7% compared with the revised 2018 baseline, according to the most recent inventory estimates.
- Underpinning the Agriculture sectoral emissions ceilings are commitments to reduce emissions by 10% by 2025 and 25% by 2030 relative to 2018. Environmental Protection Agency projections suggest that, under the 'with existing measures' scenario, emissions would remain largely static over the period to 2030, whereas emissions would fall by approximately 19% by 2030 under the 'with additional measures' (WAM) scenario. The sector could achieve the emissions reduction of 25% or more by 2030 if all WAM measures and other diversification measures identified in the latest Climate Action Plan were fully implemented.

Land Use, Land Use Change and Forestry emissions and trends

- The emissions estimates for the Land Use, Land Use Change and Forestry (LULUCF) sector have been updated based on the latest scientific research and improved activity data. The update has resulted in a reduction in the estimate of overall emissions; however, LULUCF remains a significant net source of greenhouse gas emissions.
- The publication of the final inventory values for 1990–2024 enables an estimate of the emissions trajectory required for the sector to meet the target set under the EU LULUCF Regulation. This sets an approximate emissions budget for the sector of 13.3 Mt CO_2 eq for the period 2026–2030. This estimate is subject to change, as the LULUCF inventory itself is undergoing continual improvement and revision. The most recent projections suggest that the LULUCF sector is unlikely to remain within the EU emissions budget.
- Significant progress has been observed in the reduction of emissions from wetlands, largely due to the rewetting and restoration activities on previously drained peatlands. However, this has been offset by a decrease in the sink of forest land, mostly due to a large proportion of the national forest estate approaching harvesting age and afforestation rates being insufficient to balance the resulting removals of stored carbon.
- The Council has repeatedly observed that the Forestry Programme is not achieving its stated afforestation goals. Without radical change in implementation, Ireland will grossly fail to meet both the long-standing target of 8,000 ha of new forestry per year and the 18% national forest cover by mid-century.

Resilience

- Ireland's food supply and distribution is highly dependent on imports and vulnerable to a range of external disruptions and risks, including conflicts and the impacts of extreme weather events on inputs and supply chains. A decline in the number of domestic horticultural producers and local production increases the country's vulnerability to external shocks and represents a missed opportunity to reduce the carbon footprint of Ireland's food supply and distribution, diversify against risks and deliver further environmental and health co-benefits from Ireland's agri-food system.
- The Council is concerned about the impacts of prolonged and intense winter rainfall events and summer heat stress, both of which have been strongly linked to climate change, on agricultural activities.[1] This includes the impacts of heat stress on grazing, crop yields, fodder reserves and animal welfare and the impacts of prolonged and intense rainfall events on access to fields for grazing, and the increased pressures that this is placing on fodder supplies, animal housing, management of animal waste, and run-off from agricultural land. Restoring soil, water and ecosystem functions on farmland has a key role to play in supporting farmers to absorb shocks from extreme weather events and maintain agricultural productivity.

Key recommendations

Governance and policy design

1. The Council recommends that the Department of Agriculture, Food and the Marine (DAFM) and the Department of Climate, Energy and Environment act together to develop a structured and effective dialogue process, within 12 months, with farmers, rural communities and rural workers. This dialogue is needed to ensure full and shared understanding of the concerns, costs, benefits and incentives for climate action and to inform policy design, knowledge transfer programmes, funding mechanisms, upskilling and training.
2. The Council recommends that an authoritative evidence-based paper led by the appropriate Government officials, such as the Irish Government Economic and Evaluation Service, on the carbon pricing for the Agriculture and LULUCF sectors be undertaken over the coming 12 months. This paper would build the robust evidence base required to make an informed decision regarding a national approach to carbon pricing in the context of an EU-led carbon pricing approach in the sectors.
3. The Government should integrate the evidence and findings of the Land Use Review, published in early July 2026, into a coherent national land use framework consistent with the National Climate Objective within 18 months. This framework is needed to address growing and diverse demand for resources and ecosystem services, delivered through sustainable land use management across the country.

Progressing mitigation and resilience actions

4. The Council urges DAFM to fulfil its commitment in the 2024 Climate Action Plan to develop a detailed implementation plan for the mitigation measures identified in Teagasc's 2023 Marginal Abatement Cost Curve analysis. The implementation plan should be time-bound and well resourced, with a clearly defined trajectory and both interim and final targets. In order to achieve 2030 targets, DAFM must develop and initiate these implementation plans within the next 12 months.
5. The Council recommends that the next Forestry Programme, due in 2028, address the challenge of achieving 18% national forest cover by mid-century. This will require setting specific targets across the various schemes and introducing the necessary policy flexibilities to support increased participation by landowners and farmers. The Council recommends that the design of the policy flexibilities be informed by insights from behavioural analysis, which identifies key non-economic barriers to participation.
6. The Council recommends that DAFM develop a digital land-parcel-specific climate resilience and risk management decision support tool over the next 12 months to assist farmers in understanding future climate impacts, risks and possible opportunities, and provide practical support for on-farm management options. This could be integrated into other increasingly used farmer decision support tools, such as AgNav and PastureBase Ireland, as appropriate.

Resilient food systems

7. The Council recommends that DAFM review the potential for Irish horticulture production to reduce the risk to food security, given Ireland's high reliance on the importation of fruit and vegetables, in the context of climate change risks to the supply chain. The review should include existing horticulture support schemes and supports for primary horticulture producers.

Renewable energy

8. Reducing Ireland's reliance on imported fossil fuels has taken on increased priority and urgency. Achieving the Biomethane Strategy targets would contribute significantly to improved energy security and emissions reductions within the Agriculture sector through the diversification of farm activity. Progress on the implementation of the strategy has been slow. The Council reiterates the urgency of advancing the Renewable Heat Obligation to build investor confidence and incentivise investment to ensure that demand for biomethane is robust and that production capacity is built out to meet demand.
9. A National Planning Statement on Solar Energy is required under the amended Planning and Development Act 2024. The Council recommends that the statement include best practice guidelines on the sustainable roll-out of solar infrastructure that supports integration with agriculture, soil health and biodiversity.

1. Introduction

The dominant land use in Ireland is agriculture, followed by forestry. While greenhouse gas emissions from the Agriculture sector and Land Use, Land Use Change and Forestry (LULUCF) sector are reported separately under United Nations and EU reporting conventions, the Climate Change Advisory Council examines these together, as their activities are closely integrated.

The Agriculture sector is the largest single source of greenhouse gas emissions, accounting for 37.0% of Ireland's emissions in 2025. Agriculture sector emissions account for 48.6% of emissions under the EU Effort Sharing Regulation. Methane and nitrous oxide emissions associated with livestock and dairy production dominate the sector's emissions profile.

The LULUCF sector is a net source of emissions in Ireland, accounting for 4.5% of total national emissions in 2024. Ireland is one of just nine EU Member States reporting LULUCF as a net source of emissions in 2024. The other Member States typically report net removals of greenhouse gases.[2] The largest sources of LULUCF sector emissions in Ireland are the management of wetlands and grasslands, largely due to the drainage of organic soils or peat. Critically, the forest land use category is on a trajectory to transition from being a net sink to a net source of emissions by about 2030, due to a large proportion of the national forest estate approaching harvesting age and afforestation rates being insufficient to balance the resulting removals of stored carbon.

2. Sectoral emissions ceilings and Climate Action Plan targets

2.1. Agriculture

Sectoral emissions ceilings (SECs) for the periods 2021–2025 and 2026–2030 were published by the Government in September 2022.[3] The SEC for the Agriculture sector was 106 Mt CO_2 eq for the first period, and 96 Mt CO_2 eq for the second period. Both these ceilings were underpinned by point-in-time targets of emissions reductions of 10% by 2025 and 25% by 2030 relative to 2018, which were approved by the Government in July of 2022.[4]

It is acknowledged that it is the SECs, in absolute emissions of Mt CO_2 eq, rather than point-in-time targets, in percentages, that have a legal basis in the Climate Act. However, since 2022 there have been significant improvements to the Environmental Protection Agency (EPA) inventories arising from improved scientific understanding of emissions factors for this sector, leading to systematic reductions in estimated historical and ongoing emissions in carbon dioxide equivalent (CO_2 eq).

The net effect is a downward adjustment of 6.8% to the 2018 emissions estimate for the Agriculture sector and similar reductions prior and since. As a consequence, the Agriculture sector may technically comply with the constraints of its SEC despite relatively poor progress in emissions reductions. Given the remaining uncertainties in emissions factors, it is entirely likely that further revisions will occur in future that may systematically either increase or decrease estimated historical and ongoing emissions from the sector, with substantial consequences for the perceived viability and/or achievement of the Agriculture sector target if expressed in absolute terms.

The EPA has stated that '…consequently, direct comparison of emissions in the Agriculture sector against its sectoral emission ceiling is no longer viable. The Climate Act provides for the revision of carbon budgets and sectoral emission ceilings where "there are significant developments in scientific knowledge in relation to climate change".'[5] As the Council noted in the Annual Review 2025: Agriculture and Land Use, Land Use Change and Forestry,[6] the first opportunity to undertake a review and to make technical adjustments will arise in April 2027, when the inventories for 2021–2025 are finalised.

The Government should at that point initiate a review, and at a minimum every 5 years thereafter. In Northern Ireland, all carbon budgets are expressed in percentages rather than in absolute terms. This means that movements in baseline emissions do not undermine carbon budgets expressed as absolute values. A similar approach would be appropriate in dealing with this uncertainty.

In light of this situation, Table 1 shows progress towards the Agriculture sector's annual emissions targets of a 10% emissions reduction by 2025 and a 25% reduction by 2030. The EPA provisional inventories and projections show that neither of these point-in-time targets will be met, even in the more optimistic 'with additional measures' (WAM) scenario. However, the Climate Action Plan has identified a number of other diversification measures, which, if implemented, would achieve additional emissions reductions. The sector could achieve the 25% reduction by 2030 if mitigation actions in the latest Climate Action Plan, including diversification actions, were fully implemented; see Table 5 in *Section 5.2.1*.

Table 1: Progress towards annual emissions targets for the Agriculture sector (Mt CO_2 eq % relative to 2018).

WEM, with existing measures; WAM, with additional measures.

(Sources: Ireland's Greenhouse Gas Emissions Projections 2025–2055 [5] and Ireland's Proxy Greenhouse Gas Emissions 1990–2025.[7])

Agriculture	2018	2024	2025	2030
	Mt CO_2 eq			
Provisional 1990–2025 inventory	21.4	20.4	20.4	–
WEM	–	–	–	20.5
WAM	–	–	–	17.3
	% change relative to 2018			
Indicative emissions reduction target	–	–	−10%	−25%
Inventory	–	−4.5%	−4.7%	–
WEM	–	–	–	−4.2%
WAM	–	–	–	−19.1%

Carbon budget period	SEC	Proxy emissions (2021–2025)	WEM (2026–2030)	WAM (2026–2030)
2021–2025 Mt CO_2 eq	106	105.3	–	–
2026–2030 Mt CO_2 eq	96	–	101.7	90.6

2.2. Land Use, Land Use Change and Forestry

The most recent EPA inventory analysis of the LULUCF sector reported net emissions of 2.51 Mt CO_2 eq in 2024.[7] This is close to the minimum level of 2.47 Mt CO_2 eq reported in 2022, and well below typical levels estimated in excess of 6 Mt CO_2 eq in the 1990s.

The EPA has incorporated the findings from recent country-specific research to develop and improve the LULUCF inventory and projections methodologies.[8] This revision has led to a downward adjustment of −37.5% to the 2018 emissions estimate for the LULUCF sector.

Significant progress has been observed in the reduction of emissions from grasslands and wetlands, largely due to the changes in management of drained organic soils under grasslands and the rewetting and restoration activities on previously drained peatlands. However, this has been offset by a steady decrease in the sink of forest land since 2010, largely due to a slowdown in the growth rate as forests planted in the 1980s–2000s reach maturity, and the failure to achieve afforestation targets in recent decades.

In 2026, the EPA has implemented additional substantial revisions to the methodology and activity data used for the emissions inventory and projections analysis of the LULUCF sector.[a] Figure 1 shows the time series of emissions and removals across all land use categories as reported by the EPA in April 2026.[7] Also shown in Figure 1 are the net LULUCF emissions as reported by the EPA in 2025

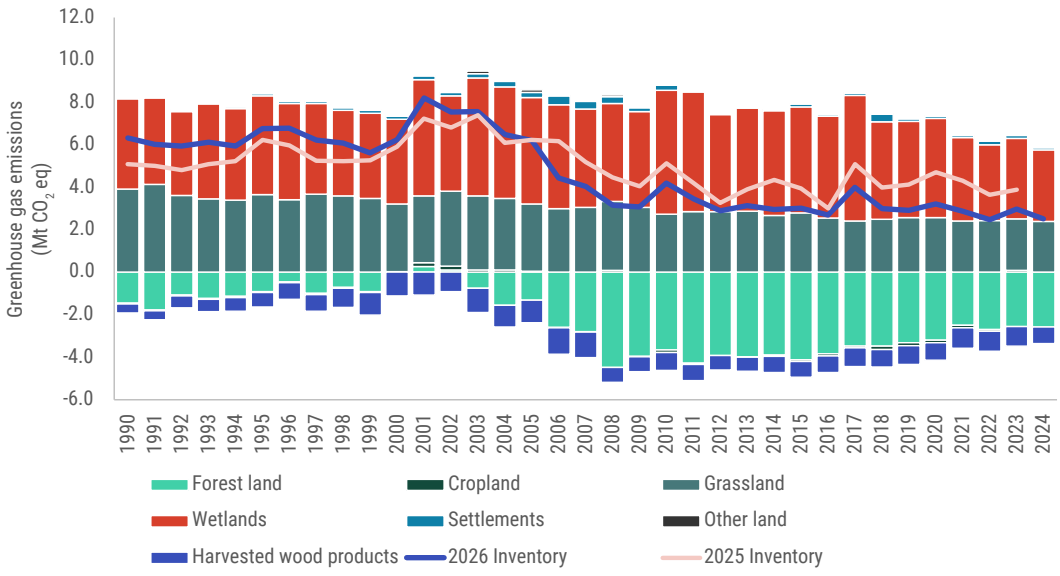

Figure 1: Estimated net greenhouse gas emissions associated with each of the land use categories within the LULUCF sector for the period 1990–2024, from the most recent EPA inventory published in 2026. For comparison, also shown are the total net LULUCF emissions for the period 1990–2023 from the EPA inventory published in 2025.
(Sources: EPA inventory 2026[7] and EPA inventory 2025.[9])

a Under the EU LULUCF Regulation (Regulation (EU) 2018/841, amended by Regulation (EU) 2023/839) all Member States have been mandated to develop robust and reliable national inventory systems to fulfil the minimum monitoring and reporting requirements under the regulation. In response, all Member States are engaged in a process of revising their inventory processes and methodologies.

(for the period 1990–2023; yellow line).[9] While the broad trends are very similar to the previous iteration of the LULUCF inventory, reported net emissions over the last 20 years are consistently lower than emissions estimates published in 2025.

A SEC has not been set for the LULUCF sector. The Climate Action Plan affirmed the goal of achieving the 2030 LULUCF emissions reduction target of 0.626 Mt CO_2 eq relative to a baseline equal to the average net emissions of the period 2016–2018, as defined in the EU LULUCF Regulation. The baseline is net emissions of 3.24 Mt CO_2 eq, estimated from the most recent inventory data.

Progress towards meeting the EU emissions reduction target is insufficient and the projections for the LULUCF sector (see Figure 2) show net emissions trending in the wrong direction. Preliminary analysis of projections under the 'with existing measures' (WEM) and WAM scenarios suggest that LULUCF will miss the 2030 emissions target by 2.6 Mt CO_2 eq and 0.5 Mt CO_2 eq, respectively. The sector will overshoot the implied cumulative EU budget for the period 2026–2030 by 9.2 Mt CO_2 eq and 0.6 Mt CO_2 eq under the WEM and WAM scenarios, respectively (see Table 2).

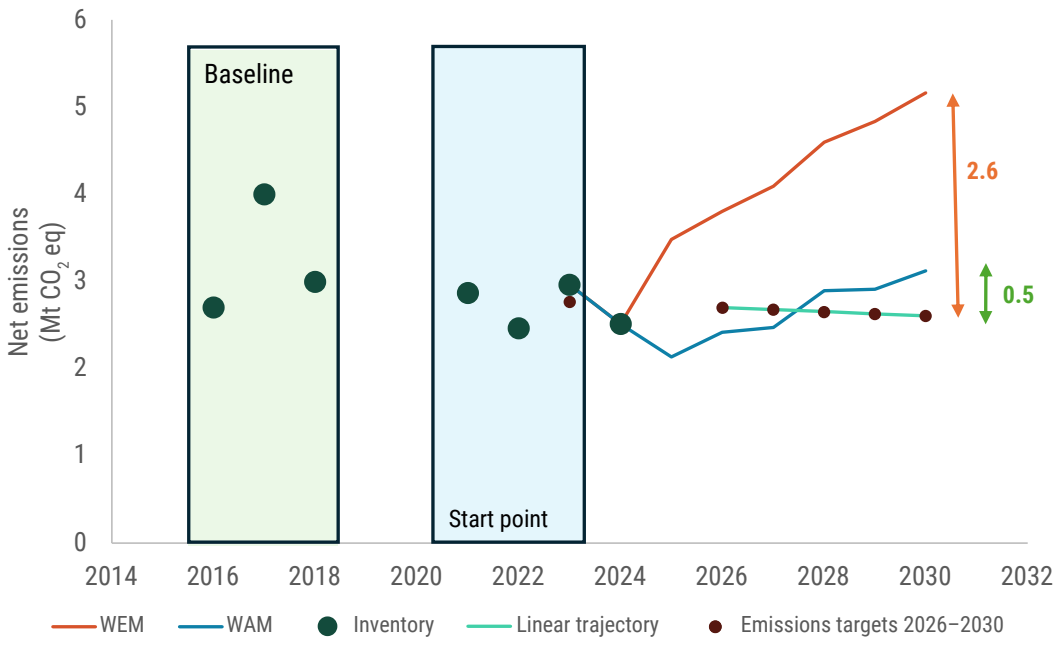

Figure 2: Estimated EU LULUCF Regulation net emissions budget and emissions annual targets, 2026–2030. LULUCF WEM and WAM projections for net emissions, 2025–2030, and projected distance to the emissions reduction target.
(Sources: Ireland's Final Greenhouse Gas Emissions 1990–2024[7] and Ireland's Greenhouse Gas Emissions Projections 2025–2055.[5])

Final assessment of compliance with the EU LULUCF Regulation will be based on inventory submissions in 2032. Given the potential for further large changes in LULUCF emissions, national compliance with the EU target is uncertain.

Table 2: Summary of estimated targets under the EU LULUCF Regulation and projected net emissions for the LULUCF sector based on EPA inventory and projections data published in 2025 and 2026.
(Sources: EPA inventory 2025[9] and EPA inventory 2026.[7])

Publication year	Annual emissions in 2030 (Mt CO_2 eq)					Cumulative emissions (Mt CO_2 eq)				
		Projected		Distance to target			Projected		Overshoot on implied budget	
	Target	WEM	WAM	WEM	WAM	Target	WEM	WAM	WEM	WAM
2025 projection	3.4	7.8	5.5	4.4	2.1	17.7	37.5	27.3	19.8	9.6
2026 projection	2.6	5.2	3.1	2.6	0.5	13.3	22.5	13.8	9.2	0.6

3. Indicators

There have been significant and welcome developments in the reporting of indicator data in the Agriculture sector in recent years. The Council urges the Department of Agriculture, Food and the Marine (DAFM) to maintain and update the information provided in the online dashboard,[10] to maintain consistency with other relevant official publications and data releases. The dashboard should be expanded to include other relevant data related to progress on climate action, for example the measures indicated in Table 5.

3.1. Agriculture emissions and main trends

Table 3 shows the contribution to emissions reductions of key source activities within the Agriculture sector in 2024/25 relative to 2023, 2022 and 2018 (the base year). The suckler cow herd continued to decline in 2025 while the dairy cow herd grew slightly. Rising prices for beef and lower prices for milk in 2026 may reverse these trends. The total number of cattle has fallen by 4.7% since 2018. The number of sheep continues to be highly variable year on year.

3.2. Land Use, Land Use Change and Forestry

Figure 3 illustrates the most recent inventory data in respect of the change in emissions and removals within each land use category from 2018 to 2024. It also shows the target net emissions reduction required under the EU LULUCF Regulation. The regulation sets the baseline as the average net emissions for LULUCF for the period 2016–2018. The 2030 target is an emissions reduction of 0.626 Mt CO_2 eq relative to the baseline. Progress on reducing net emissions in some land use categories, especially wetlands, has been offset by increases in emissions in other categories, especially forested land.

Table 3: Change in Agriculture sector emissions by source activity in 2025 relative to 2024 and the 2018 baseline.

(Sources: 1, Ireland's Provisional Greenhouse Gas Emissions 1990–2025;[7] and 2, CSO.[11])

Source activity	Emissions (Mt CO_2 eq)					Annual change, 2025 against 2024 (%)	Change in 2025 against 2018 base year (%)
	2018 (base year)	2022	2023	2024	2025 (provisional)		
Enteric fermentation[1]	12.92	13.36	13.06	12.70	12.47	−1.8%	−3.4%
Manure management[1]	2.57	2.51	2.45	2.41	2.37	−1.6%	−7.8%
Agricultural soils[1]	4.69	4.24	3.82	3.90	4.13	5.8%	−12.0%
Liming[1]	0.46	0.62	0.46	0.45	0.41	−9.8%	−11.3%
Urea application[1]	0.09	0.14	0.14	0.17	0.14	−17.0%	59.2%
Agriculture/forestry fuel combustion[1]	0.59	0.85	0.72	0.74	0.81	9.3%	37.1%
Fishing[1]	0.08	0.05	0.06	0.07	0.07	0.0%	−22.9%
Total emissions	**21.40**	**21.78**	**20.72**	**20.44**	**20.40**	**−0.2%**	**−4.7%**
Number of ruminant livestock in December							
Dairy cows[2]	1,369.1	1,510.3	1,510.9	1,481.3	1,490.4	0.6%	8.9%
Suckler cows[2]	982.3	861.7	818.6	767.8	750.6	−2.2%	−23.6%
Total cattle	**6,593.5**	**6,551.8**	**6,526**	**6,308.3**	**6,284.1**	**−0.4%**	**−4.7%**
Sheep[2]	3,798.5	4,010.6	3,722.8	3,591.6	3,689.7	2.7%	−2.9%

In 2024, total net emissions across the LULUCF sector were 2.5 Mt CO_2 eq. While this represents a reduction in emissions of 0.72 Mt CO_2 eq relative to the baseline, unfortunately the most recent EPA WAM projections indicate that LULUCF emissions are likely to increase steadily in the period to 2030, and the EU LULUCF Regulation target will not be met.

Table 4 illustrates the most up-to-date data in respect of the activities that are most relevant to the LULUCF sector. Data for 2025 emissions per subsector will not be available until 2027.

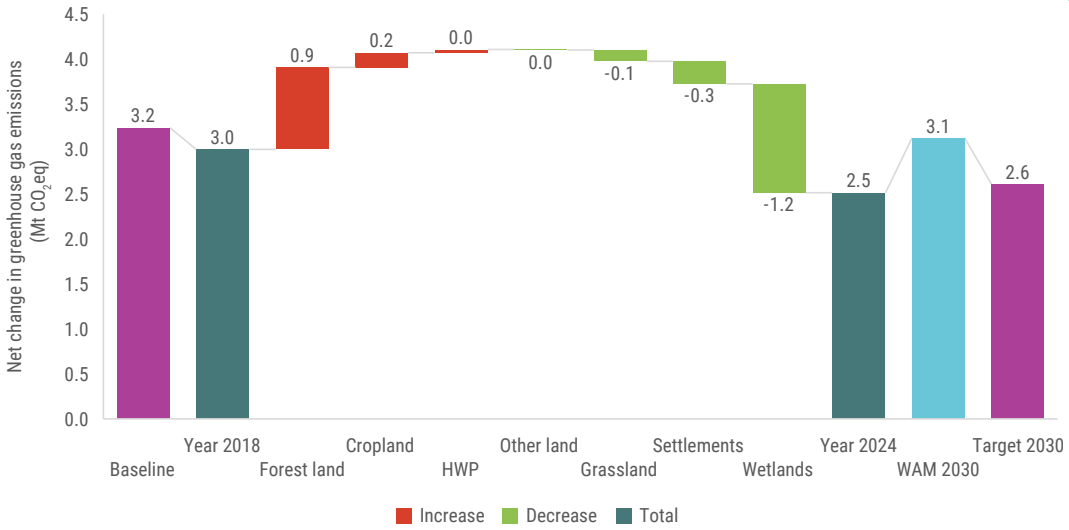

Figure 3: Change in net greenhouse gas emissions and removals by land use category, in the period from 2018 to 2024. Also shown are the baseline and target 2030 and WAM projected emissions for the sector under the EU LULUCF Regulation for 2030.
HWP, harvested wood products.
(Sources: Ireland's Final Greenhouse Gas Emissions 1990–2024[7] and Ireland's Greenhouse Gas Emissions Projections 2025–2055.[5])

Table 4: Key indicators of emissions in the LULUCF sector.
(Sources: Ireland's Final Greenhouse Gas Emissions 1990–2024,[7] DAFM Forestry Dashboard,[12] Food Vision 2030 Dashboard[10] and CSO.[13]) *Compared with the most recent available year: either 2023 or 2024 depending on data availability.

Activity	Unit	2018 (base year)	2023	2024	2025	Change relative to 2018*	Comment
Forestry cover	kha	794	804	806	–	10 kha	–
Forestry cover	%	11.2%	11.3%	11.3%	–	0.16%	Target is 18% by 2050
Annual afforestation rates	ha	4,025	1,652	1,573	2,527	–37%	8,000 ha per year
Drained organic soils	kha	971	938	935	–	–36 kha –3.7%	No target
Other diversification activities					**2025**	**Progress to 2030 target**	**2030 target**
Organic farming	kha	74	180	225	248	46.3%	450
Tillage (total crops, fruit and horticulture)	kha	357.0	372.4	362.8	377.3	47%	400

3.3. Resilience

DAFM published its Climate Change Sectoral Adaptation Plan for Agriculture, Forestry and Seafood in December 2025.[14] The Sectoral Adaptation Plan did not contain high-level outcome-oriented indicators, despite this being a mandatory requirement set out in the guidelines for sectoral adaptation plans that were developed by the Department of Climate, Energy and the Environment (DCEE). The Sectoral Adaptation Plan does, however, contain a planned action to develop indicators for measuring climate adaptation and resilience by 2027.

The Council calls on DAFM to expedite the development of these adaptation indicators and to monitor them regularly within its existing dashboard system. These indicators should be aligned with the indicators for the global goal on adaptation under the United Nations Framework Convention on Climate Change, for the targets on attaining climate-resilient food and agricultural production and supply and distribution of food, and increasing sustainable and regenerative production and equitable access to adequate food and nutrition.[15]

4. Progress on previous Climate Change Advisory Council recommendations

4.1. Agriculture

The Council has previously recommended the rapid uptake of proven and effective mitigation measures across the Agriculture sector, including early finishing of livestock, increased use of protected urea fertilisers and routine use of approved feed and manure additive products. The Council notes that the action plan on reducing the age of slaughter, originally due in Q2 2025 under the Climate Action Plan 2025, was finally published in February 2026. The Action Plan on Supporting Improved Liveweight Performance in Ireland[16] aims to support the achievement of the second SEC, which will require a reduction in the age of finishing beef cattle from 26 to 21.6 months by 2030.[17] The plan sets out an approach to optimising liveweight performance with a number of integrated action areas, from farm infrastructure and genetics to nutrition and animal health and welfare. However, disappointingly, it does not specify timelines, interim milestones or an implementation pathway to demonstrate how the actions will be achieved.

Additional regulatory measures were introduced under the Nitrates Action Programme in February 2025, including a provision to restrict the use of unprotected urea, which became effective in September 2025. Work is ongoing to encourage behavioural change following a Teagasc-led communications campaign to promote the use of protected urea in spring 2025.[18]

The Council is extremely concerned that the deployment of mitigation measures is not proceeding at the pace and scale necessary, and that delayed actions, now compounded by regulatory uncertainty, may constrain near-term emissions reductions in the sector.

DAFM has allocated €8.9 million to support ongoing research in relation to effective methane reduction feed additives for indoor and outdoor systems.[19] The feed additive 3-Nitrooxypropanol (3-NOP), which demonstrated a 30% reduction in indoor methane emissions,[20] has completed the EU regulatory approval process for dairy cows and cows for reproduction. However, in February 2026, the European Food Safety Authority launched a public call for data to inform a scientific opinion on the safety of 3-NOP under Regulation (EC) No 1831/2003.[21] This follows reporting by Danish authorities of clinical signs of digestive and metabolic disorders in dairy cows in around 25% of farms that started using the additive in December 2025. The scientific opinion is expected to be published by the end of 2026.[22]

The Council has also called for annualised targets and roadmaps for the deployment of diversification options, including targets for bioenergy, organic production systems, expanding tillage, biodiversity restoration and increasing afforestation and agroforestry in the Climate Action Plan 2026. Unfortunately, the 2026 plan is delayed while the Government finalises the carbon budget process, and the Council is disappointed that there is no clear timeline for its publication beyond 'later this year'.[23]

4.2. Land Use, Land Use Change and Forestry

The Council has repeatedly emphasised the need for urgent action to eliminate emissions and enhance greenhouse gas emissions removals in the LULUCF sector. Phase 2 of the Land Use Review was finally published in July 2026, over a year after being submitted to the Government for consideration.[24] This describes current land use patterns and the various demands on land in delivering a climate-neutral economy by 2050, but it does not represent an articulation of government policy or a new strategy in relation to land use.[24]

The Council remains concerned that there is still no certainty on the treatment of LULUCF in the carbon budgets following the end of the first carbon budget period,[3] with net emissions in the sector trending in the wrong direction and projected to substantially exceed the implied EU carbon budget by 2030. The insights and findings of Phase 2 of the Land Use Review must be used to inform strategies for land use that support improved socio-economic, climate, biodiversity, and water and air quality outcomes (see *Section 5.1.4*).

The Council has consistently recommended action to make afforestation a more attractive and accessible option for farmers and landowners. Afforestation rates remain far below the level required to meet targets, with just 2,527 ha planted in 2025,[25] well below the 8,000 ha annual target set out in the Climate Action Plan.

The Council welcomes the publication, in March 2026, of the mid-term review of the Forestry Programme 2023–2027,[26] which includes increases of 10–20% to a range of grants and allowances; a simplification of the definition of 'farmer' to lessen the burden of participation; the launch of two new agroforestry pilot schemes; and the inclusion of alluvial woodland (trees planted on floodplains) when establishing native forest. It will be important to closely assess whether these measures are delivering the required increase in afforestation rates and to take further action if necessary.

The Council has also previously emphasised that current constraints on afforestation on deep peat should remain unchanged and be rigorously enforced, given the strong evidence that afforestation on deep peat leads to significant carbon losses over time.[6] The new National Restoration Plan (NRP) due in September 2026 provides an opportunity for the review and revision of forestry-related legislation.

The Minister with responsibility for the NRP confirmed that the recently published recommendations of the Independent Advisory Committee on Nature Restoration will form part of the development of the NRP.[27] These include a recommendation that the Government support forest owners in transitioning unproductive plantation forests on deep peat, addressing barriers in the planning system and ensuring that, where forest removal is necessary to restore appropriate habitat, there is no replanting obligation, as is currently required.[28] The Council fully supports this recommendation and recommends it be reflected in the forthcoming NRP.

The Council has previously called for the cessation of peat extraction for horticulture, and for the Government to collaborate with industry to enable the necessary research and development to identify alternative sustainable substrates.[29] Initial findings from the DAFM-funded Beyond Peat project were published in December 2025, suggesting that mushroom production is possible with

bark casing, although yield was lower and other issues arose that would be deemed unacceptable from a commercial perspective, such as water stress and cropping delays.[30] This has highlighted the need for further research to support the industry in transforming woody biomass that is readily available in Ireland into growth media that meets the needs of specific crops.[30] The Beyond Peat project is due to be completed in 2027.

The Council welcomes the publication, in February 2026 by the Joint Committee on Climate, Environment and Energy, of the recommendations regarding illegal peat extraction, which are to be laid before both Houses of the Oireachtas.[31] These include a number of relevant recommendations, including phasing out retail peat products for gardening, promoting alternatives such as composted brown bin material and setting out actions and timelines for peat-reliant industries to transition away from peat use.

The Joint Committee further recommended that those involved in illegal peat extraction contribute financially to the rehabilitation of damaged sites. It is also worth noting there are ongoing legal cases at the EU level related to this topic.[32] The Council urges the Government to act swiftly on these recommendations and to ensure sustained funding for ongoing research, to support and accelerate the transition away from horticultural peat extraction.

4.3. Biomethane

In its 2025 Annual Review, the Council expressed concern that implementation of the National Biomethane Strategy has been piecemeal and stated that immediate cross-government action was required to complete the implementation of the suite of policy tools identified in the strategy, in order to build investor confidence and incentivise investment. The Biomethane Sustainability Charter was published in November 2025,[33] outlining the scope and vision for the biomethane sector and best practices that participants in the industry should commit and adhere to during plant design, construction and operational phases of production. It will apply to all projects being developed in Ireland and in receipt of any form of public-funded support.

It is critically important that biogas and biomethane facilities and supporting infrastructures are built and operated to maintain the highest possible level of climate and environmental sustainability. A key concern is the risk of fugitive emissions of methane, which would undermine the low greenhouse gas credential of the system. Appropriate standards and safeguards are required and must be enforced through regulation.

In July 2025, after a significant delay, the Renewable Heat Obligation (RHO) Bill was approved by the Government.[34] The Bill included a specific multiplier measure to provide support to indigenously produced biomethane, encouraging obligated parties to procure supplies from domestic producers. However, this was subject to formal notification at the EU level,[34] and on 29 March 2026 the European Commission issued a Detailed Opinion under the EU technical regulations notification process, finding that the proposed domestic production multiplier was incompatible with EU single market rules.[35] This did not amount to a ruling that the RHO as a whole is unlawful, but it did represent a significant legal and policy setback.

Ireland was required to postpone adoption of the draft legislation for 6 months from the date of notification, and the associated standstill deadline fell on 29 June 2026. Priority drafting of the General Scheme is now under way for introduction in 2026,[36] and the specific multiplier measure has been removed. The Council is deeply concerned that the pace of action is not sufficient to build investor confidence and to deliver domestic production capacity at the scale required to meet 2030 targets. The legal issues raised at the EU level underline the urgent need for the Government to bring forward a revised support framework without further delay.

4.4. Adaptation and resilience

The Council has previously recommended that the Government ensure local authorities, the Office of Public Works (OPW) and DAFM have the resources to create broad engagement across urban and rural communities, and that an inclusive, incentive-based catchment-level approach is taken to implement nature-based measures for flood risk management. This should include a dedicated unit to accelerate the deployment of nature-based measures and the design and deployment of large-scale pilot schemes with landholder engagement. The Sectoral Adaptation Plan for Agriculture, Seafood and Forestry, published in November 2025,[14] includes nature-based approaches as a cross-cutting principle and contains a number of actions relating to stakeholder engagement. However, these actions are not costed, with a further action instead to assess the feasibility and methodology for costing adaptation measures in the next Sectoral Adaptation Plan.

The 4th National Biodiversity Action Plan[37] includes a target for nature-based measures to be contributing to national climate ambitions by 2025. The implementation report, published in February 2026,[38] confirms that almost 80% of 194 actions are on track or complete, that the Department of Housing, Local Government and Heritage (DHLGH) has engaged with designers, policymakers and funding agencies to promote nature-based measures in all projects, and that all new OPW flood schemes are subject to feasibility assessments with regard to nature-based measures for catchment management. Nature-based approaches also feature quite prominently in most of the local authority climate action plans, particularly through sustainable urban drainage, social housing projects, flood risk schemes, greenways and active travel routes. The Council welcomes these developments but notes there is still no dedicated unit to accelerate deployment and engage landholders in large-scale pilot schemes.

In its 2025 Annual Review, the Council also recommended that DAFM develop and implement a strategy for the long-term management of the forest estate consistent with the principle of the 'right tree in the right place with the right management', considering species, soil type and condition, climate risk reduction and management to provide carbon and biodiversity co-benefits. The Council welcomes the 20% increase in funding for the Climate Resilient Reforestation Pilot Scheme included in the mid-term review of the Forestry Programme 2023–2027,[26] along with the commitment to provide training across a number of issues, including enrichment planting, soil conditions, management and location considerations.

The Sectoral Adaptation Plan[14] also includes a number of relevant actions, including establishing a baseline for the area of forest management under closer-to-nature forest management as a percentage of total forest area, supporting standardised forest management plans for forest owners who wish to achieve forest certification, and implementing support schemes to foster uptake so that forests are managed to have greater capacity to deliver ecosystem services and climate resilience. The Council is concerned, however, that without dedicated resources or costings for the actions in the Sectoral Adaptation Plan, delivery will not be achieved at the pace or scale required.

5. Analysis and discussion

5.1. Governance and policy design

Strong governance and well-designed climate policies are essential to ensure coherence across sectors, effective implementation and measurable outcomes. To strengthen national governance and policy design, a focus on developing sector-specific dialogue, an evidence base regarding carbon pricing, clear priorities for the negotiation of the Common Agricultural Policy and the development of a land use framework are required.

5.1.1. Structured and effective dialogue

A structured and effective dialogue process across the development of various Agriculture and LULUCF climate policies can support increased uptake by stakeholders and can support the sectors in reaching targets. Effective stakeholder dialogue strengthens policy development by incorporating diverse perspectives, expertise and practical experience into policy development processes. When dialogue outcomes are integrated into policy design, barriers to uptake can be better addressed, resulting in more effective, acceptable and implementable measures and higher uptake. To remain effective, dialogue outcomes should be monitored and evaluated over time. Structured dialogue involves an independent expert facilitator and a representative, inclusive group of stakeholders. This differs from current dialogue and engagement processes, where views may be gathered but do not directly inform policy development.

In its 2024 Annual Review, the Council recommended a Just Transition Dialogue Framework be developed specifically for the Agriculture and LULUCF sectors.[39] The Council highlighted the importance of an inclusive dialogue process between farmers and rural communities and policymakers to ensure that the transformational change needed across the sector is accepted by farmers and the wider community. In 2025, the Just Transition Commission submitted recommendations to strengthen the next National Dialogue for Climate Action programme of work[40] to support a Just Transition. In its submission, the Commission called for the National Dialogue to incorporate the recommendation of the Climate Change Advisory Council's 2024 Agriculture Review into the new iteration of the process and develop a Just Transition dialogue with farmers, rural workers and communities, as the appropriate departmental vehicle to progress this initiative.

More recently, the Just Transition Commission's report, Towards a Just Transition in Agriculture and Land Use,[41] highlights calls from the Climate Change Advisory Council,[39] the National Economic and Social Council[42] and the Just Transition Commission for a meaningful dialogue process with farmers and rural communities, underpinned by Government support. The report stresses that such dialogue should extend beyond consultation, requiring a clear commitment from the Government to incorporate the outcomes of engagement into policy development and implementation. The Council finds it regrettable and a missed opportunity that, as of 2026, there has been little evidence of progress towards setting up an official structured and effective dialogue process targeted at key stakeholders across the Agriculture and LULUCF sectors.

The Council welcomes DAFM's commitment to strengthening communication and engagement, including through the establishment of the Forestry Strategy Consultative Committee[43] and by supporting initiatives such as the Teagasc Signpost Programme, which demonstrate progress in improving communication with farmers and landowners around the roll-out of climate mitigation measures.[44] However, engagement alone does not constitute a structured or effective dialogue.

Evidence from deliberative processes, including the Irish Citizens' Assembly, shows that while engagement can enhance legitimacy and awareness, it only translates into meaningful policy impact where it is systematically linked to decision-making processes.[45] In particular, the concept of 'political coupling' highlights the importance of embedding the outcomes of dialogue within formal policy development, supported by clear follow-through and accountability mechanisms.[46]

A national example of structured dialogue in the Agriculture sector was the Climate-Smart Agriculture Leadership Forum (2015–2016),[47] led by the Institute of International and European Affairs and the Royal Dublin Society. The forum brought together government departments and agencies, farming organisations, non-governmental organisations, private sector actors and national and international experts to develop consensus-based recommendations on food security and climate change.

Although its recommendations were not directly incorporated into policy, the process influenced Irish policy thinking by advancing concepts such as agricultural carbon neutrality, integrated climate and agriculture policy, and a 'triple win' approach of productivity, resilience and emissions reduction. The forum demonstrated the value of inclusive, consensus-driven dialogue, but its effectiveness may have been greater had its recommendations been more formally integrated into the policymaking process. This may have been supported by government departments playing a stronger role.

The Danish Green Tripartite Agreement provides another strong example of structured stakeholder dialogue informing policy development. Through a facilitated process involving government, farmers, industry, trade unions and environmental organisations, consensus was reached on ambitious climate, biodiversity and water quality measures, including a livestock methane tax from 2030 and the rewetting and reforestation of around 15% of agricultural land.

The development of 23 local tripartite plans across Denmark helped balance competing land use demands and secure agreement across 98 municipalities, demonstrating how inclusive, structured dialogue can build consensus and deliver transformative policy outcomes.[48] While the Danish context differs from Ireland's, the process demonstrates how embedding stakeholder dialogue within policy development can build consensus among diverse interests even on the most challenging climate policy measures.

Adopting a more systematic and outcome-oriented approach to stakeholder dialogue in the development of climate policy within the Agriculture and LULUCF sectors could further enhance policy effectiveness and support the achievement of climate targets. This would involve ensuring that the outputs of dialogue processes are clearly integrated into policy design, with stakeholder perspectives and needs demonstrably reflected in final policy decisions. A study published in July 2026 by European non-profit organisation Project Tempo identified priorities for a credible transition for the Agriculture sector.[49] A core priority identified was to 'engage farmers and rural communities as partners in shaping that vision'. It emphasises that the process must follow the policy development process, not precede it. It also underscores the importance of ensuring that farmers are active participants in policy design, with representation extending beyond the largest or most profitable farm enterprises to reflect the diversity of the sector.[49]

The Council recommends that DAFM and DCEE act together to develop a structured and effective dialogue with farmers, rural communities and rural workers. This dialogue is needed to ensure full and shared understanding of the concerns, costs, benefits and incentives for climate action and to inform policy design, knowledge transfer programmes, funding mechanisms, upskilling and training. The dialogue process could be targeted at climate programmes with low levels of adoption, particularly forestry, diversification strategies and mitigation practices, to support greater uptake.

5.1.2. Carbon pricing analysis

Reaching agreement on an EU-wide greenhouse gas pricing system for agriculture would be particularly challenging for Ireland, given the diversity of farming practices and emissions profiles across the EU. While Ireland's Transport sector remains outside the EU Emissions Trading System (ETS) 2 due to the application of a national carbon tax on fuels, a similar national carbon pricing approach for the Agriculture and LULUCF sectors could offer advantages, particularly in the context of the forthcoming ETS2 framework. A detailed analysis of carbon pricing for the Irish Agriculture and LULUCF sectors is critical to enable the Government to fully evaluate its options, especially relative to EU-wide pricing mechanisms. Establishing a robust evidence base at this stage will inform future policy development and ensure the best outcomes in the national interest.

In its 2026 report on agri-food systems, the European Scientific Advisory Board on Climate Change (ESABCC) recommended that 'the EU should introduce a dedicated greenhouse gas pricing system for agriculture, designed to apply the polluter pays principle in a gradual and adaptive manner that encourages the entire agrifood value chain to reduce agricultural emissions and scale up carbon dioxide removal'.[50] There are a number of actions within the Climate Action Plan that can be directly and indirectly advanced through carbon pricing. For example, carbon pricing would directly impact on chemical nitrogen use, where there is a target to limit use to 300,000 tonnes of nitrogen by 2030. Where carbon pricing is linked directly to emissions factors, lower-emission fertilisers such as protected urea would face a reduced carbon cost, thereby incentivising farmers to move away from more emissions-intensive alternatives. The target in the Climate Action Plan is to effectively displace calcium ammonium nitrate (CAN) with protected urea by 2030 in all but specialised use cases.

As discussed in *Section 5.1.1*, the Danish Green Tripartite Agreement aims to, among other things, introduce a carbon tax on agriculture that would include tax on livestock and agriculture emissions from 2030 at rates of about €40/t CO_2 eq. This rate is scheduled to increase in 2035.[48] The implementation of the tax includes a 60% tax rebate to protect farm viability and revenue recycled into green investment in farming. The specifics of the Green Tripartite Agreement were informed by a large evidence base. The evidence was informed largely by the Expert Group for a Green Tax Reform established in 2021. The group produced a large body of evidence and reports ultimately informing the specifics of the agreement Green Tax Reform.[51]

Developing a strong evidence base is essential to support informed policy decisions on introducing a national carbon pricing mechanism for the Agriculture and LULUCF sectors in Ireland. Therefore, the Council recommends that an authoritative evidence-based paper, led by the appropriate Government officials, such the Irish Government Economic and Evaluation Service (IGEES),[b] on the carbon pricing for Agriculture and LULUCF sectors be undertaken over the coming 18 months. This paper would build an evidence base required to make an informed decision regarding a national approach to carbon pricing for the sectors in the context of an EU-led carbon pricing approach.

5.1.3. Nitrates Directive

Climate policy design should be routinely informed by ex ante analysis of the potential impacts of all policy initiatives on climate objectives, with the results published as standard practice. The Council recommends an ex ante analysis be undertaken ahead of the next decision regarding an extension of Ireland's derogation under the Nitrates Directive. Ireland is the only EU Member State currently granted a derogation subject to constraints under the directive under specific conditions on individual farms. The option for derogation was due to be removed at the end of 2025; however, following a period of intensive negotiation, Ireland has been granted an extension to the use of derogation under the Nitrates Directive for an additional 3 years, allowing the application of livestock manures at higher rates than the standard limit of 170 kg of organic nitrogen per hectare on grassland farms.[52]

The Teagasc assessment 'Environmental and Economic Modelling of the Impact of Adjustments in the Maximum Stocking Rates Permitted Under Ireland's Nitrates Derogation'[53] was undertaken at

b IGEES is the cross-government network of economists and policy analysts operating within the Irish civil service. IGEES analysts work in all government departments and a number of public sector organisations, including the Revenue Commissioners, the Agri-Food Regulator, the Electoral Commission, the Irish Human Rights and Equalities Commission, the Parliamentary Budget Office and the Data Protection Commission. In these roles, IGEES analysts focus on delivering analysis and evaluation to inform the policy development process.

the request of DAFM. This was part of a broader request by DAFM to undertake research and analysis in support of (1) the formulation of the national Nitrates Action Programme for the period 2026–2029 and (2) the Government's discussions with the European Commission and fellow Member States on securing an extension to Ireland's nitrates derogation. The analysis specifically looked at the economic and environmental implications if Ireland's nitrates derogation were to be removed, leading to a need to decrease stocking rates in order to comply with the Nitrates Directive. However, it does not include an analysis of the impact on greenhouse gas emissions due to an extension of the nitrates derogation.

It is crucial to understand what the implications are for the sectors' emissions if the derogation is removed or extended. The Council recommends that DAFM commission analysis to quantify the implications of the extension of the derogation under the Nitrates Directive on greenhouse gas emissions in the period through to 2030, in the context of the SEC for the Agriculture sector for the period 2026–2030. This analysis should be undertaken within 18 months or in advance of the next decision regarding an extension of the nitrates derogation. This analysis could be an extension of the environmental and economic modelling of the impact of potential changes in derogation undertaken by Teagasc and published in 2026.

5.1.4. Land Use Review

The Government should integrate the evidence and findings of the Land Use Review published in July 2026 into a coherent national land use framework consistent with the National Climate Objective within 18 months. This framework is needed to address growing and diverse demand for resources and ecosystem services, delivered through sustainable land use management across the country.[24]

England published its first Land Use Framework in March 2026, which provides a useful template for similar policy development in Ireland.[54] The framework is the national policy framework (not a map or zoning plan) setting out a vision for using land more effectively to balance renewable energy infrastructure, food production, climate resilience, nature restoration and landscape for water while supporting a thriving economy and communities. The framework aligns with national climate, housing and energy policy and supports multifunctional and efficient land use, which aims to ensure the land is used in a way that meets growing competing demands.

5.1.5. Common Agricultural Policy

The Common Agricultural Policy is the single largest support programme for agriculture across the EU, accounting for up to 30% of the total EU budget. The scope, ambition and sophistication of the Common Agricultural Policy have all expanded over time. Importantly, the proportion of resources allocated to support climate and environment action have steadily increased over recent iterations of the Common Agricultural Policy.

The European Commission has proposed a significant restructuring of the EU budget for the 2028–2034 period. Under the proposed Multiannual Financial Framework, the budget for the Common Agricultural Policy would be integrated with the funding for other policy objectives. Therefore, EU supports for the Agriculture and LULUCF sectors will be delivered through national and regional partnership plans.[55] Under this model, Member States would prepare a single national plan setting out investment priorities and reforms across multiple policy areas, with Common Agricultural Policy funding incorporated within a broader, consolidated fund, albeit with some elements potentially ring-fenced.

However, this proposal remains subject to negotiation and has not been agreed, with notable opposition from the European Parliament and stakeholders concerned about the implications for

the autonomy, visibility and stability of Common Agricultural Policy funding. The current phase of the Common Agricultural Policy concludes at the end of 2027. Member States have entered a very active stage of negotiation regarding the objectives, structures and funding of the next phase.

The Council recommends that DAFM integrate climate action and biodiversity improvement into its negotiation priorities for the next Common Agricultural Policy under the proposed Multiannual Financial Framework and ensure that, when specific schemes are being designed as part of the next Common Agricultural Policy Strategic Plan, administrative costs and barriers to uptake by farmers are minimised as far as possible.

5.2. Progressing mitigation and resilience actions

Progressing both mitigation and resilience actions is essential to achieving national climate targets, as it ensures that emissions are reduced while also preparing systems to cope with unavoidable climate impacts. Advancing both in tandem helps to avoid policy gaps, reduces long-term risks and costs, and supports a more sustainable and secure transition. Without sustained progress in these areas, climate targets are unlikely to be met, and the impacts of climate change may become increasingly difficult to manage.

5.2.1. Implementation plan for mitigation measures

In 2023, Teagasc published the Marginal Abatement Cost Curve (MACC) assessment for the Agriculture and LULUCF sectors and identified mitigation measures that, if implemented, could deliver emissions reductions for the Agriculture sector and support it to achieve the 25% reduction by 2030 target.[56] The SECs for the Agriculture sector were agreed on the basis of findings of the MACC assessment. To support the monitoring and implementation of the mitigation measures, DAFM committed to 'develop a detailed implementation plan for the translation of the Teagasc 2023 MACC and incorporation where appropriate into the Climate Action Plan' by Q3 2024.[57] To date, a comprehensive implementation plan has not been published.

Meanwhile, plans for some individual measures have been produced. For example, the Improved Liveweight Performance Action Plan,[58] which includes an implementation plan to support the sector to achieve the reduction of finishing of beef cattle to 21.6 months by 2030, was published in early 2026. The plan includes action areas organised under five strategic pillars. It also identifies a lead organisation and appropriate partners to ensure the implementation of actions. However, the actions do not specify timelines or clear pathways outlining how to achieve the actions, and no implementation plan has been progressed to date.

The Climate Action Plan set out emissions abatement targets for the periods 2021–2025 and 2026–2030, to be achieved through the roll-out of MACC-identified mitigation measures. Table 5 presents the targets for each mitigation measure, along with their current implementation status and the associated emissions abatement. In total, if implemented in full, these measures are expected to deliver emissions reductions of between 5.56 and 6.05 Mt CO_2 eq over the period 2021–2030.

However, the absence of clear implementation pathways for many of these measures has contributed to limited progress towards Climate Action Plan targets during 2021–2025 across all measures. The lack of systematic planning for emissions reductions at the level of individual measures means it is currently unclear whether the expected abatement associated with each target can been realised and incorporated into the EPA inventory. Ultimately, insufficient on-farm uptake of measures risks undermining the sector's ability to achieve its 25% emissions reduction target by 2030 and increases the likelihood of it exceeding its SEC for the period 2026–2030.

Table 5: State of play of the targets associated with the key mitigation practices committed to in the Climate Action Plan 2024.

(Sources: 1, Climate Action Plan 2024;[59] 2, Teagasc Achievements 2025;[60] 3, Forestry Dashboard;[61] 4, SEAI National Energy Balance;[62] 5, Food Vision 2030 Dashboard;[10] and 6, CSO.[13])

Climate Action Plan target[1]	Current target status	Potential abatement in 2025 relative to 2018 (Mt CO_2 eq)	Potential abatement in 2030 relative to 2025 (Mt CO_2 eq)
Reduce chemical nitrogen use to a maximum of 330,000 tonnes.	As of 2025, nitrogen fertiliser sales at 349,293 tonnes, down from 408,495 tonnes in 2018.[2]	0.4–0.45	0.1–0.2
Target 80–90% uptake of inhibited urea on grassland farms.	As of 2025, protected urea as a percentage of nitrogen sales at 21.2%.[2] Climate Action Plan 2024 notes that 52.8% of CAN had been displaced by different types of protected urea.	0.35–0.45	0.08–0.12
Target finishing age of 24–25 months. Earlier finishing of beef cattle at 21.6 months by 2030 (MACC practice).	The finishing age of beef cattle has stayed stagnant since 2024 at 26.5 months, compared with 25.2 months in 2021.[2]	0.25	0.48
Reduce age at first calving of suckler beef cows.	There was little change in any of the genetics and breeding indicators (calves/cow per year, calving interval, suckler cow replacement index and percentage of heifers calving between 22 and 26 months).[2]	0.03	0.07
Addition of a slow-release pasture-based feed additive/ methane inhibitor.	Not on the market yet. No improvement.	–	0.6
Miscellaneous measures, including extended grazing and acidification, amendments, aeration of manures and slurries.	The Climate Action Plan does not articulate individual targets for these measures or processes to monitor progress on their deployment.	0.2	0.3
Improved animal breeding by focusing on low-methane traits.	Progress to be rolled out in 2026–2030.	0.0	0.3–0.5
Diversification options for livestock farmers, including: • afforestation (8,000 ha per year), • anaerobic digestion for biomethane production (1 TWh by 2025; 5.7 TWh by 2030), • tillage (400,000 ha by 2030).	 2,527 ha planted in 2025.[3] 39.3 GWh biomethane was produced between 2022 and 2024 (0.7% of 2030 target), while DAFM has approved just 13 anaerobic digestion plants under its mandate.[4,5] Total crops, fruit and horticulture 377 ha in June 2025.[6]	–	1.5
Organic farming (75–450 kha).	5.50% or 248 kha achieved.[5]	0.1	0.2

It is the Council's firm view that urgent actions are now required to take the MACC from theory to on-farm practice if sectoral emissions targets are to remain viable.

The Council urges DAFM to fulfil its commitment in the 2024 Climate Action Plan to develop a detailed implementation plan for the mitigation measures identified in the Teagasc MACC analysis in 2023. The implementation plan should be time-bound and well resourced, with a clearly defined trajectory and both interim and final targets. To achieve 2030 targets, DAFM should aim to develop and initiate these implementation plans within 12 months. The plan must identify incentives, be informed by inclusive dialogue with key stakeholders, be communicated sufficiently and effectively and have indicators that can monitor implementation progress for each of the mitigation practices. The plan should support robust annual monitoring of emissions reductions, ensuring these data are integrated into both EPA emissions reporting and projections analysis.

The adoption and roll-out of a national carbon farming framework could incentivise the implementation and adoption of mitigation practices by providing payment to farmers through carbon markets. The Carbon Removals and Carbon Farming Regulation (Regulation (EU) 2024/3012), published in 2024, establishes the first EU-wide voluntary framework for certifying carbon removals, carbon farming and carbon storage in products.[63] It aims to ensure high-quality, transparent and credible certification by setting criteria and recognising compliant public and private schemes.

At the national level, the Programme for Government 2025 and Climate Action Plan 2025 commit DAFM to developing a national carbon farming framework.[57] Draft national carbon farming principles published in 2025 set out the foundation for this work, emphasising robust certification, biodiversity and water co-benefits, and a Just Transition.[64] While this represents important progress, key elements still need to be developed, including certification systems aligned with the EU framework; payment mechanisms for farmers; standardised monitoring, reporting and verification; governance structures; and pathways to mobilise private investment.

However, at the EU level, significant developments on carbon farming are still a work in progress. Core methodologies for quantifying both permanent and temporary carbon removals are still under development and are expected to be finalised between late 2026 and early 2027, which is influencing the pace of national implementation. Specifically, the European Commission is now assessing whether, and under which conditions, livestock emissions mitigation could be included under the Carbon Removals and Carbon Farming Regulation,[63] with a decision expected in 2026. Currently, pilot livestock mitigation practices that could be included under the framework are being undertaken across the EU. The results of these pilots will inform the European Commission's final decision.[65] Whether and how livestock emissions are to be accounted for in the framework would greatly influence the final national carbon farming framework.

Among other EU Member States, France remains the only country with a comprehensive scheme in place, while others are operating pilot initiatives or awaiting EU guidance. The Council calls for the Government, through DAFM, to prepare for the adoption and implementation of a national carbon farming framework to enable early and high rates of farmer participation in carbon farming projects, and to assure the cost-effective monitoring, reporting and verification of carbon credits produced by projects within the Agriculture and LULUCF sectors. The aim should be for the national framework to be delivered as soon as possible (in 2027) following the adoption of the EU methodologies scheduled in the period Q4 2026 to Q1 2027. Early adoption by farmers may be achieved if this approach is taken. Farmers' engagement with the framework can support greater uptake of mitigation measures at the farm level while supporting farmers through payments received from the carbon market.

Box 1. Carbon Border Adjustment Mechanism and agricultural fertilisers

The Carbon Border Adjustment Mechanism (CBAM) regulation came into effect in January 2026. CBAM covers the importation of chemical fertilisers into the EU.

The motivation for CBAM is closely linked to perceived unintended consequences of the operation of the ETS. Compelling evidence exists that carbon pricing through the ETS is effective in reducing greenhouse gas emissions in energy-intensive industries through improved production efficiency and green innovation. However, in certain sectors there is a high risk of 'carbon leakage', where consumers source products from outside the EU and avoid the ETS carbon price.

All large-scale producers of fertiliser within the EU participate in the ETS, and so must purchase allowances for greenhouse gas emissions in excess of the industry-specific benchmark levels. CBAM seeks to 'level the playing field' between EU producers and products imported from third countries where carbon pricing may be significantly lower or non-existent. CBAM imposes a levy on imported products that is equivalent to what a similar EU producer would pay under the ETS.

The ETS and CBAM work together to create the necessary incentive for innovation within the fertiliser sector towards low- and zero-emission production processes, e.g. the use of green hydrogen and renewable energy.

Ireland no longer has a domestic industrial production capacity for fertiliser. CAN has been the dominant type of nitrogen fertiliser imported into Ireland, with a total of 446,996 tonnes imported in 2025, 67% of which was produced within the EU. Urea use has been increasing steadily in Ireland, with 320,329 tonnes imported in 2025, of which 82% was from outside the EU.[66]

The EPA has published a CBAM liability estimator tool[67] to enable a high-level estimate of the potential impact of CBAM when importing specified products into the EU. Using this tool, it is estimated that the initial impact of CBAM is typically an 8% increase in the cost of imported urea and a 30% increase in the cost of imported CAN products, based on the default country-specific assessment of the carbon efficiency of the fertiliser industry in countries Ireland trades with.

It would appear that CBAM will increase the prices of CAN imports from outside the EU more than it will increase the price of imported urea. However, because the production of urea is largely based outside the EU, there may remain an incentive to increase the use of CAN over urea.

In the medium term, it is planned that the benchmark production efficiency thresholds that determine ETS and CBAM costs will be gradually lowered to zero. That is to say, current ETS 'free allowances' within the sector will be removed and producers will be required to purchase allowances for all emissions, and in a similar way CBAM will increase to account for all emissions associated with production in third countries.

This means that, gradually, a carbon price will be levied on the embedded carbon of all fertilisers sold in the EU. The price of fertiliser may steadily increase, consistent with the market-led trading approach to emissions reduction.

Box 2. Impact of the Middle East conflict on agriculture and climate action

There are active negotiations at the EU level to provide timely and effective supports to the Agriculture sector to mitigate the adverse impact on food production and farm income of the current crisis. The European Commission has recently proposed €540 million in financial relief and other supports for farmers.[68]

The conflict in the Middle East has had diverse impacts on the Agriculture and food sectors.

The short-term impacts have been a sharp increase in global fuel and fertiliser prices, and significant supply constraints in regions directly serviced by trade through the Strait of Hormuz (see Figure 4); 20% of global oil and 30% of global nitrogen fertilisers pass through this route.

In Europe, the adverse impact of the current conflict has been compounded by the ongoing impact of the Ukraine war, which has disrupted trade with Russia in fossil fuels and fertilisers. Part of the response to the war was to establish alternative supply chains from the Middle East, which have now been found to be similarly vulnerable to disruption.

Ireland was relatively isolated from the initial disruption of supply of fertiliser caused by the current crisis, having secured enough product ahead of the closure of the strait to meet agricultural demand in the first half of the year; however, this has not isolated Ireland from higher prices.

The conflict has driven an increase in nitrogen fertiliser costs in Ireland, but this increase is not yet at the scale of the increase in prices seen during the initial phases of the Ukraine war.

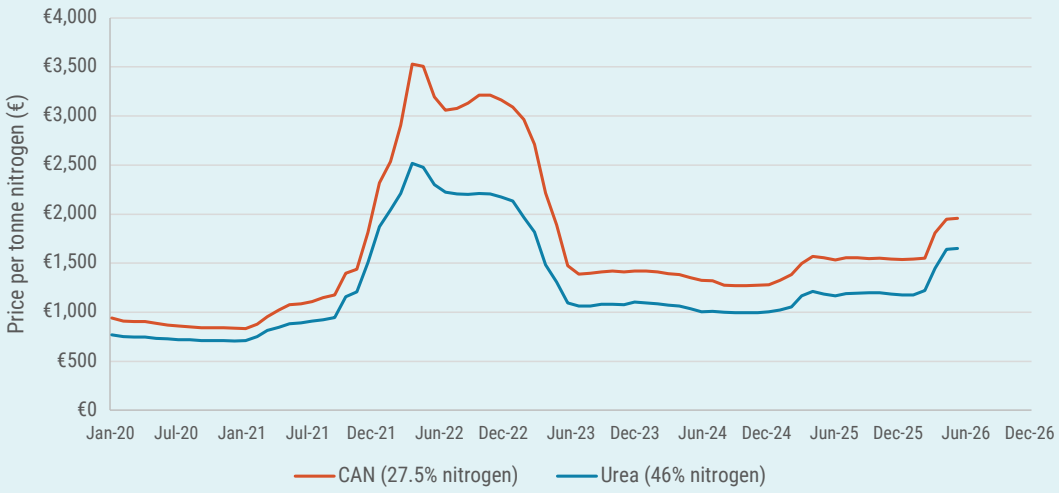

Figure 4: Prices of CAN and urea per tonne of nitrogen from January 2020 to May 2026. (Source: CSO.[69])

However, even in the event of political resolution of the current conflict, the resumption of production and supply from the region will reportedly take several months. This implies that high price and supply constraints may persist into the early part of 2027 even in a best-case scenario. There is significant and growing concern that securing fertiliser supply for the 2027 growing season will be challenging.

The Middle East conflict has also had significant impact on fuel prices. Marked gas oil (MGO) is the dominant fuel used within the Agriculture sector, and fuel use has been steadily increasing since 2014 despite steady annual increases in carbon tax since 2019. Figure 5a shows that the input cost index price of motor fuel used in the Agriculture sector increased from 147 in January 2026 to 211 in April 2026; this includes the impact of the emergency measures to reduce excise introduced in March and April. In contrast to fertiliser costs, the current fossil fuel crisis has pushed the price index above the peak levels seen during the Ukraine war.

Government measures using taxation as a lever to mitigate the price of MGO have limited impact because MGO already attracts relatively low excise compared with petrol and diesel, and VAT is charged at the reduced rate of 13.5%. The carbon tax is charged at the equivalent rate, as for all other fossil fuels. The Government reduced the existing excise on MGO from €0.047 per litre to €0.021 per litre in March 2026, with a further reduction to zero in April (see Figure 5b). This followed a similar pattern of rate decreases adopted at the height of the Ukraine crisis. In parallel, the National Oil Reserves Agency levy on all petroleum products was reduced from €0.02 per litre to a nominal one tenth of a cent.[70] In addition, the Government implemented the Fuel Income Support Scheme to further offset price increases equivalent to 20 cents per litre.[71]

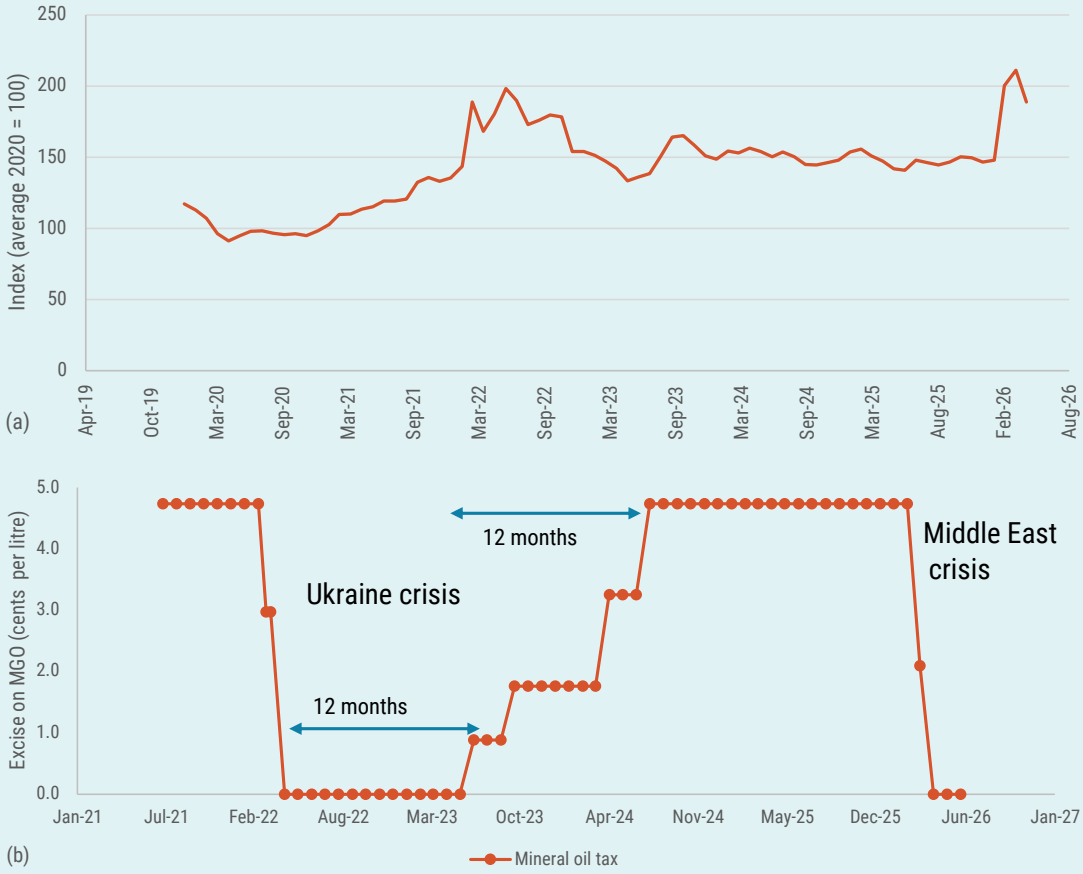

Figure 5: (a) Price index for motor fuel used in agriculture, January 2020 to May 2026. The value is indexed against the 2020 average cost (2020 = 100). (b) Rate of mineral oil tax (excise) on MGO, 2021–2026.
(Sources: CSO[69] and Revenue.[72])

There is significant concern that the disruption to global fertiliser supplies will lead to a reduction in global food production and drive food inflation. This may have mixed impacts in Ireland. Low-input pasture-based livestock production systems are less sensitive to fertiliser input constraints than dairy, tillage and horticulture systems. Nevertheless, overall fertiliser use is likely to fall, although to a lesser extent than seen during the Ukraine war in 2023, when nitrogen fertiliser use fell to 281 ktN compared with 399 ktN in 2021, and with a rebound to 349 ktN in 2025.[73]

It is very uncertain whether dairy and beef prices will increase in response to the current situation. However, if global production is adversely impacted, it is likely that imported food prices will increase. Ireland relies on its situation as a wealthy, trade-orientated, modern economy to protect and maintain food security (ensuring a sufficient, accessible and nutritious food supply on the Irish market).

5.2.2. Forestry Programme development post 2027

Afforestation and agroforestry are identified in the Teagasc MACC 2023 as key measures within the LULUCF sector to support achievement of its 2030 target. Furthermore, there is a reliance on afforestation to achieve emissions reduction targets, including staying within Ireland's carbon budgets up to 2040.[74] Afforestation rates increased slightly from 2,435 ha in 2021 to 2,527 ha in 2025.[75] However, as of June 2026, just 777 ha had been planted, compared with 1,513 ha by the same time in June 2025.[12] The reduced planting levels in 2026 may reflect less favourable weather conditions during the planting season.[76] The slow pace of afforestation to date indicates that the Government's target of planting 8,000 ha of forest annually up to 2030 will be missed by a very substantial margin.

Additionally, the commitment to achieve 18% tree cover by mid-century is becoming increasingly unrealistic. Overall, the limited engagement by farmers and landowners with the Forestry Programme 2023–2027 is evident, indicating that revisions to the new Forestry Programme, due in 2028, will be essential to address the barriers to engagement if Ireland is to get anywhere close to the stated targets.

The Council welcomes the Mid-Term Review of the Forestry Programme 2023–2027, which introduced scheme adjustments and increased financial incentives to boost planting rates across different schemes.[26] It is a positive that many of the scheme adjustments focused on the protection and enhancement of biodiversity, water quality and promoting climate-resilient forest practices. This includes promoting increased conservation and development of native forests and encouragement of silviculture,[c] which promotes habitat and biodiversity conservation and rehabilitation.

The afforestation scheme adjustments agreed under the mid-term review place a strong emphasis on increasing funding. However, past enhancements to financial supports suggest that economic incentives alone do not necessarily lead to higher planting rates. Behavioural research repeatedly highlights non-economic barriers farmers and landowners experience in accessing the Forestry Programme schemes, including administration burdens[77] and the replanting obligation resulting in the irreversibility of the farmers' decision to plant. Furthermore, farmers strongly believe that prime agricultural land should be used for producing food.[78–81]

c The care and cultivation of woodlands as opposed to arboriculture, which is the care and cultivation of individual trees.

Evidence from the forestry licensing data suggests that further behavioural barriers are at play. As of June 2026, 1,748 ha of licences had been issued compared with 1,806 ha of licences in June 2025.[82] Despite the approval of licences, planting activity has not kept pace, indicating that landowners are engaging with the application process but ultimately choosing not to proceed with planting. Understanding why applicants undertake this often costly and onerous process without following through may help policymakers better identify and address these non-economic barriers.

Behavioural barriers may be overcome through the introduction of policy flexibilities that are informed by behavioural analysis. For instance, the Agroecology Project in France and the Bavarian Rural Development Programme in Germany introduced agroforestry schemes under the agri-environmental scheme umbrella. By placing agroforestry under a different scheme, it classifies agroforestry as an agricultural land use rather than a full land use change to forest, and therefore agroforestry does not fall under the strict forest regulatory framework. In short, this meant that farmers adopting agroforestry practices were not required to replant, thereby removing a key barrier to uptake.[79,83,84]

To achieve increased national planting rates, the Council recommends that the next Forestry Programme due in 2028 address the challenge of achieving 18% national forest cover by mid-century. This will require that DAFM set specific targets across the various schemes and introduce the necessary policy flexibilities to support increased participation by landowners and farmers. The Council recommends that the design of the policy flexibilities be informed by insights from behavioural analysis that identify key non-economic barriers to participation and highlight successful afforestation programmes internationally. The Council recognises the urgency of meeting the national forestry target and is increasingly concerned that failure to do so would prevent the achievement of both EU and national targets, while also weakening Ireland's ability to demonstrate a sufficiently comprehensive response to the Paris Agreement.

5.2.3. Decision support tools for resilience practices

Many mitigation actions within the Agriculture and LULUCF sectors also enhance resilience to climate change. The support provided to incentivise these measures should include appropriate acknowledgement of their dual nature. Expanding farmers' and land managers' access to decision support tools has a key role to play in supporting them to plan and take actions to both reduce greenhouse gas emissions and increase their resilience to climate change.

The development and deployment of a digital land-parcel-specific climate resilience and risk management tool is included as a priority action and indicator in the Agriculture, Forestry and Seafood Climate Change Sectoral Adaptation Plan 2025.[14] Recent research has shown that farmers are now experiencing more frequent climate disruptions to farming operations and resulting environmental, economic and social impacts.[85] These disruptions were considered by farmers to be a fundamental shift beyond typical weather variations.

Prolonged and intense winter rainfall events have impacted access to fields for grazing and placed increased pressures on fodder supplies, animal housing, management of animal waste, and run-off from agricultural land. Summer heat stress and drought events are also impacting grazing, crop yields, fodder reserves, welfare of livestock and on-farm labour conditions. However, farmers have low confidence in performing adaptation actions and face substantial difficulties in implementing them.

Wildfire risk and management are also issues impacting farmers. The combination of available fuel (vegetation), weather and ignition sources are the factors that generate wildfires. Climate change

is increasing the frequency and intensity of conditions that allow fires to spread. Wildfires are identified in the National Climate Change Risk Assessment as a substantial current risk, with the risk likely to become critical by late century.[86]

Managing wildfires is identified as an action within the National Biodiversity Action Plan. Specifically, Action 2B8 calls for DAFM, the National Parks and Wildlife Service and the National Directorate for Fire and Emergency Management to continue to work with all relevant stakeholders to develop a national fire management strategy by 2030.[87] This action is to be facilitated by the establishment of an interdepartmental fire management group with all relevant stakeholders.

The Council considers that a digital land-parcel-specific climate resilience and risk management tool would assist farmers in understanding the future impacts, risks and possible opportunities that the changing climate will bring, and provide important practical support for farmers to plan and take decisions around measures relating to climate impacts on sward growth performance, fodder needs, animal housing and welfare, waste management implications and options for growing alternative crops and varieties.

The Council is aware of the General Data Protection Regulation and budgetary challenges to the development of the digital land-parcel-specific tool and recommends that DAFM address these as a matter of priority, and integrate the tool into other increasingly used farmer decision support tools, such as AgNav and PastureBase Ireland, as appropriate.

5.2.4. Supporting flood risk control

The role of nature-based approaches in rural areas and upper catchments is increasingly recognised as a support measure to enhance resilience to flood events and to deliver other benefits for drought management, water quality, sediment control and biodiversity.

The Council has previously emphasised the need for a more integrated catchment management approach to flood risk management, considering socio-economic as well as biophysical factors. It has also emphasised the need to move beyond the pilot-scale use of nature-based approaches to systematic, large-scale deployment across catchments, supported by a strong multi-sectoral governance mechanism so that these approaches are better integrated into land use planning and catchment-level flood risk management. Agri-environment funding schemes should recognise the substantial co-benefits across multiple environment and climate objectives. This issue will be elaborated on further in the forthcoming Adaptation Annual Review, Preparing for Ireland's Changing Climate.

In terms of nature-based approaches in the rural environment and upper catchment, natural water retention measures have a key role to play in improving water quality, creating habitats and reducing/delaying the onset of peak flow rates downstream during flooding events in small catchments. A list of prioritised natural water retention measures for Ireland was identified through the Natural Water Retention Measures Working Group and included re-wetting drained organic lands, engineered basins, ponds and ditches, floodplain restoration, river re-meandering, removal of dams and other longitudinal barriers, riparian fencing and planting, and appropriate afforestation initiatives.[88]

The OPW has also undertaken a mapping exercise where suitable areas were identified for the application of these types of nature-based measures. These maps have been used to prioritise strategic areas for funding the application of the Forest Type 2 – Forests for Water category under the Forestry Programme, whereby native forests for the protection of water and aquatic ecosystems and the expansion of alluvial forests are supported.[89]

This type of approach should be expanded so that stronger incentives for the full range of natural water retention measures are provided to farmers and landowners in targeted strategic areas through agri-environment schemes such as the Agri-Climate Rural Environment Scheme, Eco-Scheme, the Farming for Water European Innovation Partnership and the Farm Plan Scheme of the National Parks and Wildlife Service, as well as financial programmes that will be established to support implementation of the NRP for the EU Regulation on Nature Restoration.

The Council will recommend in its forthcoming Biodiversity Annual Review 2026 that OPW, DAFM, DHLGH, DCEE and local authorities develop a targeted programme to incentivise farmers and landowners to undertake local nature-based measures to support flood risk management, drought management, water quality, sediment control and biodiversity benefits as part of an integrated catchment management approach.

5.3. Resilient food systems

A resilient food system is essential in the context of climate change, as it ensures a stable and secure supply of food despite increasing environmental pressures. Climate impacts such as extreme weather events, shifting growing conditions and supply chain disruptions can threaten food production and availability. Building resilience through diversified production, sustainable practices and stronger local supply chains helps reduce vulnerability to these risks while supporting long-term food sovereignty. In addition, a resilient food system can contribute to climate mitigation by reducing emissions and promoting more sustainable consumption patterns, making it a key component of an effective climate policy response.

5.3.1. Sustainable dietary guidelines

The latest ESABCC 2026 report, 'Climate Adaptation and Mitigation in the Agri-food System', recommends that 'the EU should establish an overarching food policy framework that promotes healthy, climate-friendly diets and reduces food waste across the value chain, while safeguarding equitable access to sufficient, nutritious and affordable food for all consumers'.[50] The ESABCC highlights that EU diets are on average too low in healthy, plant-based foods and too high in red meat and ultra-processed foods. This is driving both greenhouse gas emissions and a rise in non-communicable diseases and obesity, with related health costs estimated at €530 billion per year, or 3% of EU gross domestic product.[50]

Aligning diets with nutritional guidelines would thus support climate change mitigation and reduce public health costs while enhancing climate resilience, as healthy plant-based foods require fewer inputs per calorie produced. Similarly, a reduction in food waste can contribute to both climate mitigation and climate resilience. Furthermore, the EAT-Lancet Commission guidelines define a universal, science-based diet designed to nourish nearly 10 billion people by 2050, while operating strictly within planetary boundaries. Often referred to as the planetary health diet, it outlines specific daily intake targets that improve human health while preventing environmental damage.[90]

Within an Irish context, the Climate and Health Alliance advocates for diets that promote both human health and planetary sustainability. Their landmark 'Fixing Food Together' report for Ireland emphasises reducing ultra-processed foods, moderating red and processed meat intake and transitioning towards plant-rich, accessible and culturally acceptable diets.[91] The report produces evidence-based characteristics of and recommendations for a healthy, sustainable diet and discusses the implications, such as a reduction in household emissions.

The development of sustainable dietary guidelines has been progressed and, in some cases, implemented across Europe. For example, the Welsh Government updated its national dietary

guidelines,[92] Eatwell Plate, to the Eatwell Guide[93] in 2016 to provide consumers with sustainable diet guidelines. Similarly, Scotland promotes the Eatwell Guide to inform consumers on sustainable food choices.[94]

As part of the development of the guidelines and to better understand their environmental impact compared with the 2016 UK Dietary Guidelines, the Carbon Trust provided an analysis.[95] The analysis examined data indicating the impact of 93–97% of foods (by weight), considering greenhouse gas emissions, water consumption and land requirements, and found that the Eatwell Guide shows an appreciably lower environmental impact than the 2016 average UK diet. The analysis found that a number of dietary changes contributed to the reduction, such as increasing intake of potatoes, fish, wholemeal and white bread, vegetables and fruit while reducing intake of dairy, meat, rice, pasta, pizza and foods high in added sugar.

In 2021, the Danish Government published dietary guidelines that guide the Danish population on how to eat a healthier diet, but also on how to eat with a lower climate footprint. These guidelines were informed by a scientific evidence report, 'Guidance for Sustainable Healthy Diets – Scientific Background for Revising the Danish Food-based Dietary Guidelines'.[96] Overall, countries across Europe are progressing towards more sustainable healthy dietary guidelines that aim to reduce negative impacts on the environment.

A study undertaken at the University of Cambridge in 2025 aimed to identify the sustainability gaps in current Irish dietary guidelines and barriers to making them more sustainable.[97] Results found that the current healthy dietary guidelines do not support the different dimensions of sustainability, including the ecological dimension. Future sustainable dietary guidelines should support all dimensions of sustainability and uphold a sustainable food system.

Further research published in 2024 by the Economic and Social Research Institute examined what is preventing individual climate action across Ireland. The research found that substantial mitigation potential exists in dietary change, especially in reducing red meat consumption. However, awareness is very low, and confusion and perceived barriers prevent change.[98] Unlike transport climate action, dietary behaviour is easier to shift with information-based policy.[98]

The absence of national sustainable dietary guidelines represents a potential barrier to achieving a transition towards more sustainable dietary patterns. Similar to its 2024 recommendation,[39] the Council recommends that the Department of Health, in coordination with DAFM, develop and publish guidelines on sustainable diets to promote heathy dietary choices that also support reductions in greenhouse gas emissions and other environmental objectives.

5.3.2. The development of local horticulture supply chains

Supporting a resilient food system and sustainable diets may require less reliance on imported fruits and vegetables. Ireland imports approximately 83% of the fruits and vegetables consumed in the country.[99] The majority of these are imported from the EU and the UK, relying on extended and sophisticated supply chains. Recent disruption to production and supply chains have occurred due to the extreme climate and weather events. For example, Freight Transport Ireland reported on the risk of supply chain disruption to Ireland at ports and production disruption in southern Europe.[100] ESABCC has projected significant climate impact on agriculture production,[50] while analysis has already identified the impact of climate change on European agricultural systems.[101]

The horticulture sector is recognised as an important economic sector in Ireland and includes the production of vegetables, fruits, ornamentals, flower bulbs, trees, mushrooms and protected crops.[102] Development of the horticulture sector is guided mainly by the National Strategy for Horticulture 2023–2027 and Food Vision 2030. Tillage and horticulture are recognised as the most

carbon-efficient sectors of Irish agriculture, and Food Vision 2030 includes the ambition to increase the area of cultivation of both.[103]

Ireland's supply of fruits and vegetables is currently heavily dependent on imports and vulnerable to a range of disruptions, including conflict and its impact on inputs and supply chains, and extreme climate events and crop failures resulting in reduced yields.[104] The volume of domestic food producers has declined markedly over recent years due to lower prices, retail pressures, high start-up costs, labour shortages and competition from other countries, while the sustainability and viability of the horticulture sector is increasingly being challenged by rising production costs.

It is estimated that there are now fewer than 70 commercial vegetable growers left in Ireland compared with over 600 in the 1990s.[105] The National Strategy for Horticulture also states that established growers are leaving the industry and there is a decrease in the number of new entrants.[106] Input costs have increased by over 70% over the last 6 years, and recent volatility in energy, packaging, fertiliser and transport costs has further negatively impacted the sector.

The Council recommends that DAFM review the potential for Irish horticulture production to reduce the risk to food security, given Ireland's high reliance on the importation of fruits and vegetables in the context of climate change. The review should include existing horticulture support schemes and supports for primary horticulture producers.

5.3.3. Publication of guidelines for zoning land for allotments

Allotments can play an important role in climate action by promoting more climate-positive attitudes towards diets and encouraging greater awareness of sustainable food choices. By enabling local food production, they can help reduce food miles and reliance on fossil fuel inputs associated with transport and intensive agriculture. In addition, allotments contribute to wider environmental benefits, including enhanced urban cooling and increased biodiversity within built environments. Beyond these ecological impacts, they also strengthen community resilience and support local food sovereignty, particularly in times of disruption. Overall, allotments represent a practical, low-cost means of supporting behavioural change and delivering climate mitigation at the community level.

National waiting list times have been reported as anywhere up to 10 years,[107] which highlights a clear demand for access to an allotment. For example, various Dublin City councils report long waiting lists, including for Raheny (St Anne's Park), which consists of 80 plots. The number of people on the waiting list for this area is unknown. However, it is reported that the waiting list is now closed, with previous residents waiting up to 10 years. Examples from other locations include Herbert Park, which consists of 13 plots and has around 78 people on the waiting list, and Chapelizod, with 41 plots and around 47 people on the waiting list.

The Planning and Development Act 2024 is the first piece of Irish planning legislation to give explicit statutory recognition to allotments and to require planning authorities to actively plan for them as part of community infrastructure.[108] This represents a significant change from previous practice, where allotments were optional or policy-led rather than legally mandated. Section 48 of the amended 2024 Act requires each local authority to develop a sustainable places and communities strategy as part of its County Development Plan. Within this strategy, local authorities are legally obliged to allocate land for allotments. The act does not specify a stand-alone deadline date (e.g. 'by 2026'). Instead, the obligation is triggered through the County Development Plan process, which is currently under way for many local authorities.

To guide the development of the zoning of land for allotments within the proposed sustainable places and communities strategies, DHLGH should have already published guidelines. These guidelines must be made available prior to the commencement of the strategy development to support local

authorities to allocate land for allotments. However, some local authorities have already started the development of their County Development Plan, and without guidelines they will be unable to zone land for allotments. Therefore, in order to fulfil the mandate in the Planning and Development Act 2024, the Council recommends that DHLGH support local authorities in the roll-out of allotments through the development of guidelines informed by best practice, to be published within 12 months.

5.4. Renewable energy

Delivering emissions reductions in the Agriculture and LULUCF sectors depends on the timely implementation of critical national policy actions. Delays in publishing the Land Use Review (and its non-adoption by the Government), in progressing the RHO to support the development of the biomethane sector, and in developing a national statement on solar infrastructure risk impeding sectoral progress.

5.4.1. Biomethane

Recent volatility in global energy markets arising from the conflict in the Middle East has exposed consumers and businesses to price increases and supply risk, underlining Ireland's continued reliance on imported fossil fuels. With heat accounting for 35.1% of Ireland's energy demand in 2024, of which almost 90% was met with fossil fuels and just 7.9% with renewables,[109] achieving the production targets set out in the Biomethane Strategy would contribute significantly to improved energy security, a circular economy and significant emissions reductions.

The recent Sustainable Energy Authority of Ireland (SEAI) Heating and Cooling Assessment confirms that biomethane is expected to play a targeted role in decarbonising the heat sector, particularly in heat uses that are difficult to electrify, such as high-temperature industrial applications.[110] In the assessment's 'alternative' scenario, which models near-zero emissions by 2050, biomethane accounts for 9% of final energy used for heating in 2055, compared with no contribution in the baseline scenario. SEAI also identifies clear policy signals, investment and supply chain development as being essential to support the development of an indigenous bioenergy industry.

Under the National Biomethane Strategy, the Government is committed to producing 5.7 TWh of biomethane by 2030.[111] The SEAI National Energy Balance reported that only 39.3 GWh of biomethane produced indigenously between 2022 and 2024[d] was injected into the grid.[62] This equates to only 0.7% of the 2030 target.

The Central Grid Injection Facility in Mitchelstown, County Cork, entered the construction phase in 2024 and is expected to become operational in 2026.[112] This will introduce up to 700 GWh of biomethane into the grid annually, equivalent to approximately 12% of the 2030 target. However, the latest EPA projections estimate that biomethane will deliver only 1.75 TWh by 2030 under the WAM scenario.[113] This represents a substantial downward revision of −2.55 TWh or −59% compared with the previous projections. The Council is extremely concerned that without immediate and sustained action biomethane targets will be impossible to meet.

The National Biomethane Strategy identified the RHO as a key mechanism to create a demand-side incentive and to support the development of an indigenous biomethane sector, therefore expanding

d SEAI Energy Balance data for 2022–2024 report the quantity of biogas injected into the national natural gas grid. For the purpose of calculating the total amount of indigenously produced biomethane, it is assumed that the biogas is converted to biomethane.

Ireland's renewable energy sources, strengthening security of supply and enabling mitigation of emissions within the Agriculture sector through diversification.[111,114] As noted in *Section 4.3* and in the 2026 Electricity Review,[115] the RHO was originally expected to start in 2026; however, this is now not expected until 2027.[116,117]

The SEAI Heating and Cooling Assessment identifies financial supports for biomethane as necessary to increase production and reduce the cost of sustainable heat for consumers. Up to €200 million has been secured through the National Development Plan and Infrastructure, Climate and Nature Fund for the second round of capital grants for the development of anaerobic digestion plants.

DCEE is currently in the initial stages of putting the grant scheme in place, which will be available to support the development of anaerobic digestion plants in Ireland from late 2026.[116] However, the funded anaerobic digestion plants under the 2024 Biomethane Capital Grant Scheme were required to be completed and capable of producing biomethane by the end of 2025. On 15 July 2026, the Minister for Agriculture, Food and the Marine announced that payments under the scheme, worth almost €19 million, were being issued to seven successful projects.[118] Together these projects have the capacity to deliver approximately 10% of Ireland's 2030 biomethane production target.[119] However, this represents a significant underspend in the scheme. A total of 23 applications were received, but only seven were approved and less than half of the available funding has been allocated, leaving around €21 million unspent.[119] This will be further considered in the Council's Annual Review of the Industry and Waste sectors, due for publication later this year.

As highlighted in its 2026 Electricity Review, the Council is becoming increasingly concerned by and continues to stress the slow progress and insufficient ambition of the Biomethane Strategy, which is seriously slowing critical enhancements to Ireland's energy security,[115] as well as emissions reductions within the Agriculture sector through the diversification of farm activity. Furthermore, the Joint Committee on Climate, Environment and Energy facilitated a session with key stakeholders in the Agriculture sector on 1 October 2025 and identified barriers to achieving the 2030 target. Delays in biomethane production via anaerobic digestion were attributed to prohibitive capital costs, a lack of information and uncertainty of Government supports such as the RHO.[120]

The Council reiterates the urgency of advancing the RHO to build investor confidence and incentivise investment to ensure that demand for biomethane is robust and that production capacity is built out to meet demand.

5.4.2. National statement on solar energy

Ireland has missed its interim Climate Action Plan target of up to 5 GW of solar capacity installed by the end of 2025, achieving only 1.9 GW.[115] Therefore, a significant acceleration in deployment will be required to achieve the 2030 target of at least 8 GW capacity.

Ground-mounted photovoltaic systems are one of the most cost-competitive renewable energy technologies. However, they typically require more land per kilowatt-hour produced than other renewable technologies (e.g. wind, hydro), and they can therefore reduce the available area for agriculture production.[121] Agrivoltaics is the practice of placing solar panels above or between crops to enable the simultaneous cultivation of food and harvesting of solar energy.[122] This can impact grazing densities and crop yields, so the implications for nature and food production should be a key consideration in the design of solar farms, supported by appropriate planning and policy frameworks.[123]

A 2024 Ember report found that in an agrivoltaics system land use efficiency can reach 178% compared with plots used separately for solar or agricultural purposes, and that less shade-tolerant

crops, such as wheat, can still achieve 80% or more of their typical yield, with grain losses more than offset by the revenue from the sale of electricity.[124]

Furthermore, shading produced by photovoltaic installations can increase the resilience of agriculture by protecting crops and animals against the rising number of severe weather events, by reducing water consumption, or, in low-intensity agricultural applications, can provide habitats for flora and fauna to mitigate biodiversity losses.[121] Agrivoltaics therefore offers the potential to diversify farm income, improve the resilience of some agricultural systems and reduce competition between renewable energy deployment and food production.

At the EU level, the primary driver for agrivoltaics is the EU Solar Energy Strategy, which anticipates that 50% of new solar capacity will be distributed across agricultural areas.[125] While there is no single unified approach to solar farm guidelines, some EU Member States have developed a national framework.

For example, in April 2024, France published its Agrivoltaics Decree, which sets out the conditions for setting up agrivoltaics and ground-based photovoltaic projects on natural, agricultural and forestry land. It establishes strict definitions to ensure food production remains the primary land use while supporting renewable energy. Among other elements, it sets out clear guidance for solar development, including the stipulation that projects must provide a direct agricultural benefit, maintain at least 90% of traditional crop yields and limit ground coverage for larger installations to 40%.[126] Germany has introduced a policy that provides preferential feed-in tariffs and simplified permitting processes for systems up to 2.5 ha, provided they maintain at least 66% of agricultural yields.[125]

In Ireland, the Programme for Government 2025 includes a commitment to introduce planning guidelines for solar energy developments. Work is under way to formulate a draft National Planning Statement on Solar Energy development,[127] which presents an ideal opportunity to provide strategic direction on the scale and distribution of solar development and to ensure that this is consistent with wider objectives for sustainable land use, food production and nature restoration. The Council recommends that the statement include best-practice guidelines on the sustainable roll-out of solar infrastructure that supports integration with agriculture, soil health and biodiversity.

The revised National Planning Framework provides support for renewable energy development, including solar energy, by informing a spatial hierarchy of plans that cascade to regional and local levels. The National Planning Framework introduces regional renewable electricity capacity allocations for solar generation development to support the national target. These regional allocations will be integrated into regional spatial and economic strategies, which will, in turn, inform city and county development plans and the identification of preferred and unsuitable areas for solar energy development.[128] However, regional spatial and economic strategies will not map exact solar development locations.

In response to a parliamentary question in February 2026, the Minister for Housing, Local Government and Heritage confirmed that 'any National Planning Statement on Solar Energy development will take into careful consideration the findings of the Land Use Review'.[129] In this context, the Council reiterates the recommendation to expedite the development of a national land use framework informed by the findings of the Land Use Review. However, this process should not delay the development of a national planning statement for solar photovoltaics. For more details of the Land Use Review see *Sections 4.1* and *5.1.3*.

References

1 WASITUS.ie, 'Studies'. Accessed: Jul. 24, 2026. [Online]. Available: https://wasitus.ie/events/

2 European Environment Agency, 'EEA greenhouse gases — Data viewer'. Accessed: Jun. 24, 2026. [Online]. Available: https://www.eea.europa.eu/en/analysis/maps-and-charts/greenhouse-gases-viewer-data-viewers

3 Department of Climate, Energy and the Environment, 'Sectoral emissions ceilings'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/sectoral-emissions-ceilings/

4 Department of the Taoiseach, 'Press release: Government announces sectoral emissions ceilings, setting Ireland on a pathway to turn the tide on climate change'. Accessed: May 29, 2026. [Online]. Available: https://www.gov.ie/en/department-of-the-taoiseach/press-releases/government-announces-sectoral-emissions-ceilings-setting-ireland-on-a-pathway-to-turn-the-tide-on-climate-change/

5 Environmental Protection Agency, 'Ireland's Greenhouse Gas Emissions Projections 2025–2030', May 2026. Accessed: May 29, 2026. [Online]. Available: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2025-2030.php

6 Climate Change Advisory Council, 'Annual Review 2025: Agriculture and Land Use, Land Use Change and Forestry'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR2025-AFOLU-final-corrected.pdf

7 Environmental Protection Agency, 'Ireland's Final Greenhouse Gas Emissions 1990–2024', Mar. 2026. Accessed: Apr. 14, 2026. [Online]. Available: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Final-GHG-Emissions-Report-1990-2024.pdf

8 Environmental Protection Agency, 'Ireland's National Inventory Document 2026', Mar. 2026. Accessed: Jul. 13, 2026. [Online]. Available: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Ireland-NID-2026.pdf

9 Environmental Protection Agency, 'Ireland's Final Greenhouse Gas Emissions 1990–2023', Apr. 2025. Accessed: Jun. 13, 2026. [Online]. Available: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-final-greenhouse-gas-emissions-1990-2023.php

10 Department of Agriculture, Food and the Marine, 'Food Vision 2030 Dashboard'. Accessed: Jun. 19, 2026. [Online]. Available: https://app.powerbi.com/view?r=eyJrIjoiMGFhNDUyNmUtODVlYi00ZmFkLWI5MDAtMDIyZDUyMDUyNDhjIiwidCI6IjA2YTk0YWNkLWRiZGMtNGU0My1hZGY4LTE0Nzg2MGM3ZmRhMyIsImMiOjI9

11 Central Statistics Office, 'AAA09 – Number of livestock in June'. Accessed: Jun. 24, 2026. [Online]. Available: https://data.cso.ie/table/AAA09

12 Department of Agriculture, Food and Marine, 'Forestry Licensing Dashboard – Week ending 12th June 2026', Jun. 2026. Accessed: Jun. 24, 2026. [Online]. Available: https://assets.gov.ie/static/documents/ab0a3135/Forestry_Dashboard_-_Week_Ending_12th_June_2026.pdf

13 Central Statistics Office, 'AQA06 – Area farmed in June'. Accessed: Jun. 19, 2026. [Online]. Available: https://data.cso.ie/table/AQA06

14 Government of Ireland, 'Sectoral adaptation planning'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/campaigns/sectoral-adaptation-planning/

15 United Nations Framework Convention on Climate Change, 'Matters Relating to the Global Goal on Adaptation', Nov. 2025. Accessed: Jun. 24, 2026. [Online]. Available: https://unfccc.int/sites/default/files/resource/cma2025_L25_adv.pdf

16 Teagasc *et al.*, 'Action Plan on Supporting Improved Liveweight Performance in Ireland', 2026. Accessed: May 19, 2026. [Online]. Available: https://assets.gov.ie/static/documents/6b89e02d/Improved_Liveweight_Performance_Action_Plan_FINAL.pdf

17 Teagasc, 'Teagasc Opening Statement to Joint Committee on Climate, Environment and Energy Meeting to Identifying the Key Barriers That May Prevent Ireland from Meeting its 2026–2030 Climate Change Targets', 2025. Accessed: Jun. 19, 2026. [Online]. Available: https://teagasc.ie/wp-content/uploads/uploads/media/website/publications/2025/Teagasc-opening-statement-to-Joint-Committee.pdf

18 Department of the Taoiseach and Department of Climate, Energy and the Environment, 'Climate Action Plan progress reports'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-the-taoiseach/publications/climate-action-plan-progress-reports/#climate-action-plan-2025

19 Houses of the Oireachtas, 'Written Answers Nos. 76–100 – Thursday, 19 Mar 2026 – Parliamentary Questions'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.oireachtas.ie/en/debates/question/2026-03-19/section/104/

20 Government of Ireland, 'Climate Action Plan 2025', Apr. 2025. Accessed: Jun. 19, 2026. [Online]. Available: https://assets.gov.ie/static/documents/c491032e/DECC_Climate_Action_Plan_2025_Main_Report_-_Final_Web.pdf

21 European Food Safety Authority, 'Call for data on the use of 3-nitrooxypropanol in ruminants'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.efsa.europa.eu/en/call/call-data-use-3-nitrooxypropanol-ruminants

22 A. O'Brien, 'EFSA seeks extra time for scientific opinion on Bovaer'. Accessed: Jul. 13, 2026. [Online]. Available: https://www.agriland.ie/farming-news/efsa-seeks-extra-time-for-scientific-opinion-on-bovaer/

23 Houses of the Oireachtas, 'Climate Action Plan – Thursday, 16 Apr 2026 – Parliamentary Questions (34th Dáil)'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.oireachtas.ie/en/debates/question/2026-04-16/94/

24 Department of Climate, Energy and the Environment and Department of Agriculture, Food and the Marine, 'Land Use Review – Phase 2'. Accessed: Jul. 13, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/land-use-review-phase-2/

25 A. O'Brien, 'Forestry planting reaches over 2,500ha in 2025 – DAFM'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.agriland.ie/farming-news/forestry-planting-reaches-over-2500ha-in-2025-dafm/

26 Department of Agriculture, Food and the Marine, 'Minister Michael Healy-Rae delivers Mid-Term Review of the 2023–2027 National Forestry Programme'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-agriculture-food-and-the-marine/press-releases/minister-michael-healy-rae-delivers-mid-term-review-of-the-2023-2027-national-forestry-programme/

27 Department of Housing, Local Government and Heritage, 'Advisory Committee completes its deliberations and recommendations on Ireland's Nature Restoration Plan'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/press-releases/advisory-committee-completes-its-deliberations-and-recommendations-on-irelands-nature-restoration-plan/

28 Independent Advisory Committee on Nature Restoration, 'Nature Restoration Recommendations', Apr. 2026. [Online]. Available: https://be1d489e-7aa0-4c71-a88c-5dc314c217f6.filesusr.com/ugd/9a85d8_79109345c92c4a58af2591d10db10ed0.pdf

29 Climate Change Advisory Council, 'Annual Review 2023', Jul. 2023. [Online]. Available: https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR-2023-postfinal.pdf

30 Teagasc, 'Peat me halfway'. Accessed: Jun. 19, 2026. [Online]. Available: https://teagasc.ie/about/research--innovation/research-publications/tresearch-articles/peat-me-halfway/

31 Joint Committee on Climate, Environment and Energy, 'Recommendations Regarding Illegal Peat Extraction', Feb. 2026. [Online]. Available: https://data.oireachtas.ie/ie/oireachtas/committee/dail/34/joint_committee_on_climate_environment_and_energy/reports/2026/2026-02-27_recommendations-regarding-illegal-peat-extraction_en.pdf

32 European Commission, 'Commission decides to refer Ireland to the Court of Justice of the European Union for failing to comply with the Environmental Impact Assessment Directive regarding peat cutting projects'. Accessed: Jul. 24, 2026. [Online]. Available: https://ec.europa.eu/commission/presscorner/detail/es/ip_26_1179

33 Department of Climate, Energy and the Environment, 'Press release: Ministers O'Brien and Heydon mark key step to ensuring the development of a sustainable, indigenous biomethane sector in Ireland'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/press-releases/ministers-obrien-and-heydon-mark-key-step-to-ensuring-the-development-of-a-sustainable-indigenous-biomethane-sector-in-ireland/

34 Department of Climate, Energy and the Environment, 'Press release: Minister O'Brien secures government approval for the Renewable Heat Obligation Bill 2025'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/press-releases/minister-obrien-secures-government-approval-for-the-renewable-heat-obligation-bill-2025/

35 N. Donnelly, 'EU Commission Issues Detailed Opinion on the RHO'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.philiplee.ie/eu-commission-issues-detailed-opinion-on-the-rho/

36 Joint Committee on Agriculture and Food, 'Report on Anaerobic Digestion', May 2026. [Online]. Available: https://data.oireachtas.ie/ie/oireachtas/committee/dail/34/joint_committee_on_agriculture_and_food/reports/2026/2026-06-30_report-on-anaerobic-digestion_en.pdf

37 Department of Housing, Local Government and Heritage, 'Ireland's 4th National Biodiversity Action Plan 2023–2030'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/irelands-4th-national-biodiversity-action-plan-20232030/

38 Department of Housing, Local Government and Heritage, 'Press release: Minister O'Sullivan publishes National Biodiversity Action Plan progress report'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/press-releases/minister-osullivan-publishes-national-biodiversity-action-plan-progress-report/

39 Climate Change Advisory Council, 'Annual Review 2024: Agriculture and Land Use, Land Use Change and Forestry', Sep. 2024. [Online]. Available: https://www.climatecouncil.ie/councilpublications/annualreviewandreport/AR24-Agriculture%20LULUCF.pdf

40 Just Transition Commission, 'Recommendations for the Next Iteration of the National Dialogue on Climate Action', Sep. 2025. [Online]. Available: https://justtransitioncommission.ie/wp-content/uploads/2026/03/Strategic-advice-to-the-NDCA.pdf

41 Just Transition Commission of Ireland, 'Towards a Just Transition in Agriculture and Land Use: How Can Ireland Transition Its Food, Agriculture and Land-Use Systems in a Way That Is Fair, Sustainable and Supports Thriving Rural Communities?', Jul. 2026. [Online]. Available: https://justtransitioncommission.ie/wp-content/uploads/2026/07/JTC_Agriculture-and-Land-Use_Final.pdf

42 National Economic and Social Council, 'Just Transition in Agriculture and Land Use', Jun. 2023. [Online]. Available: https://www.nesc.ie/app/uploads/2023/06/162_just_transition_in_ag_land_use-1.pdf

43 Department of Agriculture, Food and the Marine, 'Forest Strategy Consultative Committee (FSCC)'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-agriculture-food-and-the-marine/publications/forest-strategy-consultative-committee-fscc/

44 Teagasc, 'Signpost Programme'. Accessed: Jun. 19, 2026. [Online]. Available: https://teagasc.ie/environment/climate-change-air-quality/signpost-programme/

45 Knowledge Network on Climate Assemblies, 'Report on the Impact of Climate Assemblies'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.knoca.eu/news/report-on-the-impact-of-climate-assemblies

46 London School of Economics and Grantham Research Institute, 'The impact of Deliberative Mini-Publics: Lessons from Belgium, Ireland, and Sweden', Nov. 2025. [Online]. Available: https://zenodo.org/records/17527119

47 J. Curtin and T. Arnold, 'A Climate-Smart Pathway for Irish Agricultural Development: Exploring the Leadership Opportunity', Jul. 2016. [Online]. Available: https://medpartnership.com/wp-content/uploads/2016/07/IIEA_CSA-Leadership-Forum-Final-Report-Digital-Version.pdf

48 State of Green, 'News release: Denmark announces historic tripartite agreement to cut agricultural carbon emissions and restore nature'. Accessed: Jun. 19, 2026. [Online]. Available: https://stateofgreen.com/en/news/denmark-announces-historic-tripartite-agreement-to-cut-agricultural-carbon-emissions-and-restore-nature/

49 Project Tempo, 'From protest to partnership – Rethinking Europe's agricultural transition'. Accessed: Jul. 24, 2026. [Online]. Available: https://projecttempo.com/hub/publication/from-protest-to-partnership-rethinking-europe-s-agricultural-transition

50 European Scientific Advisory Board on Climate Change, 'Climate adaptation and mitigation in the agri-food system – Recommendations for coherent EU policies'. Accessed: Jun. 19, 2026. [Online]. Available: https://climate-advisory-board.europa.eu/reports-and-publications/climate-adaptation-and-mitigation-in-the-agri-food-system-recommendations-for-coherent-eu-policies

51 Expert Group for Green Tax Reform, 'Green Tax Reform: Final Report', Feb. 2024. [Online]. Available: https://skm.dk/media/tngh1b4r/green-tax-reform-final-report.pdf

52 European Commission, 'Commission extends nitrates derogation for Ireland'. Accessed: Jun. 19, 2026. [Online]. Available: https://ec.europa.eu/commission/presscorner/detail/lt/ip_25_3150

53 M. McCormack *et al.*, 'Environmental and Economic Modelling of the Impact of Adjustments in the Maximum Stocking Rates Permitted under Ireland's Nitrates Derogation', Sep. 2025. [Online]. Available: https://teagasc.ie/wp-content/uploads/uploads/media/website/publications/2025/Environmental-and-economic-modelling-of-the-impact-of-adjustments-in-the-maximum-stocking-rates-permitted-under-Irelands-Nitrates-Derogation.pdf

54 Department for Environment, Food and Rural Affairs, 'Land Use Framework'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.uk/government/publications/land-use-framework

55 European Commission, 'The CAP post-2027 in the next EU budget – Agriculture and rural development'. Accessed: Jun. 24, 2026. [Online]. Available: https://agriculture.ec.europa.eu/common-agricultural-policy/cap-post-2027-next-eu-budget_en

56 Teagasc, 'Marginal Abatement Cost Curve 2023'. Accessed: Jun. 19, 2026. [Online]. Available: https://teagasc.ie/environment/climate-centre/publications/reports/marginal-abatement-cost-curve-2023/

57 Government of Ireland, 'Climate Action Plan 2025 – Annex of Actions', Apr. 2025. [Online]. Available: https://assets.gov.ie/static/documents/c18d3b09/DECC_Climate_Action_Plan_2025_Annex_of_Actions__-_Final_Web.pdf

58 K. O'Sullivan, 'Minister launches Improved Liveweight Performance Action Plan'. Accessed: Jun.19,2026.[Online].Available:https://www.agriland.ie/farming-news/minister-launches-improved-liveweight-performance-action-plan/

59 Government of Ireland, 'Climate Action Plan 2024', May 2024. [Online]. Available: https://assets.gov.ie/static/documents/climate-action-plan-2024-8ccbde73-e288-4241-8b26-6b4922389f25.pdf

60 Teagasc, 'Achievements 2025: Progress with Innovation, Sustainability and Technical Performance in the Agrifood Sector', Feb. 2026. Accessed: Jun. 19, 2026. [Online]. Available: https://teagasc.ie/wp-content/uploads/Achievements-2025.pdf

61 Department of Agriculture, Food and the Marine, 'Forestry Licensing Dashboard – Week Ending 2nd January 2026', Jan. 2026. [Online]. Available: https://assets.gov.ie/static/documents/ccf4c7cb/Forestry_Dashboard_-_Week_Ending_2nd_January_2026.pdf

62 Sustainable Energy Authority of Ireland, 'National energy balance'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.seai.ie/data-and-insights/seai-statistics/key-publications/national-energy-balance

63 EUR-Lex, 'Regulation (EU) 2024/3012 of the European Parliament and of the Council of 27 November 2024 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products'. Accessed: Jun. 19, 2026. [Online]. Available: https://eur-lex.europa.eu/eli/reg/2024/3012/oj/eng

64 Department of Agriculture, Food and the Marine, 'Principles for developing carbon farming in Ireland'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-agriculture-food-and-the-marine/consultations/principles-for-developing-carbon-farming-in-ireland/

65 Concito, 'From Farm to Framework: Designing CRCF Methodologies for Livestock Emissions', Dec. 2025. [Online]. Available: https://concito.dk/files/media/document/Designing%20CRCF%20Methodologies%20for%20Livestock%20Emissions%209%20dec.pdf

66 Central Statistics Office, 'Fertiliser sales 2025'. Accessed: Jun. 24, 2026. [Online]. Available: https://www.cso.ie/en/releasesandpublications/ep/p-fsa/fertilisersales2025/

67 Environmental Protection Agency, 'CBAM Liability Calculator'. Accessed: Jun. 24, 2026. [Online]. Available: https://www.epa.ie/publications/licensing--permitting/climate-change/cbam-liability-calculator.php

68 European Commission, 'Press release: Commission proposes €540 million in financial relief and other supports for farmers facing fertiliser crisis'. Accessed: Jun. 24, 2026. [Online]. Available: https://ec.europa.eu/commission/presscorner/detail/es/ip_26_1348

69 Central Statistics Office, 'AHM05 – Agricultural input and output price indices (base 2020=100)'. Accessed: Jun. 24, 2026. [Online]. Available: https://data.cso.ie/table/AHM05

70 Department of Climate, Energy and the Environment, 'Press release: Minister O'Brien commences order to bring NORA levy reduction into effect'. Accessed: Jul. 13, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/press-releases/minister-obrien-commences-order-to-bring-nora-levy-reduction-into-effect/

71 Department of Agriculture, Food and the Marine, 'Fuel Income Support Scheme'. Accessed: Aug. 10, 2026. [Online]. Available: https://www.gov.ie/en/department-of-agriculture-food-and-the-marine/services/fuel-income-support-scheme/

72 Revenue, 'Excise Duty Rates: Energy Products and Electricity Taxes', Apr. 2026. Accessed: Aug. 10, 2026. [Online]. Available: https://www.revenue.ie/en/tax-professionals/tdm/excise/excise-duty-rates/energy-excise-duty-rates.pdf

73 Central Statistics Office, 'PFSA01 – Nutrient content of fertiliser sales'. Accessed: Jun. 24, 2026. [Online]. Available: https://data.cso.ie/table/PFSA01

74 Climate Change Advisory Council, 'Carbon Budget Proposal 2031–2040'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.climatecouncil.ie/carbonbudgets/carbonbudgetproposal2031-2040/

75 Department of Agriculture, Food and the Marine, 'Forestry Licensing Dashboard – Week Ending 1st May 2026', 2026. Accessed: Jun. 19, 2026. [Online]. Available: https://assets.gov.ie/static/documents/5524be5e/Forestry_Dashboard_-_Week_Ending_1st_May_2026.pdf

76 Department of Agriculture, Food and the Marine, 'Forestry Licensing Dashboard – Week Ending 15th May 2026', May 2026. [Online]. Available: https://assets.gov.ie/static/documents/8d7b5fc2/Forestry_Dashboard_-_Week_Ending_15th_May_2026.pdf

77 P. Lentz, C. Augustenborg and L. K. Lades, 'Administrative burdens as barriers to afforestation: A sludge audit of Ireland's afforestation scheme', *Journal of Rural Studies*, vol. 123, 104078, Mar. 2026, https://doi.org/10.1016/J.JRURSTUD.2026.104078

78 H. Vidyaratne, A. Vij and C. M. Regan, 'A socio-economic exploration of landholder motivations to participate in afforestation programs in the Republic of Ireland: The role of irreversibility, inheritance and bequest value', *Land Use Policy*, vol. 99, 104987, Dec. 2020, https://doi.org/10.1016/J.LANDUSEPOL.2020.104987

79 R. Irwin, I. Short, M. Mohammadrezaei and Á. N. Dhubháin, 'Increasing tree cover on Irish dairy and drystock farms: The main attitudes, influential bodies and barriers that affect agroforestry uptake', *Environmental Science and Policy*, vol. 146, pp. 76–89, Aug. 2023, https://doi.org/10.1016/J.ENVSCI.2023.03.022

80 J. Mcdonagh, M. Farrell, M. Mahon and M. Ryan, 'New opportunities and cautionary steps? Farmers, forestry and rural development in Ireland', *European Countryside*, vol. 2, pp. 236–251, Nov. 2010, https://doi.org/10.13025/19859

81 L. Zhu and M. O'Hagan-Luff, 'Investigating barriers to afforestation in Ireland: Insights from a choice experiment survey', *Forest Policy and Economics*, vol. 182, 103687, Jan. 2026, https://doi.org/10.1016/J.FORPOL.2025.103687

82 Department of Agriculture, Food and the Marine, 'Forestry Licensing Dashboard – Week Ending 5th June 2026', Jun. 2026. [Online]. Available: https://assets.gov.ie/static/documents/24786635/Forestry_Dashboard_-_Week_Ending_5th_June_2026.pdf

83 Ministry of Agriculture and Agri-Food Forestry, 'Plan de Développement de L'Agroforesterie', May 2016. [Online]. Available: https://agriculture.gouv.fr/sites/default/files/1602-ae-synthese-agroforesteriebd.pdf

84 European Agricultural Fund for Rural Development, 'Germany – Rural Development Programme (Regional) – Bavaria', 2014. [Online]. Available: https://www.stmelf.bayern.de/mam/cms01/agrarpolitik/dateien/programm_eplr2024_gesamt.pdf

85 L. Balaine, M. Henchion, Á. Macken-Walsh, D. Meredith, M. Mohammadrezaei and S. Sweeney, 'Climate Change Advisory Council Working Paper No. 36: Farm-Level Behavioural Change Towards Building Climate Resilience: Insights from a Mixed-Methods Study', Jan. 2025. Accessed: Jun. 24, 2026. [Online]. Available: https://www.climatecouncil.ie/councilpublications/councilworkingpaperseries/Farm-level%20behavioural%20change%20towards%20building%20climate%20resilience%20publication.pdf

86 Environmental Protection Agency, 'National Climate Change Risk Assessment: Main Report', Jun. 2025. Accessed: Apr. 14, 2026. [Online]. Available: https://www.climateireland.ie/media/epa-2020/monitoring-amp-assessment/climate-change/climate-ireland/EPA_NCCRA_Main-Report_Published_June_2025.pdf

87 National Parks and Wildlife Service, 'Ireland's 4th National Biodiversity Action Plan: 2023–2030', Jan. 2024. Accessed: Apr. 14, 2026. [Online]. Available: https://www.npws.ie/sites/default/files/files/4th_National_Biodiversity_Action_Plan.pdf

88 CBEC and RPS, 'Integrated Framework for River Restoration and Nature-Based Solutions for Integrated Catchment Management (NBS-ICM)', Aug. 2022. Accessed: Jun. 24, 2026. [Online]. Available: https://irishriverproject.com/2022/11/24/integrated-framework-for-river-restoration-and-nature-based-solutions-for-integrated-catchment-management/

89 Teagasc, 'Forests for Water'. Accessed: Jun. 24, 2026. [Online]. Available: https://teagasc.ie/crops/forestry/grants/forests-for-water/

90 J. Rockström *et al.*, 'The EAT-Lancet Commission on healthy, sustainable, and just food systems', The Lancet. Accessed: Jun. 19, 2026. [Online]. Available: https://www.thelancet.com/commissions-do/EAT-2025

91 Climate and Health Alliance, 'Fixing Food Together: Transitioning Ireland to a Healthy and Sustainable Food System', May 2023. Accessed: Jun. 19, 2026. [Online]. Available: https://ide.ie/wp-content/uploads/2023/09/fixing-food-together-climate-health-alliance.pdf

92 Public Health England, 'The Eatwell Guide: Helping You Eat a Healthy, Balanced Diet', Sep. 2018. Accessed: Jun. 19, 2026. [Online]. Available: https://assets.publishing.service.gov.uk/media/5ba8a50540f0b605084c9501/Eatwell_Guide_booklet_2018v4.pdf

93 Welsh Government, 'Eatwell guide'. Accessed: Jun. 24, 2026. [Online]. Available: https://www.gov.wales/eatwell-guide-html

94 Food Standards Scotland, 'Healthy eating'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.foodstandards.gov.scot/consumer-advice/healthy-eating

95 Carbon Trust, 'The Eatwell Guide: A More Sustainable Diet – Methodology and Results Summary', Feb. 2016. Accessed: Jun. 24, 2026. [Online]. Available: https://www.carbontrust.com/sites/default/files/documents/resource/public/The%20Eatwell%20Guide%20a%20More%20Sustainable%20Diet%20-%20REPORT.pdf

96 Danish Veterinary and Food Administration, 'The Official Dietary Guidelines – Good for health and climate'. Accessed: Jun. 24, 2026. [Online]. Available: https://en.foedevarestyrelsen.dk/food/nutrition-and-health/the-official-dietary-guidelines

97 G. James-Martin, D. L. Baird and G. A. Hendrie, 'Sustainability of the Irish dietary guidelines: A pilot study identifying gaps in the guidelines and barriers to improvement', *Proceedings of the Nutrition Society*, vol. 84, E220, Aug. 2025, https://doi.org/10.1017/S002966512510089X

98 S. Timmons, Y. Andersson, M. Lee and P. Lunn, 'What is Preventing Individual Climate Action? Impact Awareness and Perceived Difficulties in Changing Transport and Food Behaviour', ESRI, Dublin, Ireland, May 2024, https://doi.org/10.26504/RS186

99 Houses of the Oireachtas, 'Joint Committee on Agriculture, Food and the Marine debate – Wednesday, 11 Oct 2023'. Accessed: Jul. 13, 2026. [Online]. Available: https://www.oireachtas.ie/en/debates/debate/joint_committee_on_agriculture_food_and_the_marine/2023-10-11/2/

100 FTA Ireland, 'Press release: Holyhead closure could threaten Irish supply chain longer term, FTA Ireland warns'. Accessed: Jul. 24, 2026. [Online]. Available: https://ftai.ie/holyhead-closure-could-threaten-irish-supply-chain-longer-term-fta-ireland-warns/

101 World Weather Attribution, 'News release: Increasingly hot Europe faces more severe droughts and growing challenges for water and land management'. Accessed: Jul. 24, 2026. [Online]. Available: https://www.worldweatherattribution.org/increasingly-hot-europe-faces-more-severe-droughts-and-growing-challenges-for-water-and-land-management/

102 Teagasc, 'Horticulture in Ireland'. Accessed: Jun. 24, 2026. [Online]. Available: https://teagasc.ie/crops/horticulture/horticulture-in-ireland/

103 Government of Ireland, 'Food Vision 2030: A World Leader in Sustainable Food Systems', Jan. 2022. Accessed: Jun. 24, 2026. [Online]. Available: https://assets.gov.ie/static/documents/food-vision-2030-fc705628-d125-42e9-89e0-bca4dd67c49b.pdf

104 M. Mikaelsson, M. Benzie and R. Jones, 'Climate Change Advisory Council Working Paper No. 34: Assessment on Prioritising Transboundary Climate Risks for Ireland', Dec. 2024. Accessed: Jun. 24, 2026. [Online]. Available: https://www.climatecouncil.ie/councilpublications/councilworkingpaperseries/EPA%20Report%20REV2%20WEB%202.pdf

105 Jesuit Centre for Faith and Justice, 'Irish food is going big and going bust'. Accessed: Jun. 24, 2026. [Online]. Available: https://www.jcfj.ie/2026/03/27/irish-food-is-going-big-and-going-bust/

106 Department of Agriculture, Food and the Marine, 'National Strategy for Horticulture 2023–2027', May 2023. Accessed: Jun. 24, 2026. [Online]. Available: https://www.gov.ie/en/department-of-agriculture-food-and-the-marine/publications/national-strategy-horticulture-2023-to-2027/

107 C. Hunt, '"Gardening is like magic" – Call for more allotment spaces as demand increases'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.rte.ie/news/ireland/2026/0416/1568433-allotment-guidelines/

108 Government of Ireland, 'Planning and Development Act 2024; S.I. No. 34 of 2024'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.irishstatutebook.ie/eli/2024/act/34/enacted/en/html

109 Sustainable Energy Authority of Ireland, 'Energy in Ireland: 2025 Report'. Accessed Aug. 19, 2026. [Online]. Available: https://www.seai.ie/sites/default/files/publications/Energy-in-Ireland-2025.pdf

110 Sustainable Energy Authority of Ireland, 'Comprehensive Assessment of the Potential for Efficient Heating and Cooling in Ireland: Report to the European Commission', May 2026. Accessed: Jun. 18, 2026. [Online]. Available: https://assets.gov.ie/static/documents/e4878acc/Comprehensive_Heating_and_Cooling_Assessment_Full_Report_May2026.pdf

111 Government of Ireland, 'Ireland's National Biomethane Strategy', May 2024. Accessed: Jun. 19, 2026. [Online]. Available: https://assets.gov.ie/static/documents/national-biomethane-strategy.pdf

112 Gas Networks Ireland, 'Ireland's Gas Network: Keeping Ireland's Energy Moving', Jul. 2025. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gasnetworks.ie/sites/default/files/2025-07/Gas-Network-Report-2024.pdf

113 Environmental Protection Agency, 'Input assumptions for National Energy Projections and associated greenhouse gas emissions 2025-2055', 2026. Accessed: Jun. 18, 2026. [Online]. Available: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/InputAssumptionsGHGprojections2025to2030.pdf

114 Department of Climate, Energy and the Environment, 'Renewable Heat Obligation'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/renewable-heat-obligation/

115 Climate Change Advisory Council, 'Annual Review 2026: Electricity', May 2026. Accessed: May 21, 2026. [Online]. Available: https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR2026-2-electricity-final.pdf

116 Houses of the Oireachtas, 'Renewable Energy Generation – Tuesday, 12 May 2026 – Parliamentary Questions (34th Dáil)'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.oireachtas.ie/en/debates/question/2026-05-12/284/#pq-answers-282_283_284_285

117 J. Milne, E. Barrett and M. Martin, 'Ireland's Renewable Heat Obligation'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.williamfry.com/knowledge/irelands-renewable-heat-obligation/

118 Department of Agriculture, Food and the Marine, 'Press release: Minister Heydon announces Biomethane Capital Grant payments to issue'. Accessed: Aug. 10, 2026. [Online]. Available: https://www.gov.ie/en/department-of-agriculture-food-and-the-marine/press-releases/minister-heydon-announces-biomethane-capital-grant-payments-to-issue/

119 S. Robb, '€21m in biomethane funding left unspent as just seven AD plants secure grants', *Irish Farmers Journal*. Accessed: Aug. 10, 2026. [Online]. Available: https://www.farmersjournal.ie/news/news/21m-in-biomethane-funding-left-unspent-as-just-seven-ad-plants-secure-grants-923107

120 Joint Committee on Climate, Environment and Energy, 'Report on Barriers to Achieving Climate Targets (2026–30)', Feb. 2026. Accessed: Jun. 19, 2026. [Online]. Available: https://data.oireachtas.ie/ie/oireachtas/committee/dail/34/joint_committee_on_climate_environment_and_energy/reports/2026/2026-02-05_report-on-barriers-to-achieving-climate-targets-2026-30_en.pdf

121 International Energy Agency, 'Dual Land Use for Agriculture and Solar Power Production: Overview and Performance of Agrivoltaic Systems', Mar. 2025. Accessed: Jun. 19, 2026. [Online]. Available: https://iea-pvps.org/wp-content/uploads/2025/03/IEA-PVPS-T13-29-2025-REPORT-Dual-Land-Use.pdf

122 Solar Ireland, 'Agrivoltaics: A sustainable path forward for Ireland'. Accessed: Jun. 19, 2026. [Online]. Available: https://solarireland.ie/news/agrivoltaics-sustainable-path-forward-ireland

123 H. Blaydes *et al.*, 'Shedding light on land use change for solar farms', *Progress in Energy*, vol. 7, no. 3, Jul. 2025, https://doi.org/10.1088/2516-1083/ADC9F5

124 P. Czyżak and T. Mindeková, 'Empowering Farmers in Central Europe: The Case for Agri-PV', Aug. 2024. Accessed: Jun. 19, 2026. [Online]. Available: https://ember-energy.org/app/uploads/2024/09/Empowering-farmers-in-Central-Europe-1.pdf

125 Leadvent Group, 'Policy frameworks supporting AgriVoltaics growth in the EU'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.leadventgrp.com/blog/policy-frameworks-supporting-agrivoltaics-growth-in-the-eu

126 TSE, 'The regulatory framework for agrivoltaics to preserve French agriculture'. Accessed: Jun. 19, 2026. [Online]. Available: https://www.tse.energy/en/articles/le-cadre-reglementaire-de-lagrivoltaisme-pour-preserver-lagriculture-francaise

127 Dáil Éireann, 'Joint Committee on Housing, Local Government and Heritage: Planning Regulations for Solar Farms – Discussion', Nov. 2025. Accessed: Jun. 19, 2026. [Online]. Available: https://data.oireachtas.ie/ie/oireachtas/debateRecord/joint_committee_on_housing_local_government_and_heritage/2025-11-25/debate/mul%40/main.pdf

128 Joint Oireachtas Committee, 'Solar Energy Development Regulation and Guidance: Opening Statement –Paul Hogan, Asst Secretary Planning Division', Nov. 2025. Accessed: Jun. 19, 2026. [Online]. Available: https://data.oireachtas.ie/ie/oireachtas/committee/dail/34/joint_committee_on_housing_local_government_and_heritage/submissions/2025/2025-11-25_opening-statement-paul-hogan-assistant-secretary-planning-division-department-of-housing-local-government-and-heritage_en.pdf

129 Houses of the Oireachtas, 'Solar Energy Guidelines – Thursday, 5 Feb 2026 – Parliamentary Questions (34th Dáil)'. Accessed: Jun. 24, 2026. [Online]. Available: https://www.oireachtas.ie/en/debates/question/2026-02-05/282/