Opening Statement, IFA, 19.07.23

Opening Statement by IFA President Tim Cullinan to the Joint Oireachtas Committee on Agriculture, Food and the Marine

on Water Quality Monitoring Report on Nitrogen and Phosphorus concentrations in Irish waters 2022

Wednesday, 19th July 2023

Chairman and Committee Members, I would like to thank you for inviting IFA to address you today.

I am joined by Shane Herlihy Hydrogeologist and Environmental Consultant with ERS[1], Tadhg Buckley IFA Director of Policy and Aine O'Connell IFA Dairy Executive.

Both the environmental and economical sustainability of Irish agriculture is underpinned by our temperate climate which allows us to produce beef and dairy produce from pasture. 92% of all agricultural land in Ireland is grassland, compared with an EU average of 31%.

Our grass-based system is unique among Europe where livestock are typically reared indoors. Irish agriculture is dominated by small to medium-sized family farms, with an average farm size of 33 hectares. The average stocking rate (livestock units per hectare) in Ireland is 1.3 units per hectare (2.1 units per hectare for dairy herds) per hectare which is relatively low compared to other EU countries including the Netherlands (3.4 units), Malta (3.2 units) and Belgium (2.7 units).

In order to maximise the amount of pasture utilised in livestock production systems Ireland avails of a Nitrates derogation. The justification for having the derogation in Ireland is based on objective criteria, such as the long growing seasons, which ranges from 330 days per year in the south-west to around 250 days per year in the north-east, and the high yields of grass with high nitrogen uptake.

[1] Environmental Risk Solutions

The Commission's Implementing Decision of 29th April 2022 granting Ireland a derogation included the requirement to conduct a two-year review of water quality (2021 and 2022), to take place in 2023, to determine maximum stocking rate thresholds based on nitrates concentrations, eutrophic status and their respective trends – Article 12.

This condition was introduced without consultation with stakeholders and will have a significant economic impact on derogation farmers livelihoods and deliver negligible improvements to water quality.

The competitive advantage of grass-based systems is based on maximising grass utilisation. Where stocking rate is not sufficient relative to pasture growth potential on a farm, it will result in lower grass utilisation, lower sward quality and reduced animal performance.

The imposition of a lower organic N limit per ha could move farmers away from pasture-based systems to a higher input system (more bought in feed) in an attempt to maintain milk output from the farm.

Annex 1 of the EPA "Water Quality monitoring report on nitrogen and phosphorus concentrations in Irish Waters 2022" addresses Article 12 and upon the satisfaction of the Commissions assessment framework created "The Red Map".

IFA rightly called out the red map as nonsensical - which it is - this is not a criticism of the EPA but a criticism of the framework they were requested by the Commission to use when categorising areas for a reduced stocking rate threshold. Those that have studied this rather than the headlines would understand that the Targeting Agricultural Maps is the preferred option of the EPA for targeted actions.

Since the publication of Article 12, IFA has consistently outlined the flaws associated with its measurement of water quality to determine stocking rate thresholds. Most notably:

1. An assessment of trends between two years is too short as it ignores the reality of lag times. Lag times refer to the delay between the time when a particular agricultural practice or activity occurs and the time when its impact on water quality is observed.

   This delay is due to a range of factors, including the time it takes for nutrients to move through the soil and into the groundwater; the time it takes for groundwater to move through the aquifer; and the time it takes for monitoring data to be collected and analysed.

As a consequence, it can be difficult to attribute changes in water quality to specific agricultural practices or activities, as the effects of individual practices or activities accumulate over years or decades.

It is therefore not possible to make meaningful conclusions about national or regional trends based on a limited number of monitoring sites over a short-term period, of two or three years. These delays must be quantified in order to establish realistic deadlines, thresholds and policy expectations, and to design effective best management practices.

2. The Eutrophication status of a water body is impacted by a multitude of pressures and associated nutrients. Thereby improving its status is dependent on a variety of measures and not just simply a reduction in stocking rate. In addition, the Nitrates Directive itself requires the Eutrophic status of surface, estuary and coastal waters every four years, while the Commission decision insists that a comparison be made between 2021 and 2022. This is not consistent.

3. A reduced stocking rate threshold of 220kgN/ha will have a negligible impact on water quality. It is modelled by Teagasc to reduce nitrate loss to 1m soil depth by 2.2kg N/ha.

   However, due to Irelands heterogenous landscape, its contribution to catchments with be variable and inconsistent. While its benefit to water quality is questionable the economic impact of the reduction is guaranteed. IFA estimate that the loss to the rural economy will likely be €236m. However, the impact it will have on the impacted family farms will be much more devastating.

4. Given that our estuaries capture significantly large catchment areas and pressures, the use of their status to determine stocking rate thresholds is not valid, as it ignores the contribution of wastewater treatment plants and other pressures to declining water status.

   27% of transitional water bodies (estuaries & coastal lagoons) are at risk of not achieving good status and are impacted equally by the combined effects of urban wastewater & runoff (40%) and agriculture (43%).

5. Over 30 measures have been included in the Nitrates Directive since 2018 which need to be given time to demonstrate improvements. Of critical importance, the introduction of banding and its impact on stocking rates was only introduced in 2023 and hence this very costly measure adopted by farmers is ignored within Article 12.

Recognising the seriousness of the issue, an IFA delegation met with the Nitrates Unit of the European Commission in February to outline our concerns relating to the details of Article 12.

Subsequently, IFA made a submission to the EU Commission which has been made available to this Committee for today's meeting as 'Appendix 1'.

In March, the Minister for Agriculture reflected on our concerns and informed the Seanad that he would be seeking further flexibility on Article 12. This flexibility needs to be obtained as a matter of urgency.

It is worthwhile to point out that in the past two months the Minister for Agriculture has put together an *Agriculture Water Quality Working Group* which he consistently refers to since its establishment. This Group is in its infancy with its fourth meeting held yesterday and it may well prove to be a useful vehicle in helping protect water quality in the medium-term. However, the current issue relating to a possible reduction to 220kg organic N is far too pressing and urgent to hand over to a working group just formed in the past six weeks.

The most recent National Farm Survey data reveals that the average dairy farmer (who is most affected by any changes to the derogation) has €127,477 of bank borrowings with 77% of this classed as medium to long term debt. This debt is typically present on younger farmers whose repayment capacity is based on the premise that a 250kg organic N limit is applicable. If a 220kgN/ha stocking rate threshold is introduced, it will likely place some of these farms in financial jeopardy. How could we agree to more costly measures when we find our farmers in this space?

In conclusion, farmers are very aware of their responsibility towards protecting water quality and have made significant investments on their farms to mitigate their pressure on local catchments. An assessment of water quality must be scientifically robust, fair and justified.

Article 12's assessment of water quality is not scientifically robust. I

It is not fair or justified, yet it will have massive ramifications for the entire agricultural sector.

IFA is seeking an immediate resolution by Minister McConalogue to Article 12 and to explore alternative measures that can improve water quality without decimating farm families.

I will now hand you over to Shane Herlihy for his opening address.

IFA Appendix
19.07.2023

Appendix 1

Submission on validity of the two-year review to determine water quality trends attached to the European Commission's Implementing Decision granting Ireland a derogation

May 2023

The Irish Farmers' Association (IFA) is Ireland's largest farming organisation with approximately 77,000 members in 940 branches nationwide. We have protected and defended the interests of Irish farmers in all sectors for more than 65 years, lobbying and campaigning for improved conditions and incomes for farm families.

Executive Summary

- Ireland has a predominantly extensive grass-based livestock farming system, 67% of the land area is farmed extensively. 92% of all agricultural land in Ireland is grassland, compared with an EU average of 31%.

- Irish agriculture is dominated by small to medium-sized family farms, with an average farm size of 33 hectares. The average stocking rate (livestock units per hectare) in Ireland is 1.3 units per hectare (2.1 units per hectare for dairy herds) per hectare which is relatively low compared to other EU countries including the Netherlands (3.4 units), Malta (3.2 units) and Belgium (2.7 units).

- The production of beef and dairy in Ireland is distinct from its European neighbours since cattle are predominantly reared outdoors on permanent grassland. The average diet of dairy cows in Ireland is 81.8% forage, with concentrates constituting 18.2% of the annual feed budget on a dry matter basis. Of the 81.8% forage, 60.2% was grazed pasture, 19.8% was grass silage, and 1.8% was alternative forages.

- There are approximately 6,727 Irish farmers or approximately 5% of all farms, in derogation, that are permitted to farm to a higher level of up to 250kg organic N/ha, subject to complying with 19 additional measures. The justification for having the derogation in Ireland is based on objective criteria, such as the long growing seasons, which ranges from 330 days per year in the south-west to around 250 days per year in the north-east, and the high yields of grass with high nitrogen uptake.

- The Commission's Implementing Decision of 29th April 2022 granting Ireland a derogation included the requirement to conduct a two-year review of water quality (2021 and 2022), to take place in 2023, to determine water quality trends of nitrates concentrations and eutrophic status. This condition was introduced without consultation with stakeholders and will have a significant economic impact on derogation farmers livelihoods and deliver negligible improvements to water quality.

- The competitive advantage of grass-based systems is based on maximising grass utilisation. Where stocking rate is not sufficient relative to pasture growth potential on a farm, it will result in lower grass utilisation, lower sward quality and reduced animal performance. The imposition of a lower organic N limit per ha could move farmers away from pasture-based systems to a higher input system (more bought in feed) in an attempt to maintain milk output from the farm. The latter system of milk production has been shown to pose a higher risk to the environment.

- Ireland's river basin management planning process is based on a single national River Basin District, broken down into 46 catchment management units. Ireland is currently in the latter stages of preparing the next River Basin Management Plan (RBMP). A key ambition is a 50% reduction in nitrogen losses to waters from agriculture. Modelling work is underway to determine what this means for chemical nitrogen fertiliser reductions and where those reductions need to take place.

- In Ireland the EPA is responsible for monitoring the water quality. Biology is monitored once every three years, while the physical and chemical parameters are measured several times a year. According to the latest Water Quality in Ireland Report 2016-2021 over half of surface waters (rivers, lakes, estuaries and coastal waters) are in good or high ecological status. Agriculture has been identified as the significant pressure on water quality in Ireland, which is not unexpected given it is the largest land use in the country, accounting for 67% of the land area.
- While Ireland has one of the highest livestock densities in the EU it has above average water quality in terms of nitrates concentrations and one of the lowest gross Nitrogen surpluses in Europe. Eighty-two percent of our fresh water monitoring points have a mean nitrates concentration less than 10mg/L compared to the EU average of 65%.

- There is no fresh surface water quality standard for nitrate thus the EPA use the Dissolved Inorganic Nitrogen (DIN) values established for saline coastal water in the Surface Water Regulations to set such standards with the assumption that all DIN in fresh surface water will be present as nitrate. Under the Regulations, relatively fresh \ less saline coastal water has good status if DIN is less than or equal to 2.6mg N/l. When converted to nitrate, this corresponds to 11.5mg/l, which is the value used in the EPA's reports to describe whether fresh surface water is "too high". The assumptions used by the EPA to determine nitrate concentrations in surface water is conservative as it excludes the natural and massive effects of dilution of the surface waters upon mixing in the saline coastal water body. Given that our estuaries capture significantly large catchment areas, the contribution of dilution should be accounted for and not assumed to be nil as per EPA assumptions. In addition, when determining the nitrate status of our estuaries, the EPA deviate from reporting annual means to reporting the winter median value only for the coastal and estuarine bodies. This deviation should be corrected and be consistent with the Surface Water Regulation which specifies summer and winter dissolved inorganic nitrogen (DIN) concentrations.

- The EPA classification of nitrates concentrations in waterbodies is different to the EU classification. For consistency between Member States the EU classification for the assessment of our waterbodies should be used in water quality reporting.

- Furthermore, relying on the water quality and the trends in water quality of our estuaries to determine maximum stocking rate thresholds is not valid, as it ignores the contribution of wastewater treatment plants and other pressures to declining water status. 27% of transitional water bodies (estuaries & coastal lagoons) are at risk of not achieving good status and are impacted equally by the combined effects of urban wastewater & runoff (40%) and agriculture (43%).

- The interim review of water quality which is due to take place in 2023 will compare water quality between 2021 and 2022. Water quality can vary significantly between different catchments, depending on factors such as land use, geology, and hydrology. This can make it difficult to draw meaningful conclusions about national or regional trends based on a limited number of monitoring sites over a short-term period of two years.

- The Commission Decision has not specified what determines an increasing trend. The EPA report a trend when concentrations increase by more than 0.2mg/L Nitrate per annum. This is vastly different to the EU determination of describing strong trends as greater than 5mg/L between two reporting periods. Determining a trend at such a low level (0.2mg/L Nitrate per annum) is questionable especially when natural and laboratory/sampling error is considered.

- This results in vastly different conclusions and interpretations of information. The EU Implementation report has reported that Ireland's nitrates concentrations in rivers and lakes were largely stable (83.9%) between 2012-2015 and 2016-2019, yet over the same period the EPA have concluded that thirty five percent of rivers have reported an average concentration increase of over 0.2 mg/l Nitrates per annum since 2016.

- Within the science community a minimum of 4 years (rolling average) is used to establish trends. This is reflected in the EU Implementation report which describes trends as changes between 2012-2015 and 2016-2019, yet the Commission decision is asking Ireland to report trends between 2021- 2022 (2 years). This is not consistent. To determine the existence of a true trend all data must be subjected to statistical scrutiny.

- It is imperative that lag times are considered when assessing the impact of agricultural measures

on water quality. It can be difficult to attribute changes in water quality to specific agricultural practices or activities, as the effects of individual practices or activities accumulate over years or decades. We need an assessment of expected response times to mitigation measures for our most critical catchments rather than a blanket expectation that improvements would be seen in catchments within two years.

- IFA is seeking consistency in assessing water quality trends with a minimum four-year assessment period adopted to detect changes greater than 5mg/L.

- The Nitrates Directive obliges Member States to review the eutrophic state of their fresh surface waters, estuarial and coastal waters every four years. However, the Commission Decision requires a comparison of eutrophic status between 2022 and 2021. Given the timeframe it was not possible to enhance the frequency of testing of eutrophication status of catchments to satisfy the condition. IFA is concerned that the sample size (100 paired samples) and 2-year period, is not sufficient to capture a trend. This position is supported by several studies which have reported that a range of 3 to 20 years to demonstrate the impact of a change in land management practice on eutrophication status.

- Findings from the Agricultural Catchments Programme have consistently proven that multiple factors impact water quality, not stocking rate alone. Understanding the local factors that affect water quality and implementing tailored actions has been shown to deliver in terms of water quality rather than blanket regulation.

- Targeting measures and resources towards local issues has been demonstrated to yield improvements in water quality as demonstrated by the Agricultural Sustainability Support and Advisory Programme. The net improvement in river water quality in areas managed by ASSAP is higher than the improvements reported nationally and indicates that when targeted action is taken, , greater improvements in water quality can be achieved.

- Since 2018, farmers have adopted in excess of 30 new and enhanced measures to protect water quality in the 4th and 5th Nitrates Action Programme. These measures will deliver but appropriate lag times to demonstrate improvements must be accommodated.

- Unlike farmers in other EU countries that avail of a derogation, Irish farmers have no opportunity to export manure to manure treatment facilities. Therefore, a reduction from 250 to 220kg organic N/ha can only be satisfied by reducing cow numbers or acquiring more land. Both are detrimental to the profitability and sustainability of farms. It will also reduce the opportunity of succession to younger farmers as the viability of once profitable enterprises is threatened.

- Ireland has developed a grass-based system of dairy and livestock production distinct from the rest of Europe. IFA proposes that instead of reducing stocking rates, alternative strategies to mitigate against any potential negative impacts and deliver more significant water quality improvements are evaluated.

Ireland's Farming Systems

Ireland has a predominantly extensive grass-based livestock farming system where 67% of the land area is farmed extensively.[1] 92% of all agricultural land in Ireland is grassland,[2] compared with an EU average of 31%.[3] Ireland's high level of grassland in comparison with other EU countries is due to a combination of a climate that is favourable towards grass production and land-type which is not suitable for arable crop production.[4]

Irish agriculture is dominated by small to medium-sized family farms, with an average farm size of 33 hectares.[5] The Teagasc National Farm Survey showed that the average income across all farming systems, in 2021, was €34,367 with only 42% of farms deemed economically viable.[6] In Ireland, the average livestock herd is 70 cattle, while the average dairy herd is approximately 90 cows.[7] The number of dairy cows on Irish farms is low relative to other countries such as USA with 317[8] and New Zealand with 435.[9] The average stocking rate (livestock units per hectare) in Ireland is 1.3 units per hectare (2.1[10] for dairy herds) which is relatively low compared to other EU countries including the Netherlands (3.4 units), Malta (3.2 units) and Belgium (2.7 units).[11]

The production of beef and dairy in Ireland is distinct from its European neighbours since cattle are predominantly reared outdoors on permanent grassland. Ireland's temperate climate, ample rainfall and facilitative soil type permits the growth of substantial grass herbage per hectare on an annual basis. It is reported that the average diet of dairy cows in Ireland was 81.8% forage, with concentrates constituting 18.2% of the annual feed budget on a dry matter basis. Of the 81.8% forage, 60.2% was grazed pasture, 19.8% was grass silage, and 1.8% was alternative forages[12].

This is significantly different to farming systems in most other EU countries where grazed grass and grass silage constitute a smaller proportion of the cow's diet. Over 85% of global milk production is based on confinement or indoor dairy systems. Globally it is estimated that only 10 to 15% of milk production is based on grazing systems[13] and in Europe the levels of grazing are declining[14].

Ireland's Nitrate Derogation

On 22nd October 2007, the Commission adopted Decision 2007/697/EC (2) granting a derogation requested by Ireland pursuant to Directive 91/676/EEC for the purpose of allowing the application of livestock manure up to a limit of 250 kg nitrogen/ha per year, under certain conditions, on farms with at least 80 % grassland, in the context of the Irish Action Programme, as implemented by Ireland by means of the European Communities (Good Agricultural Practices for Protection of waters) Regulations 2006.[15] Since then Ireland has applied for the derogation after each review.

[1] Teagasc 2023. The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

[2] CSO (2017). Central Statistics Office. Retrieved from: www.cso.ie/en/statistics/agriculture/areayieldandproductionofcrops/

[3] Eurostat (2016). Share of utilized agriculture land under grassland in EU states in 2016.

[4] Teagasc

[5] CSO (2020). Central Statistics Office. Census of Agriculture 2020 - Preliminary Results Retrieved from: www.cso.ie/en/releasesandpublications/ep/p-coa/censusofagriculture2020-preliminaryresults/.

[6] Teagasc (2021). Teagasc National Farm Survey 2021 Final Results.

[7] CSO (2020). Central Statistics Office. Census of Agriculture 2020 - Preliminary Results. Retrieved from: www.cso.ie/en/releasesandpublications/ep/p-coa/censusofagriculture2020-preliminaryresults/

[8] USDA (2022) USDA Milk Production Report. Retrieved from: usda.library.cornell.edu/concern/publications/h989r321c.

[9] TUPU NZ (2019) Land Use Fact Sheet- Dairy. Retrieved from: www.tupu.nz/en/fact-sheets/dairy.

[10] Teagasc (2021). Teagasc National Farm Survey 2021 Final Results.

[11] Eurostat (2020). Livestock Density EU 2020. Retrieved from: ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-

_livestock_patterns.

[12] O'Brien et al. (2018). A national methodology to quantify the diet of grazing dairy cows. Journal of Dairy Science, Volume 101, Issue 9. Retrieved from: https://doi.org/10.3168/jds.2017-13604.

[13] L. Shalloo et al (2018). Grass-based dairy systems, data and precision technologies. Animal, Volume 12, Supplement 2, Pages s262-s271. Retrieved from: https://www.sciencedirect.com/science/article/pii/S175173111800246X.

[14] D. Hennessy et al (2020). Increasing grazing in dairy cow milk production systems in Europe. Sustainability 12, Article 2443. Retrieved from: https://doi.org/10.3390/su12062443.

[15] Statutory Instrument No 378 of 2006.

The derogation allows 6,727 Irish farmers[16] to farm to a greater level of up to 250kg organic N/ha, subject to additional measures[17]. Approximately 5% of all farms in Ireland have a derogation. The justification for having the derogation in Ireland is on the basis of objective criteria, such as long growing seasons and high yields of grass with high nitrogen uptake.

The Irish climate, characterised by an annual rainfall evenly distributed throughout the year and a relatively narrow annual temperature range, promotes a long grass-growing season ranging from 330 days per year in the south-west to around 250 days per year in the north-east[18].

Derogation farmers are required to meet a higher environmental standard and must comply with 19 additional requirements to protect water quality. These measures include the submission of an annual nutrient management plan, a record of fertiliser purchases and the adoption of a liming programme. The complete list of requirements in outlined in Appendix 1.

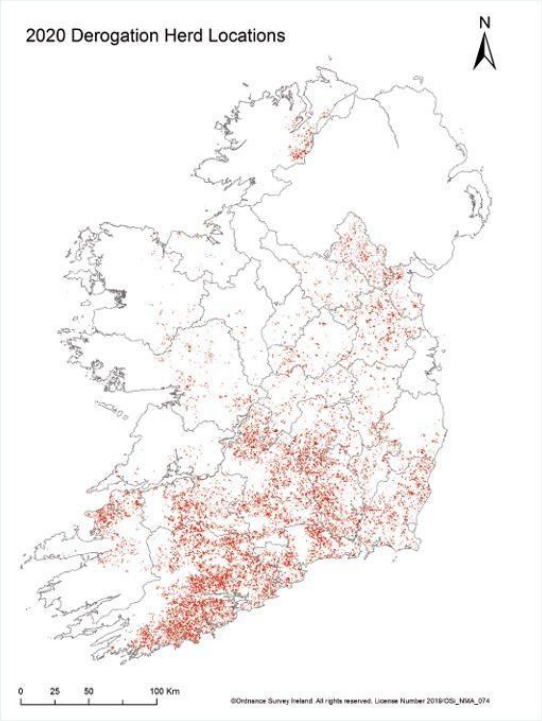


Figure 1. National distribution of derogation herds in 2020.[19]

Conditionality of granting the nitrates derogation to Ireland in 2022.
The European Commission's Implementing Decision of 29th April 2022 granting Ireland a derogation included the requirement to conduct a two-year review of water quality (Article 12), to take place in 2023.[20]

[16] DAFM (2023). Direct correspondence.

[17] DAFM (2023). 2023 Nitrates Derogation Terms and Conditions.

[18] EC (2022). Commission Implementing Decision (EU) 2022/696. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022D0696.

[19] EPA (2020) Water Quality Monitoring Report on Nitrogen and Phosphorus Concentrations in Irish Waters 2020. Retrieved from: www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_NItrogenandPhosporous_Concentrations_2020.pdf

[20] EC (2022). Commission Implementing Decision (EU) 2022/696. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022D0696

1. *"The competent authorities shall submit, by 30 June 2023, with the report described in Article 13, corresponding to the year 2022, an annex containing the results of monitoring as regards the nitrates concentrations of groundwater and surface waters and the trophic status of surface water bodies, based on the monitoring network and requirements of the Nitrates Directive 91/676/EEC and including at least maps showing those areas draining into waters where monitoring data reveal:*
    - *(a) average values of nitrate concentrations above 50 mg/l or increasing trends of nitrates concentration compared to 2021;*
    - *(b) 'Eutrophic' status or 'could become eutrophic' status with a stable or worsening trend compared to 2021.*

2. *Waters identified by either point (a) or (b) of the first subparagraph shall be considered as polluted, at risk of pollution or showing worsening trends. The data for the estimation of the average values shall cover the period from 1 January 2020 to 31 December 2022. For the assessment of trends, the data from 2021 and 2022 shall be compared.*

3. *For the elaboration of the annex referred to in paragraph 1 of this Article, the data used shall be taken from the monitoring network set up under Directive 91/676/EEC.*

4. *As from 1 January 2024, in areas draining into polluted or at-risk-of-pollution waters or presenting worsening trends, additional measures shall be applied under the Nitrates Action Programme. For farms that have been granted an authorisation pursuant to this Decision and located in such areas, the amount of manure that may be applied to the land shall not exceed 220 kg nitrogen/ha per year.*

5. *The competent authorities shall inform the Commission, by 30 September 2023, of the outcomes of this two-year review, and in particular on the areas and farms with an authorisation where the maximum amount of manure to be applied is 220 kg nitrogen/ha per year and of the additional measures to be applied within the Nitrates Action Programme.*

This condition was introduced without any consultation with stakeholders. If this condition comes into force in January 2024, it will have devastating impacts on farm livelihoods while delivering negligible improvements to water quality. We are seeking that this condition is amended, as in its current format it is not scientifically robust or justified, particularly given the disproportionate economic impact it will have on farms (See Appendix 2).

Implications of lower stocking rates on pasture-based livestock production systems

The competitive advantage of grass-based livestock production systems is based on maximising grass utilisation. Where stocking rate is not sufficient relative to pasture growth potential on a farm, it will result in lower grass utilisation, lower sward quality and reduced animal performance. On well-managed productive grassland farms in Ireland, reducing organic N/ha from 250 to 220 will result in significantly reduced farm profitability.

Research work conducted both in Ireland and internationally, has shown that increasing stocking rates while both chemical N fertiliser per hectare and concentrate input per cow are held constant (static N), result in stable or declining nitrate leaching compared to lower stocking rates due to the higher grass utilisation and greater export of N in milk[21].

[21] Teagasc 2023. The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

The imposition of a lower organic N limit per ha could also move farmers away from pasture-based systems to a higher input system (more bought in feed) in an attempt to maintain milk output from the farm. The lower organic N limit may also result in more uneven distribution of organic nutrients within farms.

International experience has shown that high input systems pose a greater risk to the environment and the proposed organic N policy changes may increase the likelihood of that happening. Additionally, derogation farms are required to implement a higher standard of nutrient management than non-derogated farms in terms of nutrient management, soil testing, manure and slurry spreading, grassland management and training.

Irish Water Quality

Ireland's river basin management planning process is based on a single national River Basin District. This covers an area of 70,273 km^2 and is broken down into 46 catchment management units[22]. Ireland is currently in the latter stages of preparing the next River Basin Management Plan (RBMP), which is required under the Water Framework Directive (WFD) for the period 2022-2027.

Ireland's Programme for Government[23] committed to producing a new, stronger River Basin Management Plan in 2022 with increased ambition and integrated catchment planning for each of the 46 catchments. A key ambition under the next RBMP is a 50% reduction in nitrogen losses to waters from agriculture. Modelling work is underway to determine what this means for chemical nitrogen fertiliser reductions and where those reductions need to take place[24].

During the development of the current (second cycle) RBMP, water bodies that require immediate action were identified by local authorities and the Environmental Protection Agency (EPA). One hundred and ninety Priority Areas for Action (PAAs) were identified (see Figure 2).

[22]DHLG (2018) River Basin Management Plan for Ireland 2018 -2021 Executive Summary Prepared by the Department of Housing, Planning and Local Government housing.gov.ie. Retrieved from: www.assets.gov.ie/131979/f92ad5f1-0c6a-42a5-9c94-73057c118e9e.pdf.

[23] Department of the Taoiseach (2021). Programme for Government: Our Shared Future (2021). Retrieved from: https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/.

[24] DHLG (2021) Draft River Basin Management Plan for Ireland 2022-2027. Retrieved from: www.assets.gov.ie/199144/7f9320da-ff2e-4a7d-b238-2e179e3bd98a.pdf.

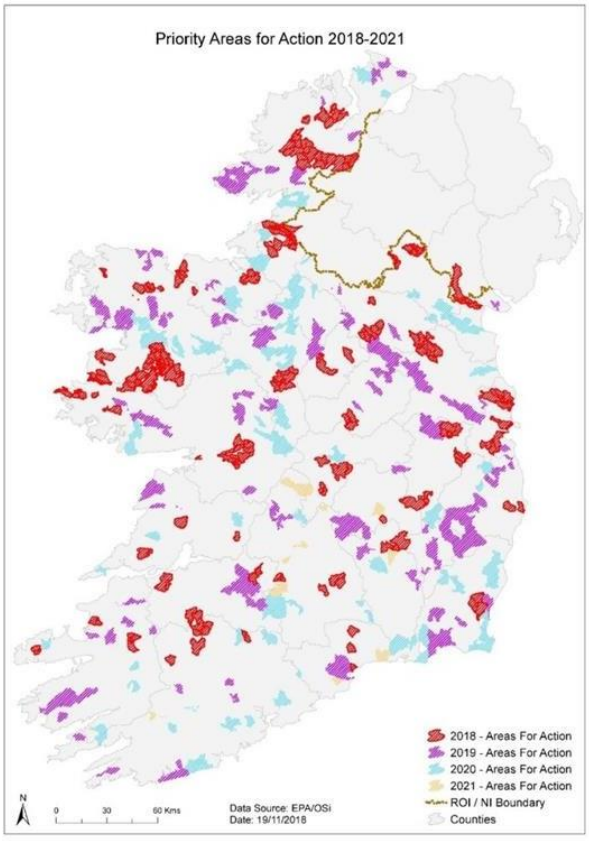


Figure 2. Priority Areas for Action 2018-2021[25].

Agriculture has been identified as the significant pressure on water quality in Ireland, which is not unexpected give it is the largest land use in the country[26]. The main sources of nitrogen from agricultural activities are organic manures and urine from livestock, and chemical fertiliser. The predominance of free draining soils in the south and southeast make these areas particularly susceptible to nitrate leaching[27].

The amount (load) of N applied to the land is one factor that influences N loss to water. However, other factors, such as soil texture, the weather (soil temperature and moisture content, sunlight), soil pH and cultivation can influence the amount of N lost to water[28].

In Ireland the EPA is responsible for monitoring the water quality of 3,192 river water bodies, 812 lakes, 156 transitional, 98 coastal and 514 ground waters. The biology is monitored once every three years, while the physical and chemical parameters are measured several times a year.

The latest EPA Water Quality in Ireland Report 2016-2021[29], which was published in October 2022, and is based on the EPA assumptions and classifications, shows that:

- 54% of surface waters are in good or better ecological status.
- 50% of the river water bodies in Ireland are at 'good' or 'high' ecological status while the remainder are at less than good. The number of water bodies at bad ecological status has more than halved since 2007-2009.

[25] EPA Catchments Unit (2019).

[26] Teagasc 2023. The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

[27] DHLG (2022) Ireland's Fifth Nitrates Action Programme.

[28] Teagasc (2023).Retrieved from: https://www.teagasc.ie/news--events/daily/environment/nitrogen-loss-to-water-in-agricultural-catchments.php.

[29] EPA (2022) Water Quality in Ireland Report 2016-2021.

- 69% of lakes in Ireland are at 'good' or 'high' ecological status, while the remainder are at less than good (31%).
- 81% of coastal water bodies and 36% of transitional waters are at 'high' or 'good' ecological status.
- 43% of river sites, mostly in the south and southeast of the country, have high nitrate concentrations while nearly a third of river sites (30%) and a third of lakes (33%) have elevated phosphorus concentrations.

EPA assumptions for measuring nitrates concentrations in surface water

In the absence of a fresh surface water quality standard for nitrate concentrations, the EPA use dissolved inorganic nitrogen (DIN) values established for saline coastal water in the Surface Water Regulations[30] to determine a standard, with the assumption that all DIN in fresh surface water will be present as nitrate.

Under the Regulations, relatively fresh/less saline coastal water has good status if the DIN value is less than or equal to 2.6mg N/L. When compared to nitrate, this corresponds to 11.5mg/L. It is assumed when assessing nitrogen reduction, that if the nitrate concentrations in streams and rivers throughout the contributing catchments are maintained at less than 2.6mg N/L (or 11.5mg/L as nitrate) that the statutory dissolved inorganic N standard will be achieved in the marine waters.

This approach to determine a standard for nitrate concentrations in surface water is conservative as it excludes the natural and massive effects of dilution of the surface waters upon mixing in the saline coastal water body. Such dilution will be a significant factor in reducing the concentration of nitrate and DIN value in the receiving estuary and coastal water body from inland fresh surface waters.

These assumptions are critical when referring to the condition prescribed by the Commission which specify that "*as from 1 January 2024, in areas draining into polluted or at-risk-of-pollution waters or presenting worsening trends, additional measures shall be applied under the Nitrates Action Programme.*"

Given that our estuaries capture significantly large catchment areas the contribution of dilution should be accounted for and not assumed to be nil as per EPA assumptions.

In addition, when determining the nitrate status of our estuaries the EPA deviate from reporting annual means to reporting of the winter median value only for the coastal and estuarine bodies. This is inconsistent with the Regulation that specifies summer and winter DIN concentrations. This deviation should be corrected.

[30] European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77/2019). Retrieved from: https://www.irishstatutebook.ie/eli/2019/si/77/

EPA classification of nitrates concentrations in waterbodies

The EPA classification of nitrates concentrations in waterbodies is different to the EU classification. It is evident from the table below that the range is narrower in the EPA classification than the EU classification. For consistency between Member States the EU classification for the assessment of our waterbodies should be used.

mg NO_3/L							
EPA	<4	4-8	8-11.5	11.5-16	16-25	25-37.5	>37.5
EU	<2	2-10	10-25	25-40	40-50	>50	

Table 1. Comparison of categories used to assign Nitrate values in surface water by the EU Commission and the EPA in Ireland.

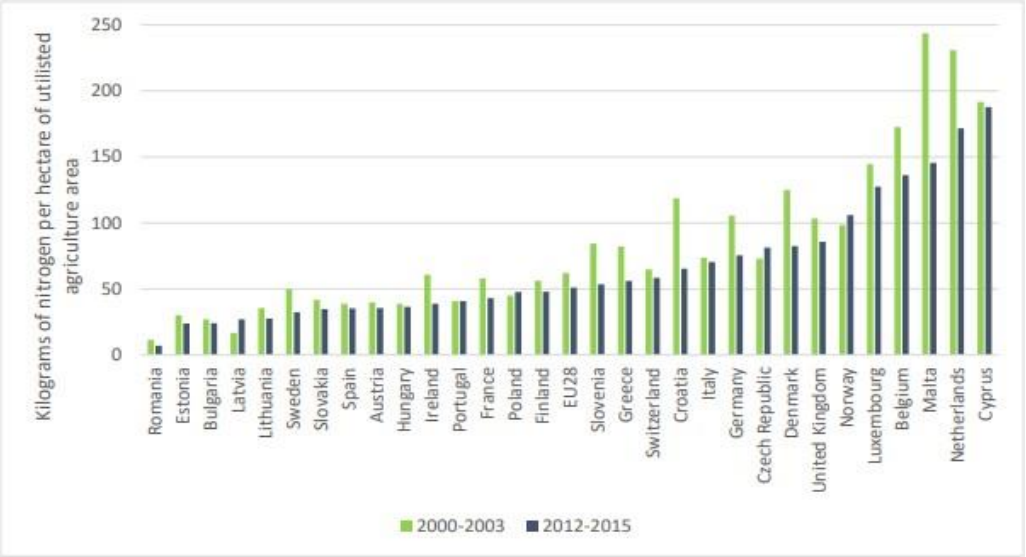
Comparison to other EU member states

While Ireland has one of the highest livestock densities in the EU, it has above average water quality in terms of nitrates concentrations. 82% of our fresh water monitoring points have a mean nitrates concentration less than 10mg/L compared to the EU average of 65%.

When compared to other EU member states that have a derogation this is considerably better than the 36% reported in Belgium, 34% in Denmark and 73% in Netherlands[31]. Even when compared to countries with low livestock densities such as Spain (80.8% of fresh water monitoring sites <10mg/L), France (43%) and Germany (43.7%), Ireland's water quality in terms of nitrates concentrations is still favourable.

In contrast Ireland's gross N balance is one of the lowest in Europe despite the presence of a nitrates derogation. Figure 3, on the following page, shows the gross N balance by country in the EU for 2000 to 2003 and 2012 to 2015. Over the period, EU 28 average gross N balance reduced from 62.2 to 51.1 kg/ha for utilised agriculture land; the corresponding reduction for Ireland was 60.8 to 38.8 kg/ha of utilised agriculture land. Therefore, over this period gross N balance reduced by 11 kg/ha on average in the EU, while gross N balance in Ireland reduced by 22 kg/ha. Additionally, it shows that over the period 2012 to 2015 Ireland gross N balance was significantly lower than the EU average (12.3 kg/ha) despite the fact that Ireland has a relatively small arable area. This is achieved by the grass-based system and the relative extensive nature of livestock production in Ireland despite the fact that individual farmers across the country operate with a nitrates derogation.

[31] EU Commission (2021), Commission Staff Working Document. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC1001.



Data source: Eurostate Gross Nutrient Balance, b. EEA_Indicator SEB1019

Figure 3. Gross Nitrogen Balance by country.

Limitations of using water quality trends in estuaries

Relying on the water quality and the trends in water quality of our estuaries to determine maximum stocking rate thresholds is not valid, as it ignores the contribution of wastewater treatment plants and other pressures to declining water status.

In recent years the EPA have observed slightly increasing nitrate levels (0.2mg/L/annum) in rivers and estuaries in the south and east of the country. Agricultural land is the dominant land type that surrounds catchments and has been identified as a significant pressure. However, when understanding the water quality of our estuaries, it is vital that the pressures posed by urban waste water are considered given their significance.

27% of transitional water bodies (estuaries & coastal lagoons) are at risk of not achieving good status and are impacted equally by the combined effects of urban waste water & runoff (40%) and agriculture (43%) (as per draft RBMP). The pressure of urban wastewater will impact trends in eutrophication status.

This is evident in the following graph from the EPA which shows that the nitrogen load to estuaries since 1990. In 1990, there were 321,000 less cows in the country (188,000 less dairy cows) yet the nitrogen loads were much greater than they are today. This highlights the important contribution of appropriate management practices on farms and indeed other sectors on reducing nutrient loads. When stock numbers are appropriately managed their contribution to nutrient loss can be mitigated.

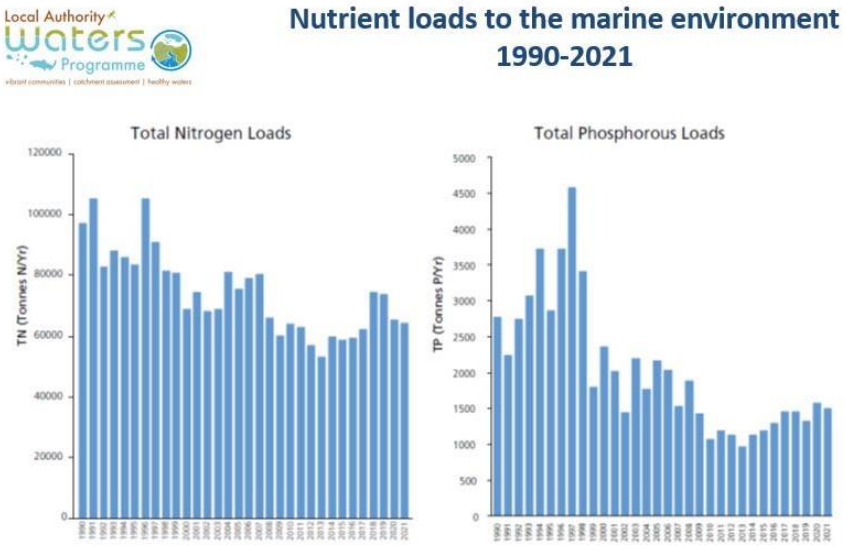


Figure 4. Load of total nitrogen and total phosphorous (tonnes per year) between 1990 and 2021 for all monitored rivers combines[32]

Determining Water Quality Trends

The interim review of water quality which is due to take place in 2023 will compare water quality between 2021 and 2022. Water quality can vary significantly between different catchments, depending on factors such as land use, geology, and hydrology. This can make it difficult to draw meaningful conclusions about national or regional trends based on a limited number of monitoring sites over a short-term period of two years.

Lack of specification to determine increasing trend

The Commission decision has not specified what determines an increasing trend. The EPA report a trend when concentrations increase by more than 0.2mg/L Nitrate per annum. This is vastly different to the EU determination of strong trends as greater than 5mg/L between two reporting periods. This results in vastly different conclusions and interpretations of information.

The EU Commission[33] has reported that Ireland's nitrates concentrations in rivers and lakes were largely stable (83.9%) between 2012-2015 and 2016-2019, yet over the same period the EPA have concluded that 35% of rivers have seen an average concentration increase of over 0.2 mg/l Nitrates per annum since 2016. Determining a trend at such a low level is questionable especially when natural and laboratory/sampling error is considered.

Within the Commission Staff Working Document, trends are described as changes between 2012-2015 and 2016-2019, yet the Commission decision is asking Ireland to report trends between 2021-2022 (2 years). This is not consistent. To make an appropriate assessment of trends, a minimum four-year assessment period must be adopted to detect changes greater than 5mg/L.

Within the science community, a minimum of 4 years (rolling average) is used to establish trends. High frequency monitoring (every ten minutes) undertaken by the Teagasc Agricultural Catchments Programme have enabled a 4-year (rolling average) trend analysis to be undertaken, using the Mann-

[32] EPA (2022). Water Quality in Ireland 2016 -2021. Retrieved from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_WaterQualityReport2016_2021.pdf

[33] EU Commission (2021), Commission Staff Working Document. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC1001

Kendall test[34]. Trend analysis over 4 years and most definitely two years may not be realistic over this time period if using less frequent data (weekly/monthly/seasonal monitoring). To ascertain true trends, all data should be subjected to statistical scrutiny over a sufficient valid period of time rather than the simple reporting of annual means.

Acknowledging the existence of lag times when improving water quality

It is imperative that lag times are considered when assessing the impact of agricultural measures on water quality. Lag times refer to the delay between the time when a particular agricultural practice or activity occurs and the time when its impact on water quality is observed. This delay is due to a range of factors, including the time it takes for nutrients to move through the soil and into the groundwater; the time it takes for groundwater to move through the aquifer; and the time it takes for monitoring data to be collected and analysed. As a consequence, it can be difficult to attribute changes in water quality to specific agricultural practices or activities, as the effects of individual practices or activities accumulate over years or decades.

It is therefore not possible to make meaningful conclusions about national or regional trends based on a limited number of monitoring sites over a short-term period, of two or three years. Indeed, recent modelling work completed by Teagasc indicated that there was significant year-to-year variability in N leaching loss to 1m below surface with no change in management. Between 2003 and 2019 modelled N loss to 1m ranged from 37kgN/ha to 83kgN/ha which indicates the overarching impact weather events can have, despite significant changes in farm management practices[35].

These delays must be quantified in order to establish realistic deadlines, thresholds and policy expectations, and to design effective best management practices[36]. In an Irish context[37], it is reported that the minimum year for measures introduced in 2012 to reduce groundwater nitrate concentrations to mean annual threshold values of 37.5 mg/NO_3/L, ranges from 2019 to 2033 depending on the specific unsaturated zone depth and aquifer thickness. Therefore, time lags offer justification in some scenarios to extend target dates for achieving good water quality status based on the programme of measures.

The current terms of the Commission Decision for Ireland ignore this reality. A recent review of 17 studies[38] concluded that it could take between 4 and 20 years for mitigation measure to have a positive impact on surface water quality and acknowledges that the presence of lag times explain why positive effects are not always evident within defined cycles. Critically, it also concluded that the response time between the implementation of measures and the delivery of water quality improvement broadly increased with catchment size.

Under the terms of the Commission Decision catchment size is considered at the macro level. Determining trends at this level over a two-year period is too narrow to demonstrate the positive impact of mitigation measures. It also ignores and in fact punishes farmers in areas where an improvement has been demonstrated at sub-catchment level but the catchment at macro level has not improved. This

[34] Teagasc. Agricultural Catchments Programme. Retrieved from: https://www.teagasc.ie/environment/water-quality/agricultural-catchments/

[35] Teagasc 2023. The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

[36] S. Vero et al. (2018). Review: the environmental status and implications of the nitrate time lag in Europe and North America. Hydrogeol J. Retrieved from: https://www.universityofgalway.ie/media/gene/Vero-et-al_2018_HJ.pdf.

[37] O. Fenton et al. (2011). Time lag: a methodology for the estimation of vertical and horizontal travel and flushing timescales to nitrate threshold concentrations in Irish aquifers. Environmental Science and Policy. Volume 14. Issue 4. Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S1462901111000396

[38] A.R. Melland et al. (2018). Effects of agricultural land management changes on surface water quality: A review of meso-scale catchment research. Environmental Science and Policy. Volume 84. Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S1462901117309784?via%3Dihub

dismissal of the collective action at sub-catchment level (through ASSAP and local EIPs – discussed later) will be detrimental to securing farmer buy-in under subsequent reviews of the NAP.

Assessment of eutrophication status

The Nitrates Directive obliges Member States to review the eutrophic state of their fresh surface waters, estuarial and coastal waters every four years. Yet the requirement in the Commission Decision requires a comparison of eutrophic status between 2022 and 2021. This decision was published in April of 2022 so consequently it was too late to enhance the frequency of testing of eutrophication status of catchments to satisfy the condition.

In Ireland, the assessment of trophic condition in Irish rivers is based on biological assessments using a biotic index scheme using aquatic macroinvertebrate communities. The EPA Quality Rating System (Q-Value) enables an assessment of the biological response to eutrophication and organic pollution in a predictable manner. The method has been inter-calibrated for the pressure 'organic enrichment' at an EU level under the WFD. In accordance with the Nitrates Directive Article 10 assessment and reporting guidelines, the five classes historically used to indicate trophic condition have been modified to the three classes; "Non-eutrophic"; "Could become eutrophic"; and "Eutrophic".

Results of the Q value test are freely available on the EPA website and include results from water samples taken in 2022 and 2021. Across both years 1,820 samples were taken. However, of this subset there are only 100 paired samples, that is a sample taken in 2021 and 2022 at the same site. This sample size is too small to be representative of the eutrophication status of all our catchments in Ireland. The results from the 100 paired samples would indicate a stable trend in 50% of sites, a declining trend in 25% of sites and an improving trend in the remaining 25% of sites.

A comparison of eutrophic status between 2 years is not sufficient to capture a trend. Several studies from Canada[39], USA[40], and New Zealand[41] have reported a range of 3 to 20 years to demonstrate the impact of a change in land management practice on eutrophication status.

To develop efficient policy, we need an assessment of expected response times to mitigation measures for our most critical catchments rather than a blanket expectation that improvements would be seen in catchments within two years.

Measures undertaken by farmers under Nitrates Action Programme

Since the introduction of Irelands' first Nitrates Action Programme (NAP) in 2006, the Irish authorities have enhanced measures within each revised cycle of the NAP in order to protect water quality. In particular the fourth (2018-2021) and fifth (2022-2025) NAP contain more than 30 additional measures which farmers must adhere to. These measures have all been introduced in a relatively short period of time (since 2018).

The following list is not exhaustive but provides a summary of the main measures that have been introduced:

i. Enhanced requirements for soil sampling equating to more farms being soil sampled at a great frequency.

[39] A.G. Yates et al. (2007) The stream and its altered valley: integrating landscape ecology into environmental assessments of agro-ecosystems. Environmental Monitoring and Assessment. 114: 257–271.

[40] Makarewicz et al. (2009) The impact of agricultural best management practices on downstream systems: Soil loss and nutrient chemistry and flux to Conesus Lake, New York, USA. Journal of Great Lakes Research. Volume 35 Supplement 1.

[41] R. Wilcock et al., (2007). Land-water interactions in five contrasting dairying catchments: issues and solutions. Land Use and Water Resources Research. Volume 2.

ii. Increased training of farmers on water quality.
iii. Enhanced slurry spreading requirements
iv. Requirements to divert water from farm roadways away from watercourses including drains.
v. Requirement to fence off water courses with a margin of 1.5m and exclude livestock from watercourses on higher stocked farms.
vi. Position water troughs at least 20m away from watercourses.
vii. Increased period where the spreading of slurry, chemical fertiliser and soiled water is prohibited.
viii. Requirement to maintain a buffer distance of 3m from watercourses for the spreading of chemical fertiliser.
ix. Enhanced inspection rate, in particular an inspection rate of 10% has been agreed on derogation farms which is the highest inspection rate in Europe.
x. Reduced stocking rate thresholds on commonage land.
xi. Reduction in chemical fertiliser allowances.
xii. Chemical fertiliser register

In addition, since January 2023, dairy farmers (who are the main applicants for a nitrates derogation in Ireland) accepted reduced stocking rates thresholds on their farms as a consequence of the introduction of revised nitrogen excretion rates for dairy cows, which has reduced the stocking rate on a considerable number of farms.

The introduction of a further reduction in stocking rate threshold in 2024, a strong probability based on the current Commission Decision, would mean it would be impossible to decipher whether the stocking rate reduction in 2023, as a result of revised nitrogen excretion rates, contributed to improved water quality or whether it was the introduction of earlier additional measures in the fourth and fifth NAP.

Unlike farmers in other EU countries that avail of a derogation, Irish farmers have no opportunity to export manure to manure treatment facilities. Therefore, a reduction from 250 to 220kg organic N/ha can only be satisfied by reducing cow numbers or acquiring more land. Both are detrimental to the profitability and sustainability of farms. It will also reduce the opportunity of succession to younger farmers as the viability of once profitable enterprises is threatened. (See attached economic analysis in Appendix 1).

Recent Teagasc analysis modelled the impact of a stocking rate reduction to 220kgN/ha and estimated that such a reduction will only reduce N leaching by an additional 2.2 kg N/ha to 1m depth[42]. This abatement is likely to differ between catchments since the relationship between stocking rates and water quality is neither proportionate nor linear[43].

It is suggested that the Commission consider alternative measures to mitigate that N loss before a reduction in stocking rate is exhausted. Both the ASSAP programme and the Agricultural Catchments Programme have demonstrated that a tailored approach is required to improve water quality rather than just blanket regulation. These programmes are explained in more detail below.

Agricultural Catchments Programme (ACP)

The Agricultural Catchments Programme (ACP) commenced in 2008 and is coordinated and managed from the Teagasc Environmental Research Centre in Johnstown Castle. Currently in its fourth phase, the programme intensively monitors 6 catchments which are representative of a wide range of landscape features, soil types and farming enterprises. The aim of the programme is to identify and address the impacts of agriculture on water quality and the environment. The ACP focuses on 6 catchments in Ireland,

[42] Teagasc (2023) The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

[43] E.Burgess et al. (2021). Does nitrates derogation farming impact water quality? Teagasc Open Day 2021. Rerieved from: https://www.teagasc.ie/media/website/publications/2021/Moorepark-21-Open-Day-Book.pdf

where researchers monitor water quality and other environmental parameters, as well as agricultural practices and land use. Since 2008 the programme has amassed a unique environmental, agronomic and socio-economic data set unrivalled around the world.

The Programme demonstrates that the relationship between livestock stocking rates and water quality is complex and can depend on a variety of factors, including the type of livestock, land use, and farm management practices. It has demonstrated that the source load of nutrients applied to land is only one factor and not always the sole factor that determines nutrient loss to a catchment. In fact, it has highlighted the importance of agronomic, meteorological and hydrology/hydrogeological factors in controlling N losses to water, which can override the impact of the source load i.e.; an increased stocking rate.[44]

The Timoleague catchment is one of the most intensive catchments in the country. Between 2008 and 2018 the stocking rate for the catchment has increased from 134kg N/ha to 182kg N/ha. Currently 66% of the land area in the Timoleague catchment is farmed under a derogation. However, since 2018 the nitrate levels in the catchment have declined. In contrast the Castledockrell catchment, a predominantly tillage-based catchment has the highest N concentration in stream water, despite only 5% of the catchment area farmed under a derogation.[45]

Land –Use:	Grass	Grass	Arable	Grass	Grass	Grass
Drainage:	Poor	Well	Well	Moderate	Poor	Well
YEAR	*Ballycanew*	*Timoleague*	*Castledockerell*	*Dunleer*	*Corduff*	*Cregduff*
2010	2.29	5.00	6.22	4.95	1.15	1.36
2011	2.34	5.39	6.48	4.48	1.17	1.65
2012	2.98	6.30	7.13	5.82	1.13	1.19
2013	2.56	5.64	7.21 ↑	4.57 →	1.20	1.14 →
2014	2.50 →	5.45 →	7.15	5.33	1.11 →	1.46 →
2015	2.53 →	7.07 →	7.37	5.22 →	1.25	1.61
2016	2.50 →	5.57 →	7.02 →	3.93 →	0.92 →	0.93 →
2017	2.91	6.49 →	7.42	4.40 →	1.35	1.34 →
2018	2.91	6.64→	7.41	6.37	2.13	1.21 →
2019	2.73→	7.15 ↑	7.22 →	8.44 ↑	2.30 ↑	1.39
2020	2.27↓	6.30 →	6.96 ↓	5.93	1.43	1.01 →
2021	2.48 →	5.43 →	6.66 ↓	5.51 →	2.20 →	1.05 →
2022	2.85	4.95 ↓	-	6.06 →	2.28 →	1.80 →

No trend Stable Increasing Decreasing

Table *. Annual average nitrates N concentrations and the four-year Mann Kendal inter-annual trends

Additional research[46] has shown that the N concentration in groundwater in a free draining soil in Ireland declined over 11 years, despite a 20% increase in stocking rate. It is possible to decouple stocking rates from pressure on water quality when the appropriate mitigation measures are put in place. Quite simply, it is the management of increased stocking rates that needs to be scrutinised rather than the stocking rate.

Agricultural Sustainability Support and Advisory Programme

The ASSAP programme was a key innovation under Ireland's 2nd cycle River Basin Management Plan (RBMP) 2018 to 2021. It represents a move away from regulatory based "one size fits all" approach, towards a more collaborative approach, focussed on identifying and implementing "the right measure in the right place". It is a collaboration between the state, dairy processing co-op advisors, and Local Authorities Waters Programme (LAWPRO), to provide an evidence-based approach to agriculture

[44] Teagasc (2023) The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

[45] Teagasc (2023) The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems.

[46] M. Huebsch et al. (2013) Impact of agronomic practices of an intensive dairy farm on nitrogen concentrations in a karst aquifer in Ireland. Agriculture Eco system Environment. Issue 179

pressure identification and the prevention of contaminant losses to waters with a view to attaining Water Framework Directive (WFD) water quality targets.

The programme provides a farm advisory service to farmers located in the 190 priority areas for action (PAA) identified in the RBMP 2018-2021. Each of the PAA's were selected as they were deemed to be 'at risk' of not meeting the WFD objectives of "good" status. The PAA's comprise of 726 waterbodies. From 2018 to the end of 2020 the programme visited farms in 98 of the 190 PAA's. It carried out 1,810 on-farm assessments and 391 follow-up farm visits to establish the level of implementation of recommended measures. There was 96% farmer engagement with the programme.

On average 51% of the mitigation actions recommended are 'commenced, completed' or being implemented on an 'on-going' basis. The non-implementation of actions where farmers have 'not started' or are 'not proceeding' is averaged at 37% with the remaining 12% made up of actions which were not assigned any implementation status.

The greatest levels of implementation were on actions that required the changing of farming practices and behaviours. These included nutrient management actions, measures to break the pathway of nutrient and sediment loss, management of critical source areas etc. The greatest level of non-implementation were actions that require capital investment; these included investments in fencing, collection and storage of manures and effluents and farm road infrastructure.

Of the 500 river water bodies monitored by the EPA in the designated PAA's during 2019-2021, 316 remained stable with no change in ecological status. A total of 117 river water bodies showed improvements in status, while 67 declined, resulting in a net overall improvement in status class in 50 water bodies in the entire PAA[47].

The net improvement in river water quality in PAA's is greater than the improvements reported nationally and indicates that when targeted action is taken, such as that facilitated through the ASSAP programme, better improvements in water quality can be achieved.

Conclusion

Ireland's grass-based livestock farming model is one of the most sustainable and carbon-efficient food production models in Europe. The foundation to this model is our grassland, which, due to our climate and soil-type, is the most appropriate agricultural land use for vast swathes of the country. Ireland's nitrates derogation, allowing Irish livestock farmers to choose to stock their farms up to 250 kg organic N per hectare is fundamental to protecting our grass-based production model which has served Irish and European agriculture very well since its introduction in 2007.

A potential reduction in the maximum stocking rate threshold will have a significant impact of the sustainability of farms in Ireland while the intended outcome to improve water quality is far from guaranteed. Furthermore, scientific research clearly concludes that the assessment of a water quality trend over a 2-year period is an incorrect and inappropriate approach. In addition, it prevents the measuring of the positive contribution measures recently introduced will have on water quality.

Assessing trends at macro-level and determining stocking rate thresholds based on the water quality of our estuaries is also flawed as it ignores the contribution of other pressures most notably urban wastewater to declining water quality. There have been very positive developments towards improving water quality through enhanced measures regulated for in the fourth and fifth review of the NAP.

[47] EPA (2022). Water Quality in Ireland 2016 – 2021

Additionally in areas where the ACP and ASSAP are operational, IFA can demonstrate net improvements in water quality – a proven pathway that demonstrates that focused tailored actions can better deliver than blanket regulation. The expansion of such programmes is supported by IFA as they are proven to deliver both for the farmer and for water quality.

Ireland has adopted a grass-based system of dairy and livestock production distinct from the rest of Europe. IFA proposes that instead of reducing stocking rates, alternative strategies to mitigate against any potential negative impacts and deliver more significant water quality improvements are evaluated.

Ends.

Appendix 1 Additional requirements of Nitrates derogation farmers

1. Grassland farmers who want to benefit from a derogation shall, each year, submit an application for an authorisation to apply livestock manure containing up to 250 kg nitrogen/ha per year to the competent authorities.
2. The amount of livestock manure from grazing livestock applied to the land each year on grassland farms, including by the animals themselves, shall not exceed the amount of manure containing 250 kg nitrogen/ha per year.
3. The total nitrogen inputs shall neither exceed the foreseeable nutrient demand of each crop nor the maximum fertilisation rate applicable to grassland farms as established in the Nitrates Action Programme and shall take into account the supply from the soil. Total nitrogen application shall be differentiated on the basis of the stocking rate and grassland productivity.
4. A fertilisation plan shall be prepared and kept for each grassland farm. The fertilisation plan shall describe the crop rotation of the farmland and the planned application of manure and other fertilisers. That plan shall be available on the grassland farm for each calendar year, before 1 March of that year. The fertilisation plan shall be revised no later than 7 days following any change in agricultural practices at the grassland farm.
5. Fertilisation accounts, including information related to the management of nitrogen and phosphorus inputs and the management of soiled water, shall be prepared and kept for each grassland farm. They shall be submitted to the competent authority for each calendar year by 31 March of the following calendar year.
6. A liming programme shall be adopted based on a nutrient management plan and associated to soil analysis results.
7. Livestock manure shall not be spread in the autumn before grass cultivation.
8. At least 50 % of slurry produced on the grassland farm shall be applied by 15 June. Low-emission slurry spreading equipment shall be used for all slurry applications.
9. The stocking rate allowance on commonage areas shall not exceed 50 kg nitrogen/ha. Chemical fertiliser shall not be permitted on commonage area.
10. Periodic nitrogen and phosphorus analysis in soil shall be done for each grassland farm.
11. Sampling and analysis shall be carried out at least once every 4 years for each type of area with similar features with regard to crop rotation and soil characteristics.
12. At least one soil analysis per every five hectares of grassland farm shall be carried out.
13. The results of the nitrogen and phosphorus analysis in soil shall be available for inspection at the grassland farm.
14. Farmers who wish to plough grassland shall do so between 1 March and 31 May.
15. Ploughed grass on all soil types shall be followed by a crop with high nitrogen demand immediately and no later than 3 weeks after ploughing grass.
16. Crop rotation shall not include leguminous or other plants fixing atmospheric nitrogen. This shall, however, not apply to clover in grassland with less than 50 % clover and to other leguminous plants that are under sown with grass.
17. All new grass reseeds on the grassland farm shall incorporate at least 1,5 kg/ha of naked clover seed or at least 2,5 kg/ha of pelleted clover.
18. Parcels shall be equipped with fences ensuring a minimum distance of 1,5 metres between livestock and watercourses, and drinking points shall be installed at a minimum distance of 20 metres from a watercourse.
19. A maximum of 15 % crude protein in concentrate feed for grazing livestock shall be allowed each year between 15 April and 30 September.

Appendix 2 Economic Impact of a Reduced Stocking Rate

IFA estimates that the profit reduction on impacted farms will be between €6,522 and €18,336 depending on how farmers adapt to the reduced limit of 220kg/N/ha (either by acquiring extra land or reducing cow numbers).

Across the sector it is estimated that this condition could result in a loss to the rural economy of €236m. This impact is already evident in early 2023 as dairy farmers, impacted by nitrogen banding and the prospect of a reduction to 220kgN/ha, seek additional land.

Dairy farmers, due to their higher per hectare net margins, are likely to outbid farmers from other sectors in the land market. There is a risk that larger farms will be in a better position to overcome the land constraints by purchasing smaller sized farms which could lead to a smaller number of larger sized farms in the sector. This is already impacting more vulnerable sectors such as tillage, beef and sheep.

IFA estimate that an additional 28,000 hectares will be required to sustain existing herd sizes on farms.

Furthermore, reducing the maximum stocking rate from 250kg/N/ha to 220kg/N/ha on top of a reduction in stocking rate associated with the general increased organic N per cow as a result of banding will result in reduced pasture utilisation which would be expected to result in reduced farm profitability on Irish farms[48].

[48] Hanrahan L et al (2018). Factors associated with profitability in pasture-based systems of milk production. Journal of Dairy Science. Retrieved from: https://www.journalofdairyscience.org/article/S0022-0302(18)30205-4/fulltext.