Rialtas na hÉireann
Government of Ireland

Public Consultation

2019 Nitrates Derogation Review

Prepared by: Nitrates, Biodiversity and Engineering Division, Department of Agriculture, Food and the Marine, Johnstown Castle, Co Wexford

April 2019

Contents

1. Purpose of this consultation

The Department of Housing, Planning and Local Government (DHPLG) is the lead authority for the Nitrates regulations (SI 605 2017). The Department of Agriculture, Food and the Marine implements and operates the Nitrates Derogation (SI 65 2018).

Ireland's nitrates derogation provides farmers an opportunity to farm at higher stocking rates, above 170 kg livestock manure nitrogen/ ha, subject to additional conditions designed to protect the environment. The derogation is an important facility for more intensive farmers and almost 7,000 intensively stocked farmers availed of the derogation in 2018. It is recognised that compliance of a higher standard is required from these farmers to ensure a greater level of environment efficiency is achieved.

A review of Ireland's nitrates derogation is being carried out. This review willl examine further opportunities for derogation farmers to improve efficiencies and continue to reduce their environmental footprint with particular regard to water, climate and air quality.

It is conducted against the background of derogation farms being a very significant intensive cohort and the increasing area being farmed under the derogation. Furthermore recent EPA reports have highlighted deterioration in water quality and increasing green house gas and ammonia emissions.

Public consultation is an important element of this review process and provides an opportunity for stakeholders to submit their views as regard the derogation and related issues.

The purpose of this public consultation is to seek views on the potential revisions to the terms and conditions of the current nitrates derogation.

Structure of Irish farming

Grass based production is at the heart of Irish agriculture, with dairy and beef predominating in both overall output terms and export values. As a result of the temperate climate, long grazing season and productive soils, Irish farms have the potential to produce high yields of grass and crops resulting in low costs of production and leading a highly sustainable production system.

Average farm size of 32.5 ha is quite small compared to some other Member States. In general, farms in the southern and eastern regions are larger but farm output is higher in these regions also.

Table 1- Number of farms, farm size & output 2016

	Total	**Border, Midland & Western Regions**	**Southern & Eastern Regions**
Number of farms	137,500	72,500	65,000
Utilised agr. area	4.459 m ha	1.965 m ha	2.49 m ha
Average farm size	32.4 ha	27.2 ha	38.3

Source: CSO, Farm Structure Survey 2016

Over 60% of farms have an extensive stocking rate of under 85 kg livestock manure nitrogen per ha (Table 2). The western regions have the most extensive farming systems. The percentages of farms with stocking rates of less than 85 kg livestock manure N/ ha is very high in counties Leitrim (92%), Sligo (83%) and Mayo (78%). Southern and eastern counties have the lowest levels of extensive farming systems – Waterford (42%), Tipperary (44%), Cork (48%).

Table 2 - Analysis of farms by stocking rate for 2017

Stocking Rate kg Bovine Livestock manure N/ ha (as per Nitrates Regs)	**No. Farms**	**% Farms**
Under 85 kg (extensive)	80,919	61
86-130 kg (moderate intensity**)**	26,602	20
131 – 170 kg (intensive**)**	17,420	13.1
171+ kg (very intensive)	7855	5.9

Source: Nitrates section, DAFM

Table 3 - Stocking density distribution from bovine livestock manure

SR (kg livestock manure N/ha)	**≤ 50**	**51-100**	**101-130**	**131-170**	**171- 210**	**211- 250**	**>250**
% Farmers	**42.4**	**27.8**	**11.9**	**12.4**	**3.3**	**1.8**	**0.4**
% area	**25.8**	**12.4**	**15.5**	**5.0**	**2.9**	**0.3**	

Source: Nitrates section, DAFM

2. Ireland's Nitrates Action Programme & Nitrates Derogation

Irelands third Nitrates Action Programme (NAP) was reviewed by the European Commission in 2017, resulting in the fourth NAP for 2018 -2021. A number of significant changes were introduced for the fourth NAP (2018 -2021)

- New strengthened water protection measures - focus on intercepting and breaking nutrient transport pathways and preventing sediment and nutrient losses to waters.
- Targeting improved soil fertility for more efficient use of fertilisers and achievement of sustainable intensification objectives.

- Simplification of the regulations to improve implementation

The NAP is given legal effect by the Good Agricultural Practices for Protection of Waters Regulations 2017[1] (SI no. 605 2017)

Following the NAP review, Ireland's nitrates derogation was renewed by the Commission and the current derogation is valid for the period 2018 - 2021. New conditions were introduced for derogation farmers from 2018 including the requirement that 50% of slurry must be applied on derogation farms by 15 June. After this date slurry can only be applied by Low Emission Slurry Spreading (LESS) equipment. SI no. 65/2018 gives legal effect to the current derogation[2] .

Nitrates derogation farms have become a very significant intensive farming cohort over recent years. The area farmed under derogation, stocked at up to 250 kg livestock manure N/ ha, has increased by 34% from 2014 to 2018.

Table 4 – Profile of Derogation farm

	2014	2015	2016	2017	2018
No. Derogation Farms	5,800	6,300	6,800	7,000	6,891
Area under Der. Farms (ha)	332,200	351,900	409,800	432,300	445,200
Average Farm Size (ha)	58	56	60	62	65
Livestock Units/ Der. Farm	139	146	149	150	162

3. Cattle Numbers and Fertiliser Use Trends

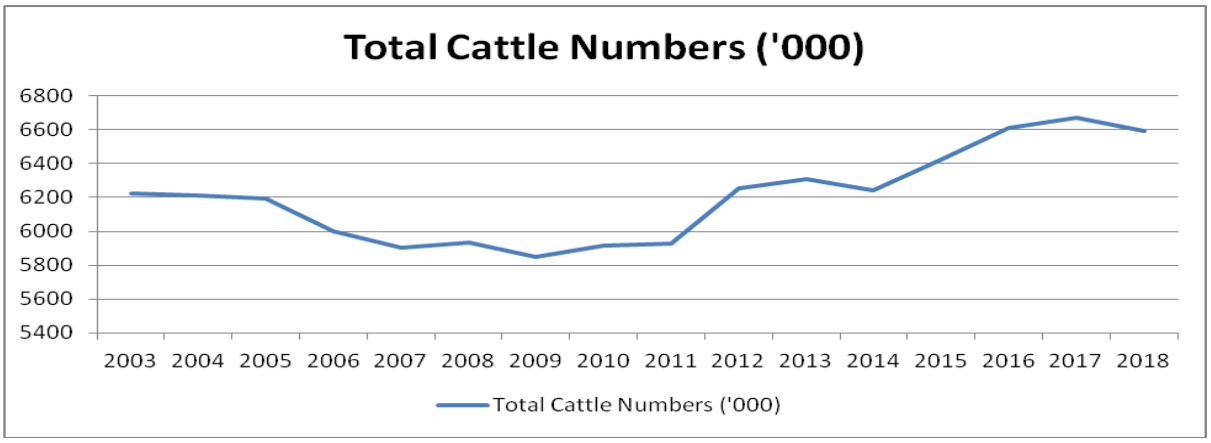
Over recent years cattle numbers and fertiliser use have increased and it is important to note that these increases have taken place on non-derogation as well as derogation farms.

The Central Statistics Office (CSO) provides the national cattle herd statistics. At the end of 2018, the National Herd was 6.6m head, an increase of 0.74m head since 2010 (+10.3%). This has been driven by growth in dairy cow numbers (+38%).

[1] https://www.agriculture.gov.ie/media/migration/ruralenvironment/environment/nitrates/2017/SINo605271217.pdf

[2] https://www.agriculture.gov.ie/media/migration/ruralenvironment/environment/nitrates/2018/SI%2065150318.pdf

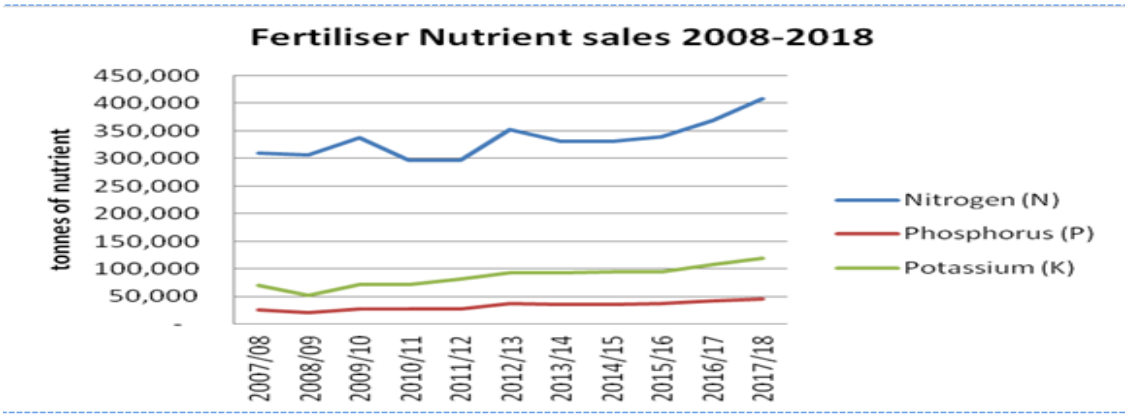
Figure 1: Trend in Total Cattle Numbers ('000)



Source: CSO Trend in livestock numbers 2003 – 2018 https://www.cso.ie/en/statistics/agriculture/archive/

In line with increasing livestock numbers, chemical fertiliser sales increased by over 10% in 2018. This follows a similar increase in 2017. Nitrogen sales are up 10% with Phosphorous and Potassium sales both up over 11%. Sales of stabilised urea, with low ammonia emission levels, have increased but are only 1% of the straight nitrogen sold. Nitrogen fertiliser use is projected to further increase over coming years. Furthermore according to Teagasc data, 90% of our soils are sub optimal for pH, P and K which is limiting grass production.

Figure 2: Fertiliser Sales 2008 -2018



Source: Department of Agriculture, Food and the Marine

4. Environmental Pressures

Recent EPA reports show that water quality has deteriorated and greenhouse gas emissions and ammonia emissions have increased. River water quality has declined by 3% according to the recent

EPA indicator report[3] . In 2016 Ireland breached its ammonia emissions[4] and furthermore GHG emission from agriculture has increased by 3% in 2017[5]. More detail is provided in Annex 1

5. Stakeholder Engagement & Review Group

Taking account of these environmental pressures, a review of Ireland's nitrates derogation is taking place, which will examine further opportunities for derogation farmers to improve efficiencies and to reduce their environmental footprint.

A public consultation will provide an opportunity for stakeholders to submit their views as regard the derogation and related issues.

Following this consultation, an expert group comprising officials from DAFM, DHPLG, EPA and Teagasc will draw up recommendations in relation to the conditions that show costs to farmers benefiting from the derogation. It is expected that the outcome of this review, including recommendations, will be published mid-year, in order to allow derogation farmers sufficient time to plan for 2020 and beyond.

6. How You Can Respond to the Public Consultation Timetable and Next Steps

The public consultation will commence on **1st April 2019** and will close on **10th May 2019**. A short, targeted questionnaire has been developed to facilitate responses to some of the key questions we have in relation to the derogation review. The responses received will allow us to determine stakeholders' opinion and will assist with the forming of recommendations. The questionnaire can be found in Appendix 1 of this consultation document. If you have any comments or suggestions outside of these topics covered in the questionnaire (Appendix 1), you can also send them directly to us at the Department of Agriculture, Food and the Marine by e-mail to:

DerogationReview@agriculture.gov.ie or post to Derogation review, Nitrates, Biodiversity and Engineering, Department of Agriculture, Food and the Marine, Johnstown Castle, Wexford, Y35 PN52.

The final date for receipt of responses in respect of this consultation is **10th May 2019**

[3] http://www.epa.ie/pubs/reports/water/waterqua/waterqualityin2017anindicatorsreport.html
[4] https://www.epa.ie/pubs/reports/air/airemissions/Irelands%20Air%20Pollutant%20Emissions%202016.pdf
[5] http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions2017/Report_GHG%201990-2017%20November%202018_Website.pdf

Nitrates Derogation Review 2019

Appendix 1: Questionnaire

Name:

Address:

Email address:

Organisation (if applicable):

Consultation Questions

In responding to this consultation you are invited to gives your views on the following taking into consideration the relevant links with Annex 1:

1. Our livestock systems are based on the maximum utilisation of grassland. How can we increase the efficiency of grassland management on derogation farms, while protecting the environment?

2. How can livestock manure be best managed to ensure its impact on the environment is minimised?

3. How should agricultural impact on soil be minimised on derogation farms?

4. What specific actions can derogation farms take to minimise their impact on the environment?

5. Should all intensive livestock farms be subject to the conditions of the derogation whether they apply or not?

Annex 1

Water Quality:

Overall, water quality in Ireland is relatively good compared to other European Member States. However over recent years, EPA reports indicate that water quality declined in recent period and that agriculture is responsible for a significant portion of the decline[6]. The two main suspected causes of pollution in rivers are agriculture and municipal sources, accounting for 53% and 34% of cases, respectively. The EPA's 'State of the Environment Report 2016[13] notes that Ireland is still a long way from meeting the full legal requirements of the Water Framework Directive, against which water quality is measured. It indicates that there was no overall improvement in water quality over the first river basin cycle (2009-2015) and that the target of a 13.6% improvement in the ecological status of surface waters (from the 2009 baseline) by 2015 was not achieved. Water quality improvements are required by approximately 50% of rivers, lakes and estuaries that are impacted by pollution or other pressures. While overall the length of unpolluted river channel has remained relatively constant, there has been a substantial loss in the number of highest quality river sites (i.e. Q value of 5). In the most recent monitoring period (2013-2015) only 21 sites were classified as the highest quality river sites (0.7% of sites) compared with 575 between 1987 and 1990 and 82 between 2001 and 2003. This is an area where substantial effort is required to protect the few remaining sites and, where feasible, return impacted ones back to their earlier extremely high quality.

The EPA's indicators report for water quality in 2017, published in November 2018, stated a further 3% reduction in river water quality was observed in 2017 with 44% of river water bodies of less than good status[14]. It noted that nutrients (phosphorus and nitrogen) continue to cause eutrophication of waters with agriculture as a significant source. Some of the main findings in the report are:

- River biological quality fell by 3% (72 water bodies) since 2013–2015. 56% of our rivers are at high or good biological quality with the remaining 44% being at moderate or worse quality.
- The reduction in the number of river water bodies at bad quality is continuing. The number of water bodies in this category fell from five in 2016 to just two in 2017.
- The decline in high-quality sites (Q4–5 and Q5) is continuing. This trend must be reversed.
- There is a relatively stable picture with regard to nitrate concentrations in our rivers. This decreasing trend may be slowing down, with evidence of increasing nitrate concentration at some river sites.

The number of river sites with phosphorus concentrations needed to support high-quality rivers dropped from 58% in 2014–2016 to just over 48% in 2015–2017. There is also an increase in the percentage of sites with higher phosphorus concentrations that are likely to lead to water quality issues.

http://www.epa.ie/pubs/reports/water/waterqua/waterqualityin2017anindicatorsreport.html

[6] http://www.epa.ie/pubs/reports/water/waterqua/waterqualityin2017anindicatorsreport.html

Green House Gases:

Interest in the Irish climate has considerably increased in recent years due to international concerns regarding climate change and the recognition that agriculture produces a third of national greenhouse gas emissions and is also significantly impacted by changes to weather systems.

Key results for the Irish climate:

- The observed warming over the period 1981 – 2010 is expected to continue with an increase of ~ 1.5 degrees in mean temperatures by mid-century; the strongest signals are in winter and summer.
- Warming is enhanced for the extremes (i.e. hot or cold days) with highest daytime temperatures projected to rise by up to 2 degrees in summer and lowest night-time temperatures to rise by up to 2-3 degrees in winter.
- Milder winters will, on average, reduce the cold-related mortality rates among the elderly and frail but this may be offset by increases due to heat stress during summer.
- Winters are expected to become wetter with increases of up to 14% in precipitation under the high emission scenarios by mid-century; summers will become drier (up to 20% reduction in precipitation under the high emission scenarios).
- The frequency of heavy precipitation events during winter shows notable increases of up to 20%
- Changes in precipitation are likely to have significant impacts on river catchment hydrology
- The models predict an overall increase (0-8%) in the energy content of the wind for the future winter months and a decrease (4-14%) during the summer months.
- A small decrease in mean wave heights is expected around Ireland by the end of the century, while in winter and spring storm wave heights are likely to increase.
- Expected increases in temperature will further affect ecologies of Irish butterflies, in particular their flight periods, voltinism and abundances.
- Birch tree simulations suggest that advance in bud burst with increasing temperature will be greater in the northeast than the southwest resulting in more homogenous bud burst across the country towards the end of the century.

Policy:

Ireland's national policy position is transition to a low-carbon, climate resilient economy and society with 80% decarbonisation by 2050 including an approach to carbon neutrality to the agriculture and land use sector which does not compromise sustainable food production. This is against a backdrop of national binding targets for climate and energy targets set at EU level for 2020 and 2030. These GHG reduction and renewable energy targets for Ireland are as follows:

Key indicator	**2020**	**2030**
Reduction in Non emissions trading GHG emissions	20%	30%
Increase in energy efficiency	20%	32.5%
Increase in renewable energy (across electricity, heat and transport)	16%	>16% - 32%

Source: DG Clima website outlining the climate and energy framework targets for Ireland

https://ec.europa.eu/clima/policies/strategies/progress_en

Current projections indicate that Ireland will fall short of all of these targets. While none of these targets are sectorally aligned, all sectors will have to contribute and agriculture has a key role to play in helping to meet these GHG emissions and energy related targets.

The national policy position for the bioeconomy[2] is to grow Ireland's ambition to be a global leader for the bioeconomy through a co-ordinated approach that harnesses Ireland's natural resources and competitive advantage and that fully exploits the opportunities available. An important objective of the bioeconomy is to move Ireland beyond simply a compliance and carbon mitigation focus, to integrating sustainable economic development into our economic model, as we transition to a low carbon and circular economy. The bioeconomy has a close relationship with the circular economy and represents an area where Ireland has some crucial advantages. The bioeconomy should promote circularity through solutions and innovations that reuse and recycle materials while maximising resource efficiency through the use of unavoidable wastes and ensure environmental sustainability. The EU vision to achieve climate neutrality by 2050, will require societal transformations that develop bioeconomy, circular economy and smart infrastructure and connections as offering feasible means to reach a climate neutral economy, including farming, forestry and horticulture. The national policy position on bioeconomy has identified four guiding principles for bioeconomy development

- Sustainability Principle - Environmental sustainability is a core principle of the bioeconomy and products developed must be sustainable.
- Cascading Principle - whereby higher value applications are preferentially derived from biological resources (e.g. food, bio-based materials and chemicals) prior to their use in energy and fuel generation which will allow us to derive the maximum value from our bio-resources.
- Precautionary Principle - is a risk management approach to prevent policies or actions causing harm to the public or the environment. Innovation in the bioeconomy will depend on the sensible application of this principle and it should be informed by the latest scientific information and consensus.
- Food First Principle - gives priority to food and nutrition security by improving the availability of and access to a safe and healthy food supply for citizens.

Decarbonising the agriculture sector is challenging but the sector should also be seen as part of the solution. Moving towards carbon neutrality is based on a three pillar approach of:

i. On Farm Efficiencies / Abatement Measures that reduce carbon emmissions
ii. Carbon Sequestration an absorption measure
iii. Energy Efficiencies measures that displace fossil fuel use to the use of carbon intensive materials.

Green House Gas (GHG) profile & trends

Agriculture sector emissions arise from enteric fermentation, manure management and the application of nitrogen to soils. Methane (CH_4) and nitrous oxide (N_2O) make up the majority of Irish agricultural greenhouse gas emissions, mainly due to the pre-dominance of cattle and sheep livestock production.

Methane is the most significant greenhouse gas emitted from agricultural activity in Ireland, accounting for 64.5% of total agricultural emissions. Enteric fermentation, which is a natural process in the digestive system of ruminant animals that results in the emission of methane, accounts for 90% of agricultural methane emissions. The remaining agricultural methane is associated with the storage and management of animal manures which may present opportunities, albeit limited, for methane recovery through the future deployment of anaerobic digestion technologies.

Nitrous oxide emissions arise mainly from applications of nitrogen-based fertiliser and animal slurries to agricultural soils. Nitrous oxide contributes up to 35% of Ireland's agricultural greenhouse gas emissions.

In the EPA's national inventory report, the total emissions from agriculture are projected to increase by 4% over the period 2017 – 2020, to 20.7 Mt CO_2eq, under the EPA's "With Existing Measures" scenario. Emissions are projected to increase by 7% over the period 2017 – 2030, to 21.1 Mt CO_2eq under the With Existing Measures scenario. Under the EPA's "With Additional Measures" scenario emissions are estimated to increase by 3% and 6% from current levels to 2020 and 2030 respectively.

Because of the structure of Ireland's economy and in particular the absence of heavy Industry, agriculture remains the single largest contributor to overall emissions in Ireland. It accounts for 33.3% of the total. This is uniquely high in a European context where the average is 10%, although our emissions intensity per unit of output is among the lowest in EU. Our absolute agricultural GHG emissions rank 8th in the EU, contributing approximately 4.4% of EU sectoral emissions. France, Germany and the UK contribute 43% of EU agricultural emissions. This relative high percentage reflects the importance of agriculture to the Irish economy, the significance of an efficient grass based livestock industry. Agriculture emissions increased by 2.9% or 0.57 Mt CO_2eq in 2017 following an increase in 2016 of 2.7%. The most significant drivers for the increased emissions in 2017 are higher dairy cow numbers (+3.1%) with an increase in milk production by 38.8%[3].

The EPAs 'State of the Environment report 2016' requires the following key environmental action in relation to climate change[15] – '*accelerate mitigation actions to reduce greenhouse gas emissions and implement adoption measures to increase our resilience in dealing with adverse climate impacts'*

Table 5 – Agriculture related GHGs 2014 – 2017 compared to 2005 baseline

Year	Agr related GHG (mt CO_2 eq) 1990 Base of 19.514
2005	18.75
2014	18.42
2015	18.74
2016	19.25
2017	19.82

Source: EPA preliminary inventory released in Dec 2018

Teagasc has published a new report 'Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030' and have assessed the likely level of future GHG emissions if no action is taken to address emissions over the period 2021 to 2030 https://www.teagasc.ie/media/An-Analysis-of-Abatement-Potential-of-Greenhouse-Gas-Emissions-in-Irish-Agriculture-2021-2030.pdf

Ammonia Emissions:

There are a number of European Union (EU) Directives on air quality in place that set standards for a wide variety of pollutants. Additionally, Ireland is a Party to the Convention on Long Range Transboundary Air Pollution (CLRTAP) under which certain transboundary air pollutants including ammonia are controlled. As a member of the EU, implementation of the Gothenburg protocol (a daughter protocol of the CLRTAP) is achieved through limits set out in the National Emissions Ceilings Directive 2001/81/EC (NECD). As part of the EU Clean air package, the National Emissions Ceilings Directive was reviewed and updated to reflect the latest scientific knowledge and understanding of the health and environmental impacts of air pollution. This revised NECD entered into force on 31st December 2016 and was transposed into national legislation on the 29th June, S.I. No. 232 of 2018 (European Union (National Emission Ceiling) Regulations 2018.

A key component of the revised NECD is more ambitious and protective national emission ceilings for key pollutants such as ammonia. The NEC Directive sets new national targets for 2020 and 2030 for for five air pollutants – particulate matter (PM10 and PM $_{2.5}$), sulphur dioxide (SO_2), nitrogen oxides (NO_x), ammonia (NH_3) and volatile organic compounds (VOCs). The aim of the revised Directive is to cut the negative impacts of air pollution on human health by almost half by 2030. Reducing levels of illness, including respiratory and cardiovascular diseases and premature death is the main priority.

Ammonia deposition has negative environmental impacts such as the loss of biodiversity, eutrophication of surface waters and soil acidification. Ammonia can also have a negative impact on human health including short-term irritation of the eyes and lungs. Its combination with other air pollutants (NO_x and SO_2) can lead to the formation of secondary particulate matter (PM $_{2.5}$) which can have long-term effects on the cardiovascular and respiratory system when inhaled. As well as potentially damaging the environment, the release of ammonia is a cost to the farmer through the loss of a valuable plant nutrient.

Nitrogen is a key farm input (through fertilisers and feedstuffs) and the priority should be to take steps to (i) introduce no more N into our production systems than is necessary and efficient and (ii) retain it within the production system rather than releasing it to the atmosphere. Utilising N efficiently will result in higher nutrient use efficiency on farm and the need for less additional nutrients.

The agriculture sector accounts for virtually all (99 per cent) of ammonia emissions in Ireland. Grasslands ultimately receive the bulk of the 40 million tonnes (Mt) of animal manures produced annually in Ireland along with approximately 400,000 tonnes of nitrogen in fertilisers (2018 N sales figures). Of the 400,000 tonnes of Nitrogen used, just over 13% is Urea fertiliser, which is associated with ammonia emissions. A proportion of the nitrogen in these inputs is volatilised into the air as ammonia.

Ireland's national emission ceiling for NH_3 under the NEC Directive is 116 kilotonnes (kt), to be achieved from 2010 and in each year until 2019. This is equivalent to a 5.6 per cent permitted increase in emissions from the 109.8 kt 1990 baseline figure.

Animal manures produce about 90 per cent of ammonia emissions in agriculture and chemical fertilisers and road transport account for the remainder. It is estimated that approximately 15 per cent of the nitrogen in animal manures and 2 per cent of nitrogen contained in chemical fertilisers is lost to the atmosphere as NH_3. The Nitrous Oxide (NH_3) emissions trend is consequently largely determined by the cattle population and showed a steady increase up to 123.5 kt in 1998. There was some decline in the populations of cattle and sheep after 1998, as well as a decrease in fertiliser use, which contributed to a decrease in NH_3 emissions in the period 2000 to 2011. Recent increases in cattle numbers and fertiliser use have seen NH_3 emissions increase for the last five years. Ammonia emissions increased in 2016 by 5.6 kt, primarily as a result of a 6.2 per cent increase from dairy cattle and a 2.8 per cent increase from synthetic fertiliser use.

Ammonia emissions are compliant with the 2010 ceiling for years 2010 to 2015, however Ireland exceeded the emission ceiling in 2016 for the first time. Limiting and reducing NH_3 emissions into the future could be problematic given the strong performance of the agriculture sector in particular dairy following the removal of the EU milk quota regime in 2015. Furthermore there is a requirement for 1% reduction in emissions compared to 2005 levels by 2020 onwards and 5% reduction in emissions compared to 2005 levels by 2030 onwards. Reducing NH_3 is a challenge, with almost all our ammonia coming from grass based agricultural activities where grazing is already considered a cost-effective Category 1 abatement option (i.e. associated with lower emissions than confined housing systems).

The EPA published the most recent air quality emission in 2016;

https://www.epa.ie/pubs/reports/air/airemissions/Irelands%20Air%20Pollutant%20Emissions%202016.pdf