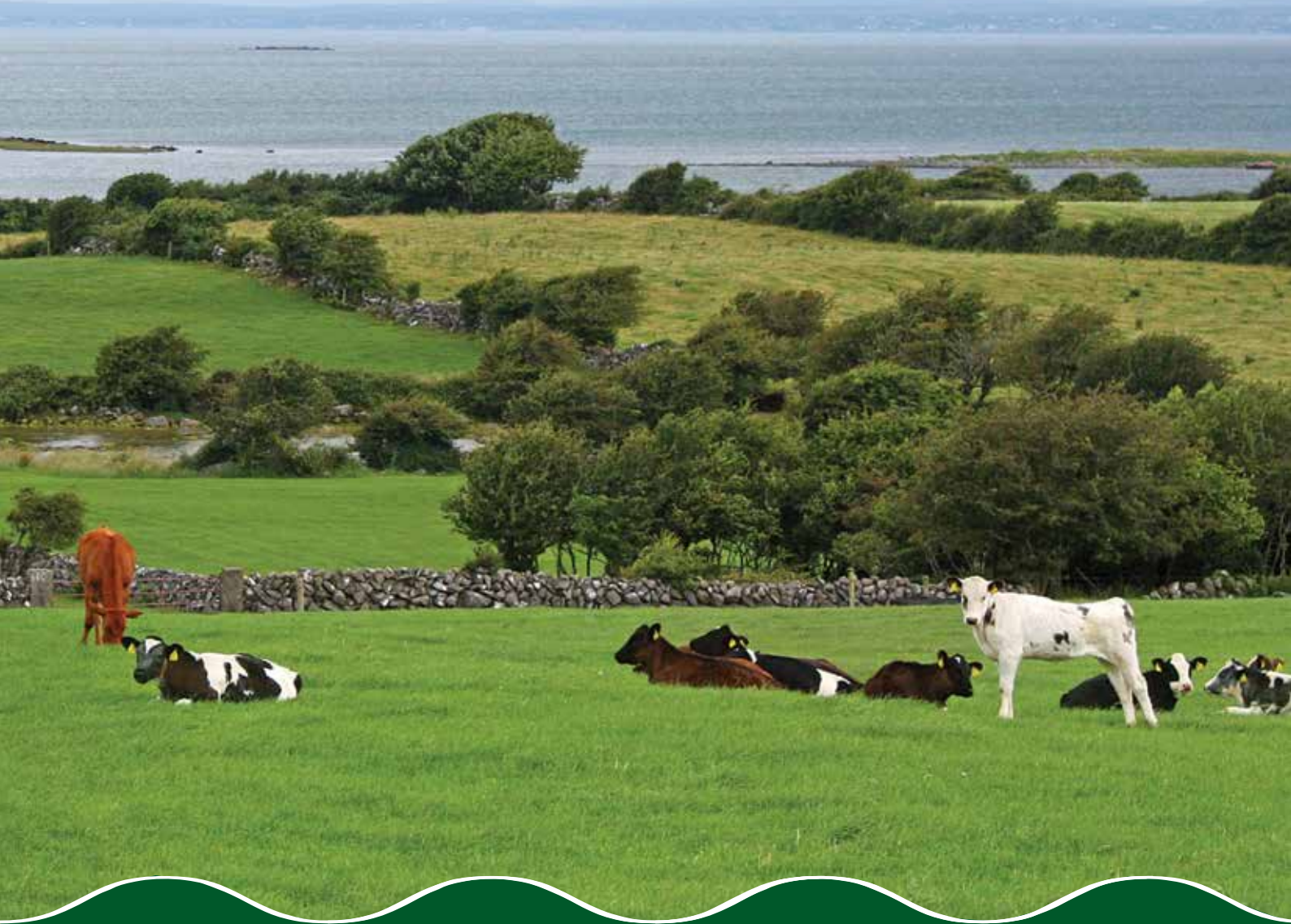


# AGRICULTURE & WATER MANAGEMENT

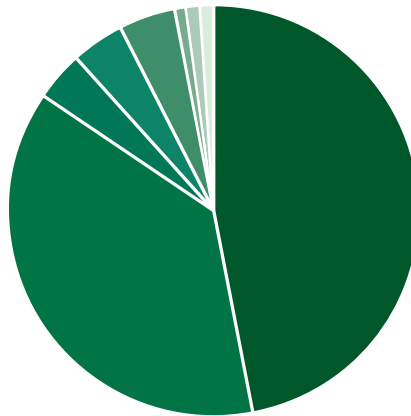


# Introduction



There is a range of pressures on the water environment in Ireland, of which agriculture is one of the key contributors. Agricultural activities can cause water pollution by overloading our rivers, lakes, aquifers and coastal waters with a variety of harmful substances including pesticides and nutrients from fertilisers and animal waste which can also be a significant source of pathogens. While other sources of these pollutants exist, modern agriculture remains the greatest source of diffuse nutrient pollution, accounting for 47% of the suspected causes of river pollution

## Suspected causes of river pollution in Ireland



- Agriculture 47%
- Municipal 37.5%
- Forestry 4%
- Industrial 4%
- Miscellaneous 4.5%
- Peat Harvesting 1%
- Engineering Works 1%
- Aquaculture 1%

Data Source EPA 2012

according to the EPA's 2012 report, 'Ireland's Environment-An Assessment'.

However, agricultural production itself depends on a plentiful supply of good quality water, meaning agriculture can also be negatively impacted by water pollution. In Ireland, agriculture covers 64% of the

total land area so it is not surprising that it has a substantial impact on the quality and condition of Ireland's waters. Therefore it is important to balance farming activities with the high quality water requirements of farmers, the wider community and healthy ecosystems.

## Agricultural development and water

In Ireland agricultural production has intensified significantly over the last 40 years. This was primarily driven by the EU's Common Agricultural Policy (CAP), which directly rewarded increases in production, and also by the availability of cheap inputs, namely fossil fuels, artificial fertiliser and pesticides. The dramatic change in farming methods resulted in the pollution of surface waters and groundwater, loss of biodiversity, soil degradation and erosion.



Since the 1990s the CAP has been revised several times to address environmental concerns, including those on water resources. The 1992 'MacSharry' reforms  
*Cover photo: Agricultural landscape, Co. Galway*

made agri-environmental measures compulsory for the first time and the 2003 Mid Term Review resulted in the Single Farm Payment (SFP) to farmers being decoupled from production. In order to receive the SFP, farmers must comply with existing legislation via Statutory Management Requirements (SMRs), a number of which aim to reduce the impact of agriculture on the water environment and maintain land in Good Agricultural and Environmental Condition (GAEC). Collectively, GAEC and the SMRs form the legislative baseline, known as cross-compliance, and these remain in place up to the present time. Ireland also introduced the Rural Environment Protection Schemes (REPS), an agri-environment scheme funded through CAP, to reward more environmentally sensitive farming practices. However, REPS was replaced in 2011 with a smaller Agri-Environmental Options Scheme (AEOS), which has a very limited focus on water quality.

CAP is currently being reviewed for the 2014 to 2020 programme period and 'greening' measures form a component of these deliberations. However, despite this review, increasingly intensive farm practices, such as those proposed in 'Food Harvest 2020', have the capacity to seriously impact upon our water and wetland environments due to increased inputs of nutrients and chemicals.





# The impact of agriculture on our waters

## Nutrients and organic pollutants



Slurry spreading ©Vicky Veerkamp, DKIT

Nutrients and organic pollutants can be carried from farms into watercourses and groundwater from poor management of farmyard manure, dung and silage effluent and also the spreading of slurry and fertiliser on farmland close to waterways, during wet weather or in fields that are already saturated with nutrients. It is estimated in the EPA 'Environment in Focus 2006' report that over 70% of phosphorus reaching inland waters emanates from agricultural sources.

## Physical alterations



Animal access erodes banks and adds sediment and pathogens

Physical alterations of rivers, lakes or coast lines through animal access, drainage, realignment, or abstraction can interfere with the ecology of a watercourse by altering flow patterns and increasing sediment loading or nutrient inputs. For example, animals accessing rivers can cause contamination with animal faeces and sedimentation of the water as the bank breaks away causing habitat damage for spawning fish and other aquatic organisms.



Poor farmyard management



Cow faeces in stream © Pamela Maher



Badly placed ring feeder next to river

## Chemicals

A major source of chemicals in our waters is from the application of agricultural pesticides, such as Cypermethrin. Used for sheep dip, Cypermethrin can be extremely toxic to aquatic organisms.



Physical realignment destroys habitats and affects ecosystem functioning ©Pamela Maher



## What is Eutrophication?

Eutrophication is the process whereby lakes, estuaries, rivers or streams receive excess nutrients (phosphorous and nitrogen). These act as a fertiliser in the water causing excessive plant growth, e.g. algae and larger plants. Often referred to as an algal bloom, this enhanced plant growth reduces dissolved oxygen in the water and can lead to the death of a range of species including fish and invertebrates. In the most serious cases, the ecosystem can fail entirely.

# What is in place and is it effective?

The following are examples of legislative and policy instruments with brief assessments of their efficacy:

## The Good Agricultural Practice for the Protection of Water Regulations (The 'Nitrates Regulations')

The 'Nitrates Regulations' are the main policy measure for addressing agricultural water pollution in Ireland. These set a maximum stocking density (with derogations) and impose various measures in relation to farm nutrient management. There are widespread reservations amongst the environmental and academic community about the efficacy of the regulations to address water pollution. For example, it is considered that the allowed levels of phosphorous are too high and the buffer zones for spreading slurry near watercourses are too narrow.

## Nature protection laws

The Birds and Habitats Directives constitute the main European legislation for the protection of birds and habitats from a wide range of pressures and threats. They require the establishment of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), subject to specific regulations, aimed at the conservation of rare and threatened species and habitats. Ireland has had a great deal of difficulty in implementing the protection mechanisms effectively, although continual progress is being made.

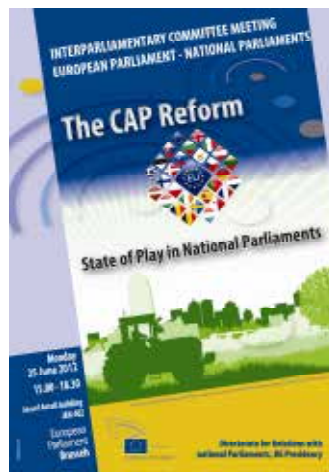
According to the 2013 EPA report *'Management strategies for the protection of high status water bodies'*, there has been a serious decline in the number of 'high status' river sites in Ireland over the past 20 years. These are very valuable, sensitive sites of high conservation value, assigned by the EPA under the Water Framework Directive (WFD), due to their relatively pristine condition. Nature protection laws generally do not protect these sites, either because many are not designated under



Lough Corrib, Special Area of Conservation

these laws or because their designation has not resulted in a management plan to protect them. These sites are particularly vulnerable to many pressures including farm animal access and agricultural pesticides.

## Common Agricultural Policy (CAP)



A number of reforms since the 1990s have made CAP somewhat less damaging to the environment but the Single Farm Payment (at time of writing) is still linked to historical productivity levels and the inspection regime for the environmental specifications of Statutory Management Requirements (SMRs) is inadequate (for example, only 1% of farms inspected in 2010). Many civil society organisations across Europe are

calling for greater public benefits to be delivered by CAP, since it accounts for almost 40% of the EU Budget. However, current negotiations (May 2013) on the 2014-2020 CAP, threaten to slow down or even halt the trend towards less environmentally damaging CAP payments, due to political pressure to weaken cross-compliance and decrease funding for Rural Development Programmes and agri-environmental measures in favour of direct subsidy payments to farmers.

A failure of REPS was that the environmental benefits of the programme were never properly assessed, making its success in delivering improvements in the water environment difficult to evaluate. The water protection measures in its replacement scheme, the pared-down Agricultural Environmental Options Scheme (AEOS), are limited to riparian zones and are reduced in scope, due to the scheme's modest budget. With a limit of €4000 per farmer and a budget of only €20m, AEOS 3 for 2013 represents a mere 6% of the 2009 REPS budget of €336.75m. In the absence of greater investment in environmentally-friendly agriculture it is predicted that we will see a lessening of the numbers of participating farmers and an increasing, subsidiary impact upon the quality of Ireland's waters.

## Local Government Water Pollution Act (1977 & 1990)

This Act enables local authorities to regulate certain agricultural activities or require action by farmers to eliminate water pollution. Unfortunately, the implementation of this Act is inconsistent across authorities and consequently does not have the beneficial impact which was originally intended.

## The Water Framework Directive (WFD)

To date, the policies and regulations set out above have made only modest progress in addressing the negative impact of agriculture on the water environment. There is little evidence that diffuse pollution is reducing at the national level and the loss of pristine water sites has, in fact, accelerated.

It was intended that the River Basin Management (RBM) Plans, required under the WFD and in place since July 2010, would represent the necessary integrated plan of action for addressing agricultural

water pollution from a range of sources. These plans were also intended to have 'filled the water protection gaps' in current legislation with the target of preventing deterioration and achieving good environmental status of all water bodies by 2015. RBM Plans identify the 'Nitrates Regulations' as the primary legislative tool by which to achieve agricultural compliance with the WFD. However they also state that *'Even with the full implementation of the Nitrates Regulations ... it is unlikely that the objective of good status for groundwater and/or surface waters will be met by the 2015 deadline'* for all the country and that *'the need for supplementary measures will arise'* including for *'high-status sites'* (Shannon International River Basin Management Plan (2009-2015)). The Plans propose waiting for the results of the Teagasc Agricultural Catchments research before these supplementary measures are decided. At time of writing (May 2013) it also unfortunately appears that reference to the WFD will be excluded from the

Statutory Management Requirements (SMRs) and thus from cross compliance in the 2014-2020 CAP.

## Food Harvest 2020

Food Harvest 2020 is an industry-driven development plan for agriculture which has been adopted by government and sets out a strategy for the medium-term development of the agri-food, fisheries, and forestry sectors in Ireland for the period to 2020. It is included in the Programme for Government and has considerable political impetus, making it a significant driver for future national agriculture policy. There has been considerable public debate as to how consistent Food Harvest 2020's production targets are with the achievement of WFD targets for the aquatic environment, for example in relation to *'50 per cent increase in milk production by 2020'*. Further concern has been expressed at the lack of a Strategic Environmental Assessment to evaluate the potential impacts of this significant national policy on the environment.

# Recommendations

## Common Agricultural Policy (CAP)

SWAN considers that a fundamental transformation of CAP at the EU level must take place in order to justify spending European taxpayers' money on agriculture. CAP must reward land management activities that protect water and deliver tangible benefits to local communities and wider society ('public goods' benefits). CAP must be fully integrated with the WFD and actively contribute towards the clear WFD objective of achieving 'good environmental status' in all European and Irish waters. SWAN proposes the following measures:

- Compliance with the WFD must be introduced as a cross compliance measure under CAP. Stricter financial penalties should be imposed on the

Single Farm Payment for cross-compliance failures

- The inspection of 1% of farms is insufficient and should be expanded
- Cross compliance inspections by the Department of Agriculture, Food and the Marine should be subject to independent audit
- A new well-funded agri-environment scheme under the Irish Rural Development Programme must be introduced which:
  - Includes a more comprehensive suite of water protection measures such as payments for low pesticide and nutrient input farming (taking into account critical source pathways)

- specifies appropriate buffer zones (e.g. minimum distance of 10m from watercourses for spreading of slurry)
- requires fencing off livestock access to water courses
- provides for increased levels of on-farm support and advice from ecologically qualified advisors
- includes comprehensive monitoring and assessment to determine effectiveness in delivering environmental improvements
- contains a special measure for the protection of pristine water bodies and high status sites under the WFD and for the restoration of high status water bodies which have declined from high status since 2004.





Where installing drinking troughs is not possible, animals may still need access to streams/ivers however fencing will prevent direct contact with the water and bed ©Pamela Maher

- Application of nutrients on soil of Teagasc Soil Phosphorus Index 4 under certain circumstances should be removed
- Regulations should prohibit spreading of manure or other fertilisers on unimproved land
- Nutrient management plans should be compulsory for all farms and maximum permitted levels of nutrients applied to land should be set using nutrient loss risk assessments which take account of critical source pathways and ecological impact on water. Distances from watercourses and lakes for spreading of chemical fertilisers should be increased to a minimum of 10m and for animal waste (slurry) to a minimum of 15-30m, depending on soil type and slope.

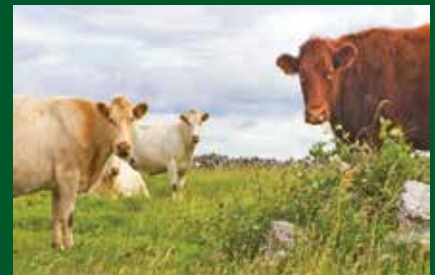


Eroded bank exposing sediment before fencing & after fencing vegetation regrowth ©VickyVeerkamp, DKIT

## Nitrates Regulations

The Nitrates Regulations should be reviewed based on water protection priorities and include the following revisions:

- There should be a requirement for field-level soil tests for phosphorus requirements and prohibition on application of nutrients in excess of crop need



Species rich meadow, River Shannon Callows, Special Area of Conservation and Special Protection Area, © Brian Caffrey,- Birdwatch Ireland



## River Basin Management (RBM) Plans

The RBM Plans should firstly drive improvements in existing policy and regulations in alignment with WFD objectives. For example, requirements for receiving the Single Farm Payment should be aligned with farming practices necessary to reach WFD objectives. If WFD objectives are to be achieved, the RBM Plans must secondly 'bridge the gap' by proposing additional supplementary measures where existing legislation does not offer sufficient water protection.

### SWAN makes the following proposals:

- Current regulations are not sufficient to deliver WFD requirements for sites of High Conservation Value. These include our most pristine and scenic rivers, lakes and bays, many of which are designated for protection and, as well as hosting important habitats and species, also attract thousands of tourists every year. A sub-catchment management plan including a dedicated, targeted programme of supplementary measures should be drawn up and implemented for each of these sites
- New mechanisms for the disposal of slurry other than land spreading must be investigated thoroughly via state-funded research e.g. biodigestor technology
- Supplementary measures for the strengthened protection of remaining wetlands and prohibition on drainage must include robust implementation and ongoing monitoring of the effectiveness of the new Environmental Impact Assessment Agriculture Regulations system to evaluate whether it is preventing continued losses of small wetlands from the landscape. Significant doubts have been raised as to its efficacy

- Improved measures for the control of dangerous substances e.g. agricultural pesticides are needed. In particular, synthetic pyrethroids (Cypermethrin) in sheep dip must be prohibited and withdrawn from sale.



Wet grassland © Neil Warnock, BirdWatch Ireland

## Active engagement, information and voluntary schemes

- 'Top-down' approaches have limited success in controlling pollution from agriculture. It is vital that farmers and community representatives actively participate in the implementation of the current RBM Plans and in the development of the 2015-2021 Plans if real on-farm changes are to happen
- Ecological training for farm advisory personnel (Teagasc and others) is vital in implementing the necessary new approaches to nutrient & pesticide management. This should be carried out as part of a much-improved advisory, information and training service, based on ecological impact, to assist farmers in changing land management practices.



Good example of providing information and advice Teagasc and Inland Fisheries Ireland staff discussing river invertebrates with farmers © Catherine Keena, Teagasc



## Integrated management and improved enforcement

The enforcement of environmental measures in the agriculture sector is inadequate and the RBM Plans must prioritise integrated management, including collaborative approaches between all relevant state agencies and stakeholders, in addition to improved enforcement, as part of a wider overhaul of water governance in Ireland. RBMPs should require:

- Adequate resources and independence of the competent authorities responsible for overseeing the implementation of RBM Plans and inspecting for compliance with the Nitrates Regulations and for cross-compliance under CAP for the SFP
- Inspections for the Nitrates Regulations to be expanded beyond farmyard inspections to include systematic checks for application of nutrients and land spreading of slurry
- An increased inspection regime for the Single Farm Payments beyond 1%
- A risk-based approach to inspection, targeting critical source areas, areas with known water quality issues and offenders, providing no more than 3 days notice for farm checks.

### Further reading

*The Common Agricultural Policy (CAP): Interactions with the Water Framework Directive (WFD) and implications for Ireland's Waters, Sustainable Water Network (SWAN), 2012.*

*Ireland's environment – an assessment, EPA, 2012.*

*Management strategies for the protection of high status water bodies, EPA: Literature Review 2011; Final Report, 2012.*

*Water Quality in Ireland 2007- 2009, EPA, 2009.*

*Guidance for the farming community on protection of water resources and habitat quality from impacts due to livestock access to waters, EPA, 2009.*



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