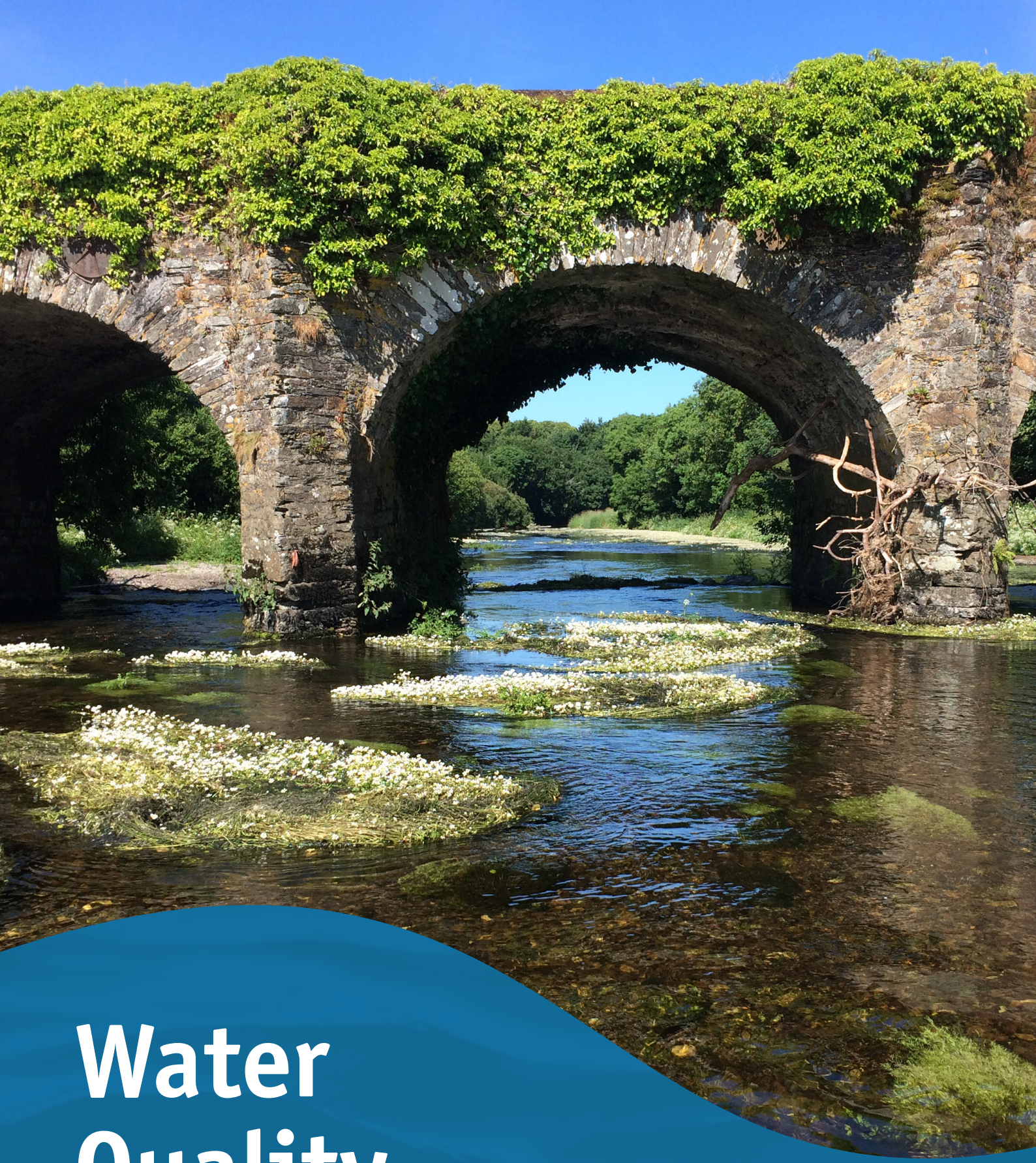

Water Quality In 2020

An Indicators Report

epa
Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Environmental Protection Agency

The EPA is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

- **Regulation:** Implementing regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.
- **Knowledge:** Providing high quality, targeted and timely environmental data, information and assessment to inform decision making.
- **Advocacy:** Working with others to advocate for a clean, productive and well protected environment and for sustainable environmental practices.

Our responsibilities include:

Licensing

- Large-scale industrial, waste and petrol storage activities;
- Urban waste water discharges;
- The contained use and controlled release of Genetically Modified Organisms;
- Sources of ionising radiation;
- Greenhouse gas emissions from industry and aviation through the EU Emissions Trading Scheme.

National Environmental Enforcement

- Audit and inspection of EPA licensed facilities;
- Drive the implementation of best practice in regulated activities and facilities;
- Oversee local authority responsibilities for environmental protection;
- Regulate the quality of public drinking water and enforce urban waste water discharge authorisations;
- Assess and report on public and private drinking water quality;
- Coordinate a network of public service organisations to support action against environmental crime;
- Prosecute those who flout environmental law and damage the environment.

Waste Management and Chemicals in the Environment

- Implement and enforce waste regulations including national enforcement issues;
- Prepare and publish national waste statistics and the National Hazardous Waste Management Plan;
- Develop and implement the National Waste Prevention Programme;
- Implement and report on legislation on the control of chemicals in the environment.

Water Management

- Engage with national and regional governance and operational structures to implement the Water Framework Directive;
- Monitor, assess and report on the quality of rivers, lakes, transitional and coastal waters, bathing waters and groundwaters, and measurement of water levels and river flows.

Climate Science & Climate Change

- Publish Ireland's greenhouse gas emission inventories and projections;
- Provide the Secretariat to the Climate Change Advisory Council and support to the National Dialogue on Climate Action;
- Support National, EU and UN Climate Science and Policy development activities.

Environmental Monitoring & Assessment

- Design and implement national environmental monitoring systems: technology, data management, analysis and forecasting;
- Produce the State of Ireland's Environment and Indicator Reports;
- Monitor air quality and implement the EU Clean Air for Europe Directive, the Convention on Long Range Transboundary Air Pollution, and the National Emissions Ceiling Directive;
- Oversee the implementation of the Environmental Noise Directive;
- Assess the impact of proposed plans and programmes on the Irish environment.

Environmental Research and Development

- Coordinate and fund national environmental research activity to identify pressures, inform policy and provide solutions;
- Collaborate with national and EU environmental research activity.

Radiological Protection

- Monitoring radiation levels and assess public exposure to ionising radiation and electromagnetic fields;
- Assist in developing national plans for emergencies arising from nuclear accidents;
- Monitor developments abroad relating to nuclear installations and radiological safety;
- Provide, or oversee the provision of, specialist radiation protection services.

Guidance, Awareness Raising, and Accessible Information

- Provide independent evidence-based reporting, advice and guidance to Government, industry and the public on environmental and radiological protection topics;
- Promote the link between health and wellbeing, the economy and a clean environment;
- Promote environmental awareness including supporting behaviours for resource efficiency and climate transition;
- Promote radon testing in homes and workplaces and encourage remediation where necessary.

Partnership and networking

- Work with international and national agencies, regional and local authorities, non-governmental organisations, representative bodies and government departments to deliver environmental and radiological protection, research coordination and science-based decision making.

Management and structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by advisory committees who meet regularly to discuss issues of concern and provide advice to the Board.

WATER QUALITY IN 2020

An Indicators Report

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Disclaimer

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Local Authorities, Marine Institute, and Office of Public Works staff together with staff in the EPA Offices of Evidence and Assessment (OEA) and Office of Radiation Protection and Environmental Monitoring (ORM).

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Contents

Key Findings

Surface waters and groundwaters continue to be under pressure from human activities; particularly from nitrogen and phosphorus from agriculture and urban waste water discharges. There are some improvements in the biological quality of our rivers, however many are not as ecologically healthy[1] as they should be. Focussed action is needed to see sustained improvements in water quality which is essential to health and wellbeing.

Biological Quality	■ Some rivers are showing evidence of improvement in biological quality with a net improvement in quality of 115 river water bodies[2]. ■ There is an increase in the number of river sites classified as high biological quality with an additional 21 sites in the highest quality category (Q5). ■ There are encouraging signs in the Prioritised Areas for Action (PAAs) where there has been a net improvement of 57 waterbodies. ■ 43% of rivers are still in unsatisfactory quality and there was a decline in water quality in 230 rivers nationally; these declines are off-setting the improvements made. ■ 44% of our lakes are in unsatisfactory biological quality. This has been relatively unchanged in recent years.
Nutrient Pollution	■ Nutrient levels, predominantly from agriculture and waste water, are too high in many of our waters, and in some areas trends are going in the wrong direction. ■ Nitrate levels in rivers, groundwater, and estuaries in the south, southeast and east of Ireland are too high. This is primarily attributable to agricultural activities and to a lesser extent urban waste water discharges. ■ Nearly half (47%) of river sites have unsatisfactory nitrate concentrations and 38% of sites have rising concentrations. ■ Loads of total nitrogen and total phosphorus from our rivers to the marine environment have increased by 26% and 35% respectively since 2012-2014.
Why protect water quality?	■ Our health and wellbeing are inextricably linked to our environment. Water is needed to sustain life and is an important and integral part of our everyday existence. ■ High nutrients cause nuisance plant and algal growth which can damage natural ecosystems and affect the recreational use of our waters. ■ Nitrate concentrations in excess of the drinking water standard pose a risk to human health. ■ Untreated discharges from wastewater treatment plants and agricultural runoff can damage water quality, impact bathing waters and cause illness.
Actions needed	■ The next River Basin Management Plan, due in 2022, must address the main pressures on water quality (agriculture, urban waste water, hydromorphology (physical changes) and forestry) and build on the progress made in the PAAs with a focus on preventing further declines. ■ Reducing the nitrate levels in our waters must be a priority. The next Nitrates Action Programme must deliver reductions in nitrogen losses to water. There also needs to be full implementation of existing regulations by the Local Authorities and the Department of Agriculture Food and Marine. ■ Full implementation of climate measures identified in the AgClimatise Roadmap and AgriFood 2030 strategy offer significant potential co-benefits in terms of improving water quality and protecting biodiversity. ■ While progress is being made by Irish Water in reducing the number of waste water plants on the EPA's priority action list, continued and sustained investment is needed to address water quality issues from urban waste water and to meet our Water Framework Directive objectives.

1 Biological quality is assessed based on macroinvertebrates and other biological elements and is a subset of overall ecological status. Indicators for other elements used to determine overall ecological status such as hydromorphology are not included in this report.

2 Of the 1,836 river water bodies assessed in 2019 and 2020, 345 improved in quality, 230 declined, resulting in a net improvement in quality of 115 river water bodies.


2020 Water Indicators
epa
Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil
Lakes
Lake biological quality
56%
are in good or high quality
Lake Total Phosphorus
30%
of lakes have unsatisfactory total phosphorus concentrations
Rivers
Changes in biological quality of rivers surveyed in 2019 and 2020
345
improved in biological quality
230
declined in biological quality
River Biological Quality
Satisfactory
57%
Unsatisfactory
43%
Rivers
Nutrient Trends 2013-2020
Nitrogen
47%
of sites have unsatisfactory nitrate concentrations
38%
of sites have increasing nitrate concentrations
Phosphorus
29%
of sites have unsatisfactory phosphate concentrations
24%
of sites have increasing phosphate concentrations
Rivers
89%
of sites have satisfactory BOD values
Groundwater
24%
of sites have high nitrate concentrations (greater than 25mg/l NO_3)
Estuarine and Coastal
Riverine inputs of nitrogen and phosphorus increasing since 2012-2014
26%
increase in loads of Nitrogen
35%
increase in loads of Phosphorus

Introduction

This report provides an update on the quality of water in Ireland's rivers, lakes, transitional and coastal waters and groundwater using information collected in 2020.

Water quality monitoring in Ireland is carried out under the Water Framework Directive (WFD). The EPA undertakes a full assessment of the overall quality and ecological status of Ireland's waters every three years and we report on the indicators of water quality in the intervening years. These indicators provide an update on the biological quality of our rivers and lakes and the nutrient concentrations in all the water categories[3]. We also include information on the input of nutrients to our marine environment. Each indicator presents the current situation and where possible details of any recent changes or trends[4].

The full suite of indicators are:

1. River biological quality
2. Nitrate in rivers
3. Phosphate in rivers
4. Oxygen demand in rivers
5. Total phosphorus in lakes
6. Lake biological quality
7. Nitrogen in estuaries and coastal waters
8. Phosphate in estuaries and coastal waters
9. Nutrient inputs to the marine environment
10. Nitrate in groundwater

The most significant pressure causing a decline in our water quality is increased concentrations of nutrients such as phosphorus and nitrogen entering our waterways. These excess nutrients come primarily from agriculture and waste water.

These nutrients, in excessive concentrations, can lead to the over-growth of plants and algae that outcompete and displace other flora and fauna. This over-growth can also cause oxygen depletion and damage the ecology of our water bodies. High nitrate values in our drinking water supplies pose a risk to human health.

The presence of too much phosphorus is a particular concern for the ecological health of our rivers and lakes while elevated levels of nitrogen can impact negatively on the quality of our estuaries.

Loss of phosphorus to water is a particular problem in agricultural areas with poorly draining soil, while the predominance of free draining soils in the south and southeast of the country increases the sensitivity of our estuaries to nitrogen pollution.

Oxygen levels in our waters can also be significantly reduced by organic pollution such as discharges of poorly treated sewage or animal waste from agriculture. Such pollution events leave very little oxygen for invertebrates and fish to survive and can often cause fish kills.

3 Biological quality is assessed based on macroinvertebrates and other biological elements and is a subset of overall ecological status. Indicators for other elements used to determine overall ecological status such as hydromorphology are not included in this report.

4 Trends are calculated using the Mann-Kendall and Sens slope tests where applicable.

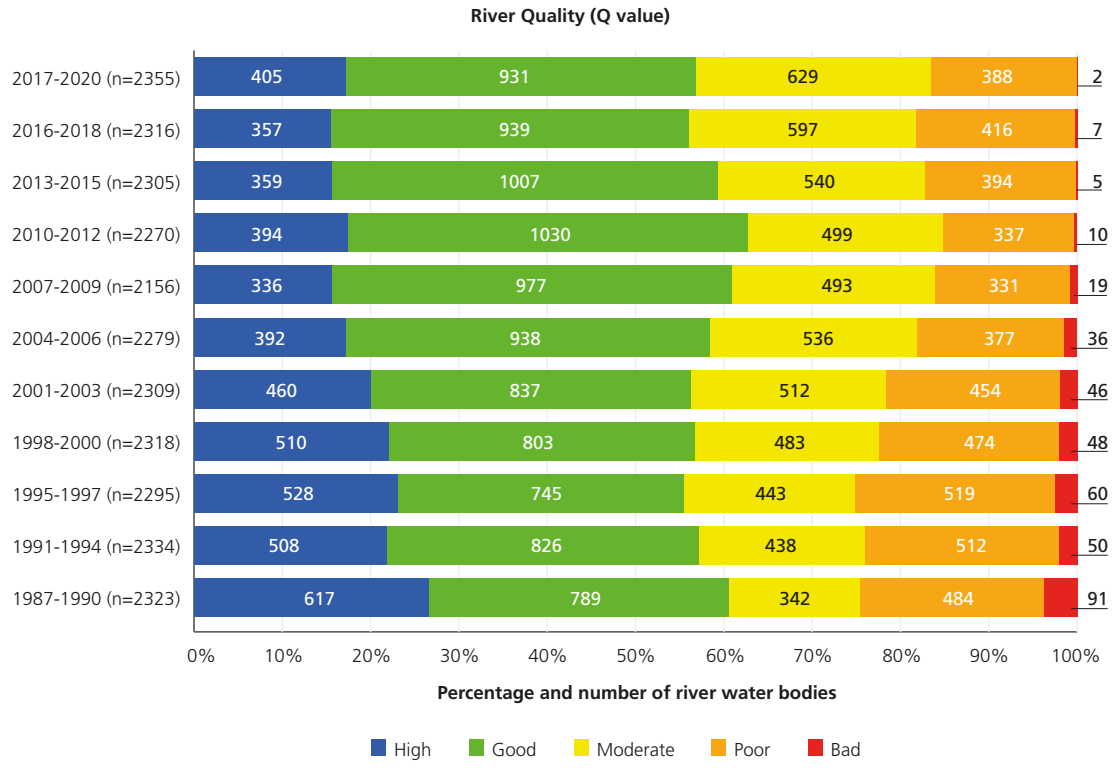
Indicator: River Biological Quality

The biological quality of river water bodies across the country is assessed as part of the national Water Framework Directive (WFD) monitoring programme. The system assesses macroinvertebrate communities[5] to categorise the biological quality (Q value)[6] of a river into five classes: high, good, moderate, poor and bad.

Findings

57% (1,336) of the river water bodies assessed over the period 2017-2020[7] were in high or good biological quality. The remaining 43% (1,019) were in moderate, poor or bad quality. The number of river water bodies in bad condition has reduced to two[8]. (See the appendix for a breakdown of river quality in each Local Authority area).

Of the 1,836 (out of 2355) river water bodies assessed in 2019 and 2020, 345 improved in quality and 230 declined, resulting in a net improvement in quality in 115 river water bodies.



5 Macroinvertebrates are tiny animals without backbones, for example, insects, snails and worms.

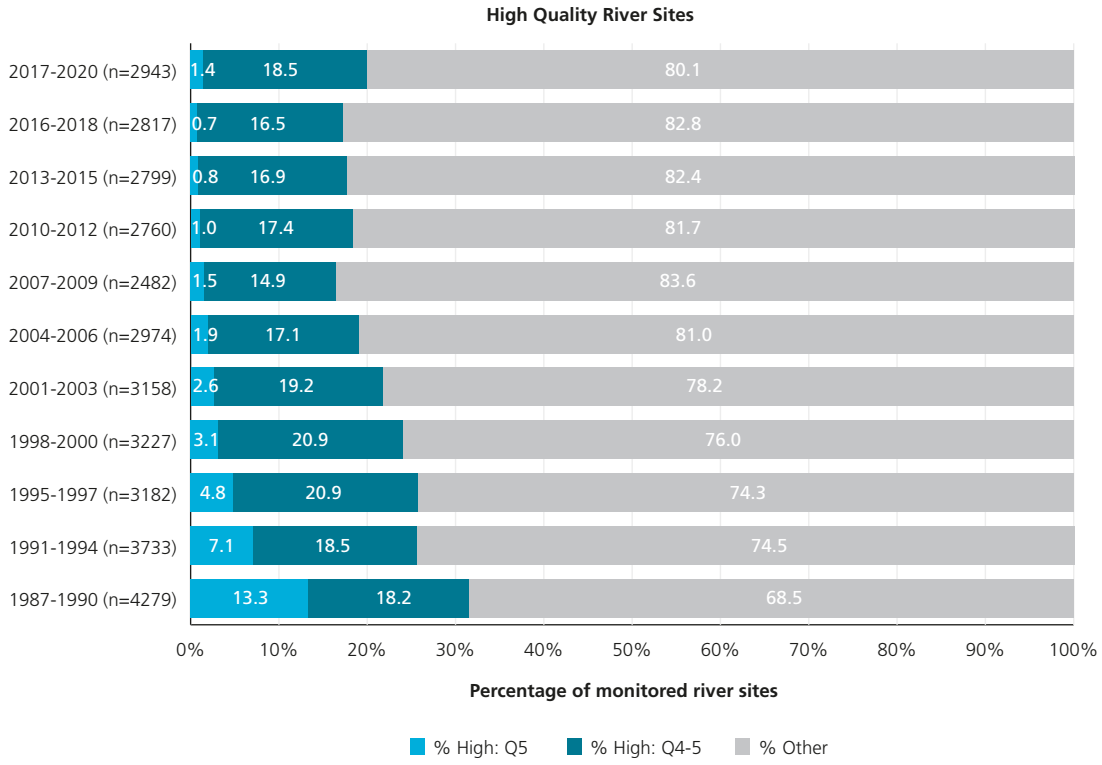
6 Q value system: Q5 and Q4-5=High; Q4=Good; Q3-4=Moderate; Q3 and Q2-3=Poor; Q2, Q1-2 and Q1=Bad.

7 Some areas scheduled to be monitored in 2020 were deferred to 2021 due to covid-19 restrictions. Inclusion of data from 2017 aids with comparison for these water bodies.

8 River water bodies in bad biological condition: Ara_020 in Tipperary and Mourne Beg River (Derrygoonan) in Donegal.

High Quality Sites

There are now 585 river sites classified as high quality (Q5 and Q4-5); this represents an increase of 101 sites in this category. Included in this number is an additional 21 sites[9] in the Q5 category (highest quality) bringing the total number of these sites to 41. The majority of these Q5 sites are situated in clusters near the coast in the west, southwest and southeast. These high quality sites are important for supporting sensitive aquatic species such as juvenile salmon and trout and the protected, but declining, freshwater pearl mussel and are still at very low numbers when compared to the late 1980s and early 1990s.



Prioritised Areas for Action (PAAs)

There are 190 Prioritised Areas for Action (PAAs) identified in the current River Basin Management Plan which are subjected to targeted action aimed at bringing about an improvement in water quality. There are encouraging signs in the rivers in PAAs where a net improvement was noted in the biological quality of 57 water bodies, building on the improvements reported previously and indicating that the targeting of actions is helping to improve water quality.

While some water bodies are improving they are still not achieving the high or good quality required for them to be in satisfactory condition. In addition, a large number of river water bodies are still declining in quality nationally. Unless this is addressed, sustained and progressive improvements in water quality will be difficult to achieve.

9 This includes 4 new sites not previously monitored.

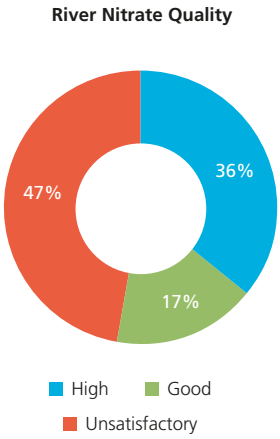
Indicator: Nitrate in Rivers

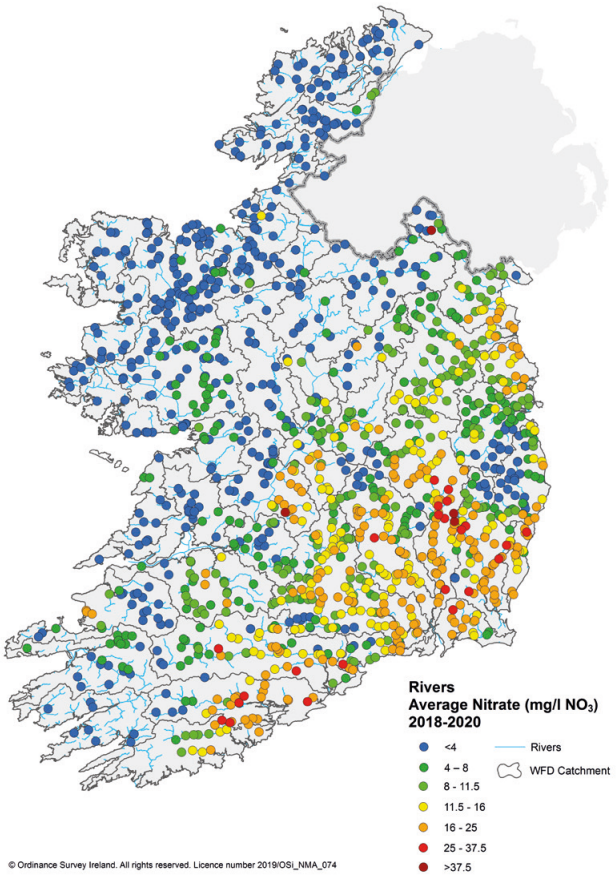
Nitrate enters our waterways from the land through free draining soils to our groundwaters where it can then discharge to rivers and ultimately to our marine waters. It mainly comes from agriculture through chemical and organic (manures and urine from livestock) fertilisers and from urban waste water discharges. Areas of the south and southeast are particularly susceptible to nitrogen losses from agriculture. This indicator is based on an assessment of average nitrate concentrations over three-years (2018-2020) at 1,326 river sites.

Findings

The 2018-2020 data for nitrate in rivers show that 47% of river sites have unsatisfactory nitrate concentrations (above 8 mg/l NO_3)[10]. The map shows that nitrate concentrations are highest in rivers in the south and southeast where there is more intensive farming coupled with freely draining soils. Recent analysis[11] by the EPA shows that up to 85% of nitrogen in rivers in some catchments in the south and southeast comes from agriculture. Parts of the east of the country have higher nitrate concentrations associated with urban waste water discharges.

Thirteen catchments have elevated nitrogen concentrations and are of concern. All of these areas are located along the south, southeast and east coasts and include: the Maigue/Deel, Bandon, Lee, Blackwater, Suir, Nore, Barrow, Slaney, Tolka/Liffey (including the Dodder) and the Boyne[12].





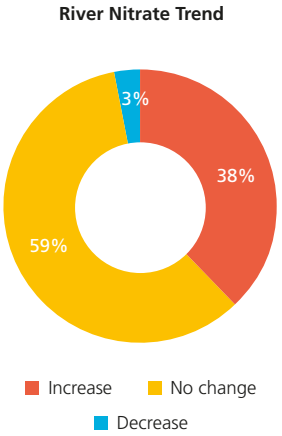
10 There are currently no environmental quality standards for nitrate, however, average nitrate concentration values less than 4 mg/l NO_3 (0.9 mg/l N) and less than 8 mg/l NO_3 (1.8 mg/l N) are considered by the EPA to be indicative of high and good quality respectively. The nitrate standard for drinking water is 50 mg/l NO_3.

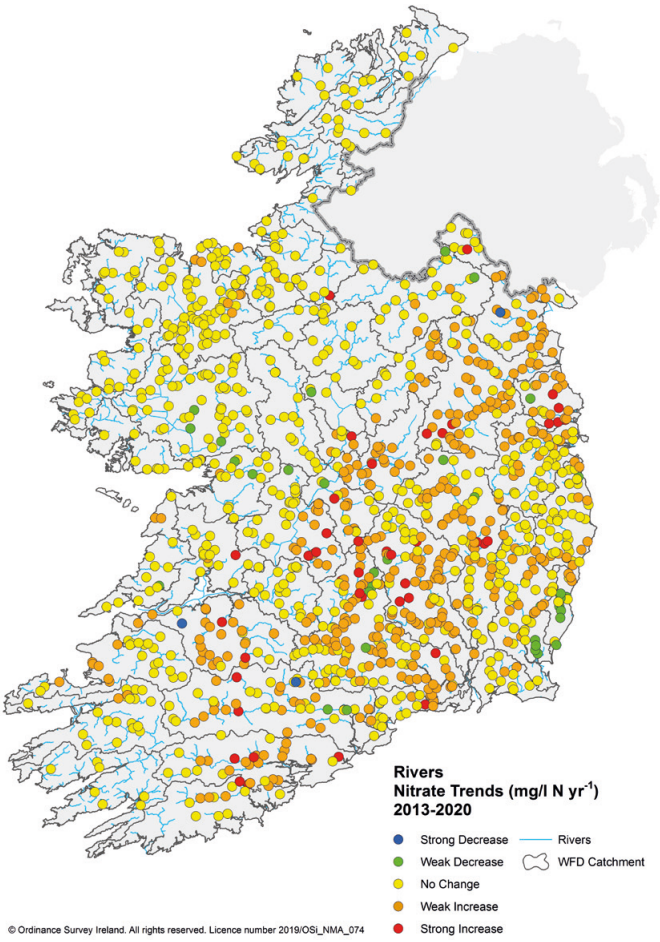
11 https://www.catchments.ie/assessment-of-the-catchments-that-need-reductions-in-nitrogen-concentrations-to-achieve-water-quality-objectives/

12 An interactive map of Ireland's catchments can be found at https://www.catchments.ie/data/#/?_k=m96bcp

Over a third (38%) of sites are showing an increasing nitrate trend for the period 2013-2020 while only 3% have a decreasing trend[13].

Inputs of nitrogen from our rivers to our marine environment continue to increase, particularly in catchments in the south and southeast (see the indicator on Nutrient Inputs to the Marine Environment). There are strong indications that these nitrogen inputs are increasing the level of nutrient pollution in our marine environment. Over a fifth of our estuarine and coastal waters have too much nitrogen in them and this is causing a problem by triggering nuisance algal blooms in many of our estuaries. These unsightly blooms can reduce the recreational value of our marine waters by causing foul odours whilst also decreasing the amount of oxygen in the water and damaging the ecology. If we do not substantially reduce our nitrogen inputs to our rivers, and ultimately our marine environment, we are in danger of losing our excellent coastal water quality.





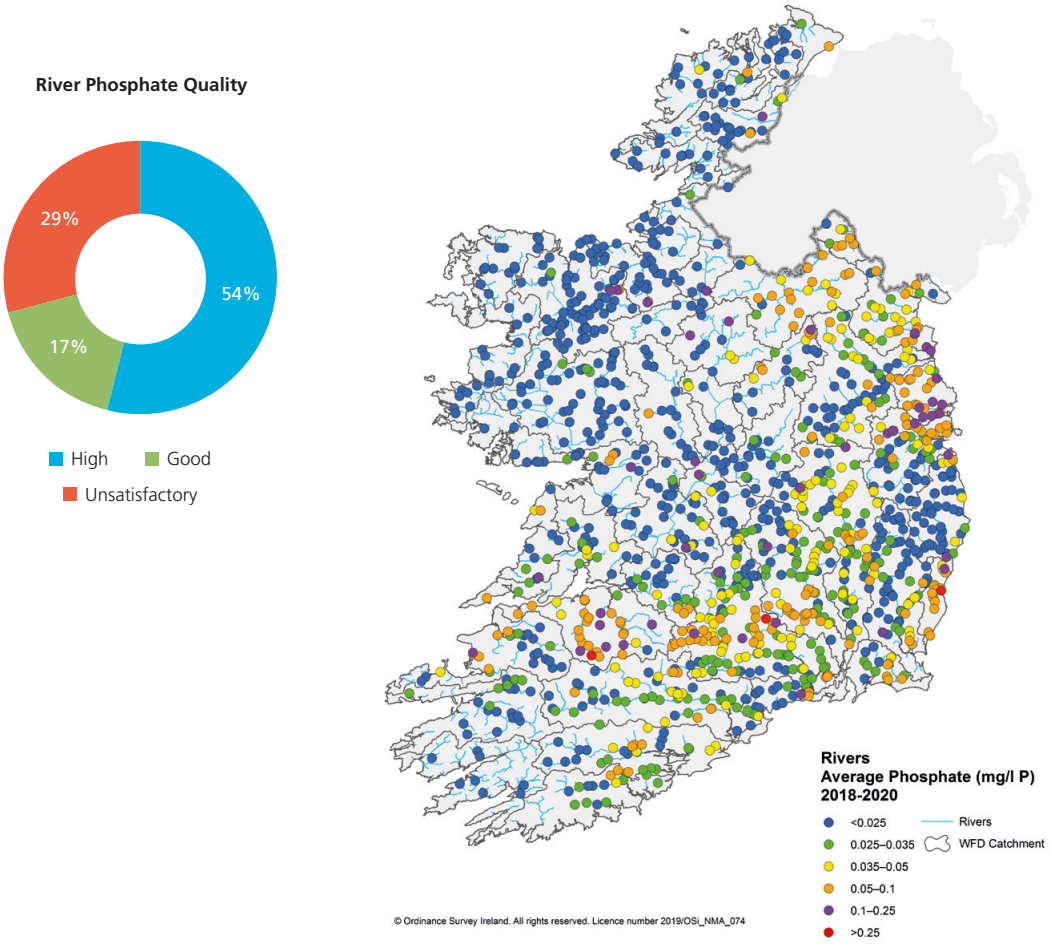
13 Rate of change (mg/l N/yr): Strong decrease (>0.2); Weak decrease (0.05-0.2); No change (varying by <0.05); Weak increase (0.05-0.2); Strong increase (>0.2).

Indicator: Phosphate in Rivers

Phosphate enters waters from a variety of sources, but primarily from sewage and industrial discharges and agricultural land where animal manure and inorganic fertilisers have been spread. This indicator is based on an assessment of average phosphate[14] concentrations over three-years, 2018 to 2020 at 1,336 sites.

Findings

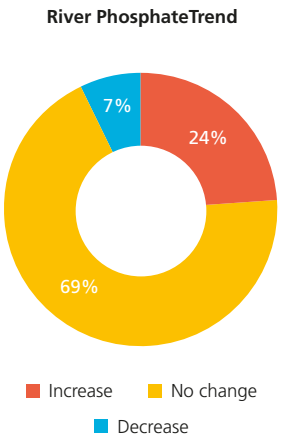
The assessment shows that 29% of sites have unsatisfactory phosphate concentrations while the remaining 71% are at high (54%) or good (17%) quality[15]. Sites with higher phosphate concentrations are evident in the Liffey and Dublin Bay and Nanny-Devlin catchments in the east, in the Erne catchment in the northeast and in the Shannon Estuary South catchment in the southwest of the country. Phosphorus losses in these catchments come primarily from runoff losses from agriculture on poorly draining soils and from waste water discharges. The rate of change in river phosphate was calculated over the 2013-2020 period[16]. Nearly a quarter (24%) of sites had an increasing concentration while 7% of sites had a decreasing concentration.

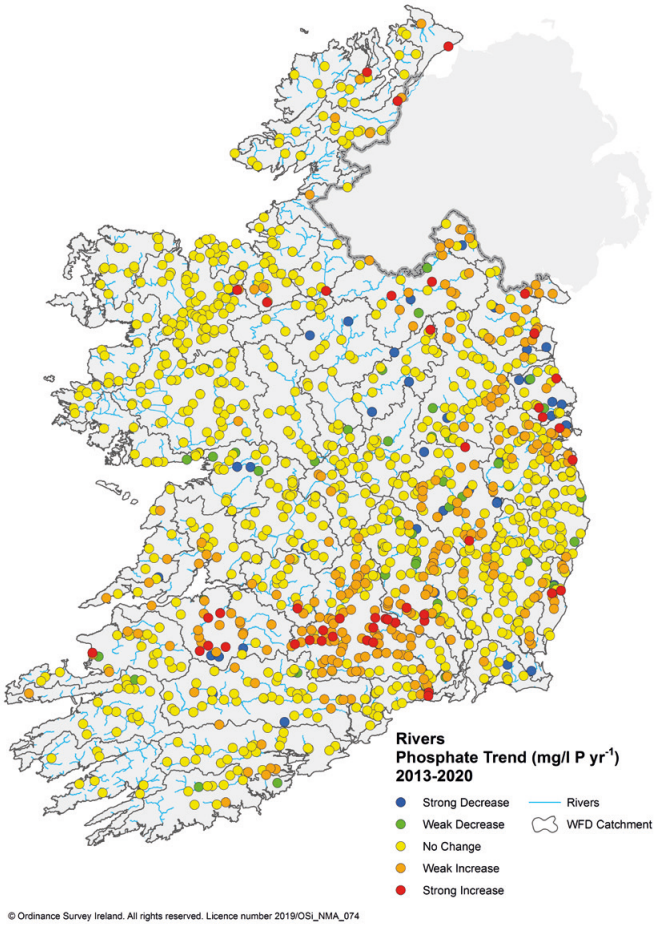


14 Measured as molybdate reactive phosphate (MRP).

15 Average phosphate concentrations of less than 0.025 mg/l P and less than 0.035 mg/l P have been established in Ireland as legally binding national standards (EQS) to support the achievement of high and good ecological status respectively.

16 Rate of change (mg/l P/yr): Strong decrease (>0.005); Weak decrease (0.002-0.005); No change (varying by <0.002); Weak increase (0.002-0.005); Strong increase (>0.005).





Diffuse phosphorus loss from agriculture occurs most often via overland flow on poorly draining soils and subsoils. It can be difficult to manage as the sources and pathways can have a patchy distribution in the landscape leaving some areas more at risk than others[17].

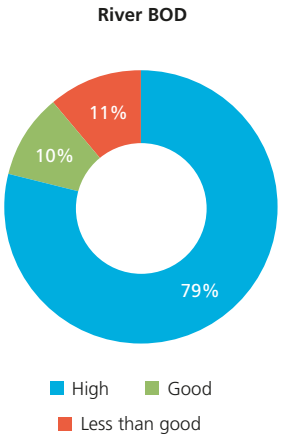
17 The EPA has developed Pollution Impact Potential (PIP) maps which show the areas most at risk of diffuse runoff of phosphorus to waters. The maps can help identify where measures should be implemented and can be accessed at https://gis.epa.ie/EPAMaps/Water.

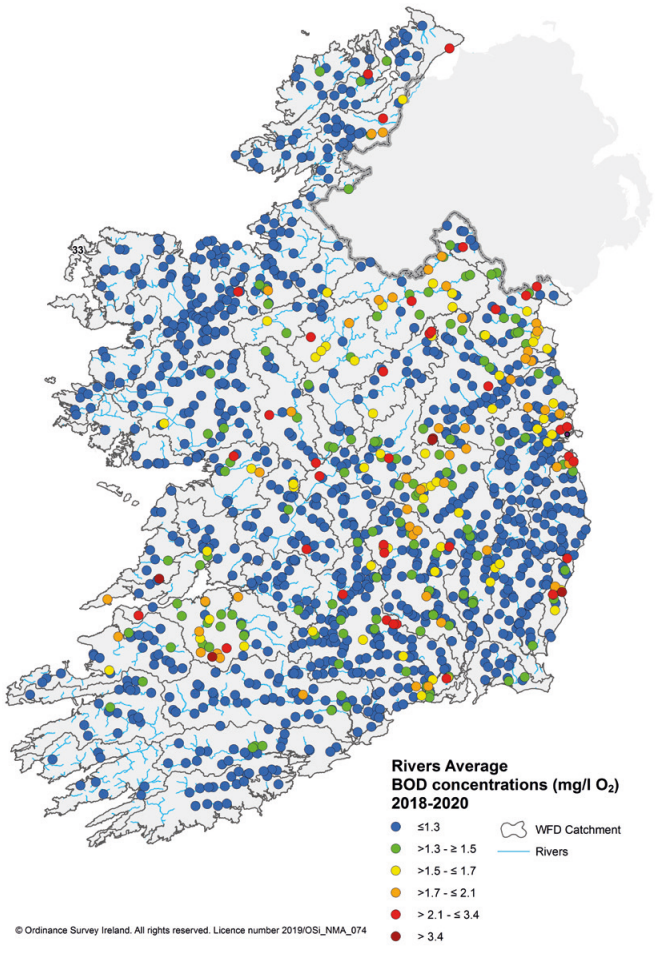
Indicator: Oxygen Demand in Rivers

When biodegradable organic matter (such as organic waste from waste water treatment plants) enters a river it provides nutrients for the growth of bacteria and other microorganisms. A large amount of organic matter will cause the microorganisms to multiply to such a degree that they will deplete the dissolved oxygen in the water. Such oxygen depletions negatively affect river macroinvertebrates and can cause fish kills. The amount of oxygen consumed by the microorganisms to break down the organic matter is called the Biochemical Oxygen Demand or BOD. Higher amounts of organic matter in a river lead to higher BOD values[18] which give an indication of organic pollution.

Findings

Most (89%) of river sites monitored have satisfactory (high and good) BOD levels for the 2018-2020 period. Just over a tenth (11%) of sites have issues with higher BOD levels and these are dispersed geographically. River sites with elevated BOD levels experience significant localised impacts on their ecology.





18 Average BOD values of less than or equal to 1.3 mg/l O_2 and less than or equal to 1.5 mg/l O_2 in rivers have been established in Ireland as legally binding national standards (EQS) to support the achievement of high and good ecological status respectively.

Indicator: Total Phosphorus in Lakes

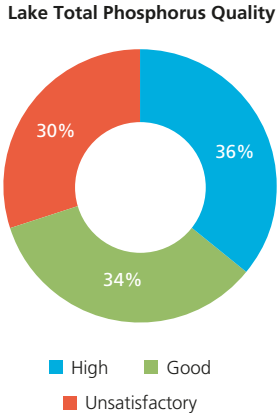
The concentration of total phosphorus (mg/l P) in lakes is a key indicator because of its impact on the ecological health of freshwater systems. If phosphorus is present in excess amounts it can lead to a significant decrease in water quality due to an overgrowth of plants and algal blooms. This over-growth reduces the amount of dissolved oxygen and the sunlight that can penetrate the water and can negatively affect the lake's ecology.

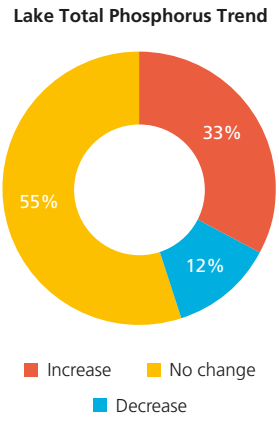
This indicator is based on an assessment of the average three-year total phosphorus concentration in 223 monitored lakes into five quality classes: high, good, moderate, poor, and bad.

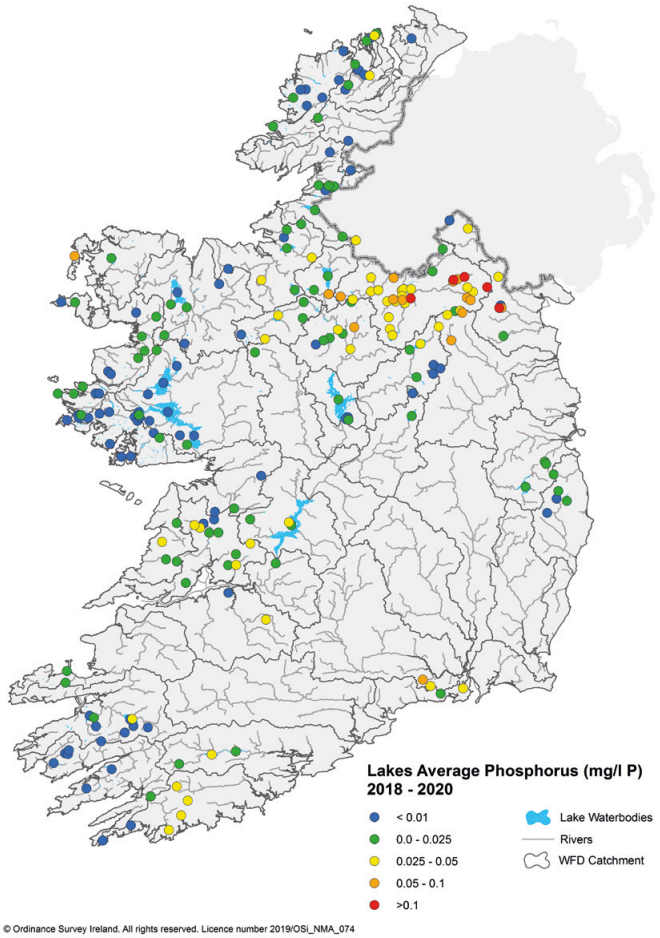
Findings

In the period 2018-2020 almost a third (30%) of lakes had unsatisfactory total phosphorus concentrations[19]. The majority of lakes in poor or bad condition for phosphorus are situated in the Erne catchment in the northeast where agriculture is the largest significant pressure.

A third (33%) of the lakes analysed for a trend[20], showed increasing total phosphorus concentrations and 12% had decreasing concentrations for the 2013-2020 period.







19 Average total phosphorus concentrations in lakes of less than 0.01 mg/l P and less than 0.025 mg/l P have been established in Ireland as a national standard to support the achievement of high and good ecological status as required by the WFD.

20 The data of 83 of the 223 lakes monitored met the statistical criteria for trend analysis.

Measures are needed to reduce the loadings of phosphorus to the lakes in the northeast. Improvements in phosphorus concentrations can take a long time as these lakes will still have a reservoir of phosphorus in their sediments that will continue to impact water quality as it is slowly released.

Photo: Neasa McDonnell

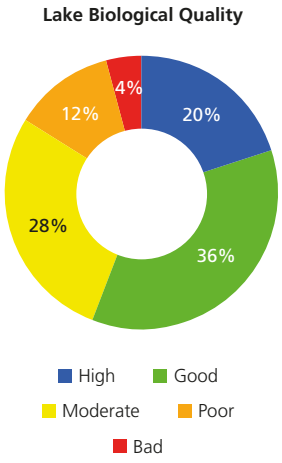
Indicator: Lake Biological Quality

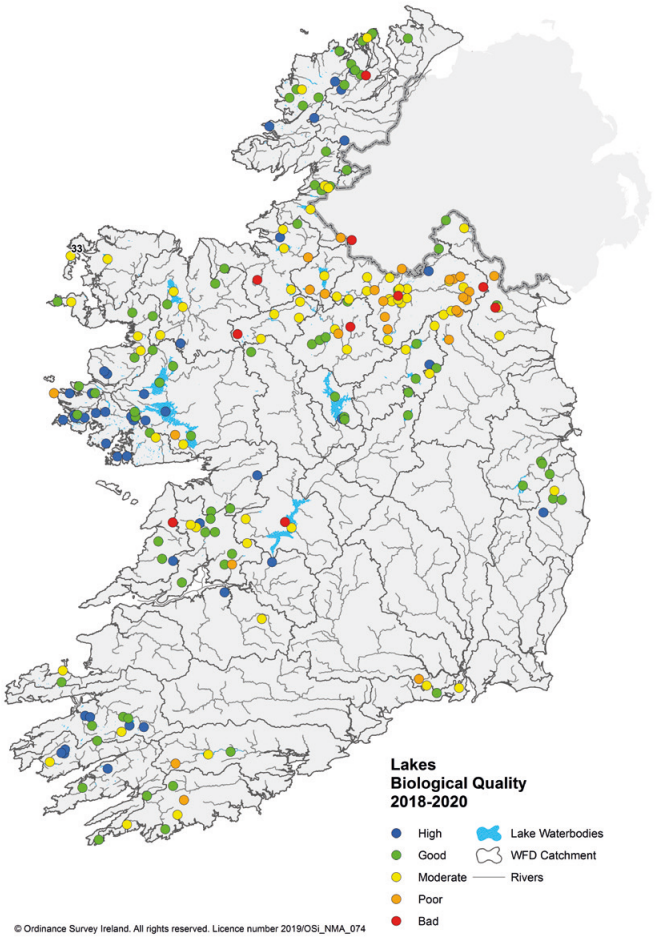
This indicator is based on the biological assessment of 224 monitored lakes for the period 2018-2020. Lake biology is categorised into five classes: high, good, moderate, poor and bad. The biological elements that are assessed for lake biological quality are plants, phytoplankton, phytobenthos and fish. These biological indicators give an indication of the long-term water quality of a lake.

Findings

Over half (56%) of monitored lakes are in high or good biological quality for the period 2018-2020 with the remaining 44% in moderate or worse quality. Ten lakes (4%) are in bad biological quality, the worst class, for 2018-2020. The majority of lakes that are failing to achieve good biological quality are in the Erne and Upper Shannon Catchments, areas with predominantly elevated phosphorus levels.

The proportion of lakes at satisfactory quality (high and good) has remained relatively unchanged in recent years. The majority of these lakes are situated along the western half of Ireland and not subjected to the same phosphorus loadings as lakes in the northeast.





Indicator: Nitrogen in Estuaries and Coastal Waters

Nitrogen is generally considered the primary limiting nutrient in coastal ecosystems, meaning that its concentration will control the growth of algae and aquatic plants. This increased algal growth can lead to problems such as low oxygen levels and shading of sunlight needed by aquatic plants. These changes can damage the ecology of these systems.

This assessment is based on winter levels of dissolved inorganic nitrogen[21] (DIN). The concentration of DIN is expected to be at its highest in winter because of the absence of any significant plant or algal growth at that time of year, therefore less nitrogen is used up and remains in the water.

Findings

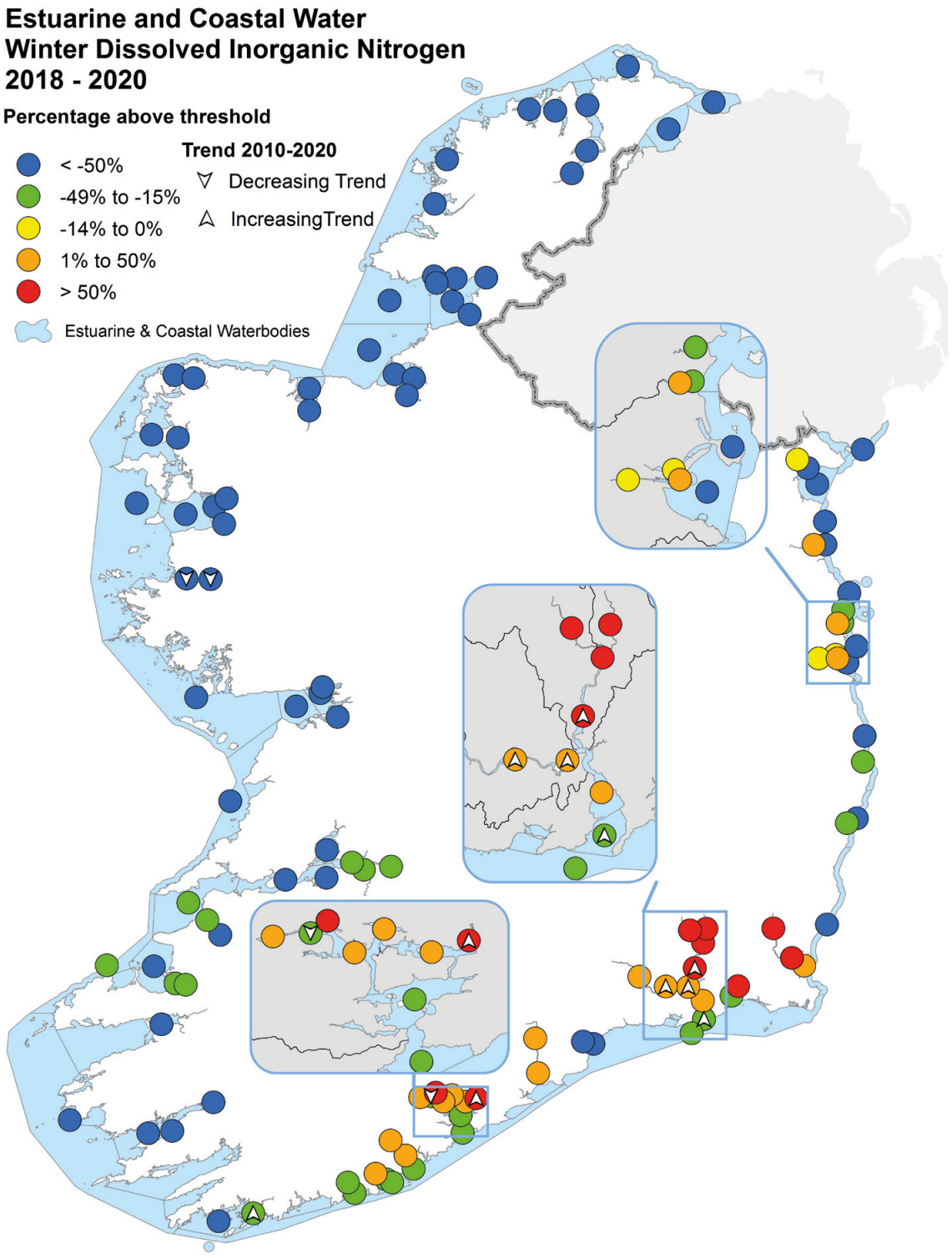
Twenty five of the 118 (21%) estuarine and coastal water bodies assessed were in unsatisfactory condition for DIN[22]. The estuaries with the highest median winter dissolved inorganic nitrogen concentrations were in the south and southeast of the country, these areas receive water from river catchments that have elevated nitrate concentrations that are rising (see the Nitrate in Rivers indicator).

A trend analysis looking at winter median data from 2010-2020 has shown that nitrogen levels have significantly increased in 6 water bodies, again mainly found in the south and southeast of the country. These include the Ilen and Owenacurra Estuaries, Waterford Harbour, the Middle Suir, Lower Suir and New Ross Port Estuaries.

Since 2010, small, but significant decreases have been observed in the Erriff Estuary and Killary Harbour and the Lower Lee Estuary.

21 DIN = (nitrite + nitrate + ammonia). DIN is expressed as nitrogen (N).

22 Salinity related thresholds have been defined for DIN in our estuaries and coastal waters. The thresholds range from between 2.6 mg/l N in freshwater to 0.25 mg/l N in fully saline waters. DIN concentrations above these thresholds can indicate pollution.



Indicator: Phosphate in Estuaries and Coastal Waters

Phosphate is important in estuarine systems because it is typically the limiting nutrient in lower salinity waters meaning that the concentration of this nutrient can control the growth of algae and aquatic plants. If present in sufficient concentration it can cause eutrophication.

This assessment is based on winter phosphate[23] levels. In winter the concentration of phosphate is expected to be at its highest due to the absence of any significant plant or algal growth.

Findings

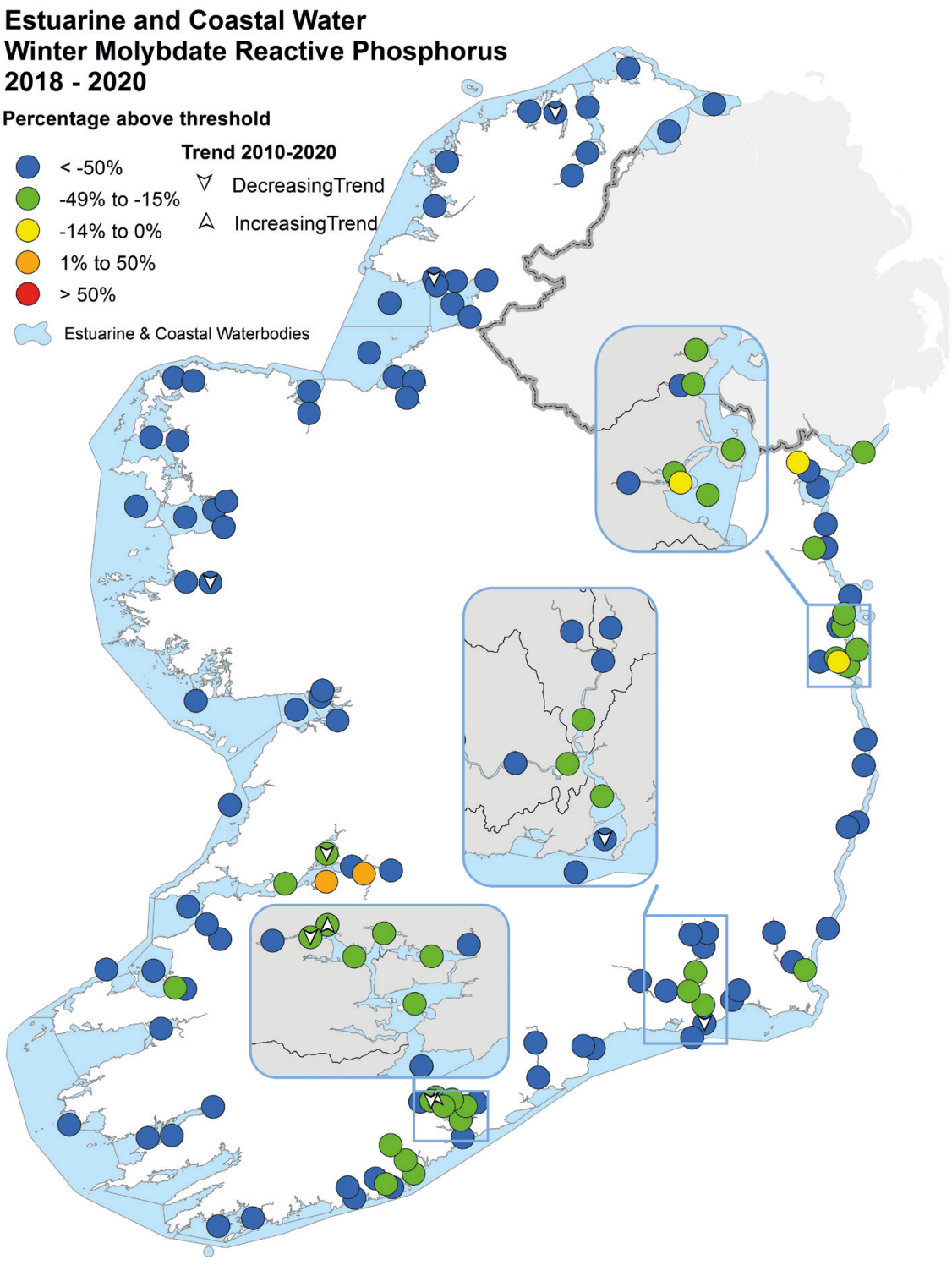
Nearly all (98%) estuaries and coastal waters assessed were in satisfactory condition for phosphate[24]. Only two water bodies, the Maigue Estuary and Deel Estuary (Co. Limerick) were in unsatisfactory condition. Agriculture is a significant pressure in both these estuaries and they receive water from rivers with elevated phosphorus concentrations.

A trend analysis looking at winter median phosphate concentrations from 2010-2020 shows that there have been significant decreases in phosphate concentration in Mulroy Bay and Killybegs Harbour, Erriff Estuary, Waterford Harbour, Fergus Estuary and Lower Lee Estuary. The only estuary where phosphate is increasing is the Glashaboy Estuary, but the water body remains in satisfactory condition.

Photo: Paddy Morris

23 Measured as molybdate reactive phosphate (MRP).

24 Salinity related thresholds have been defined for phosphate in both our estuaries and coastal waters. The thresholds range from 0.060 mg/l P for fresh to intermediate salinity waters to 0.040 mg/P for full salinity waters. Phosphate concentrations above these thresholds can indicate pollution.



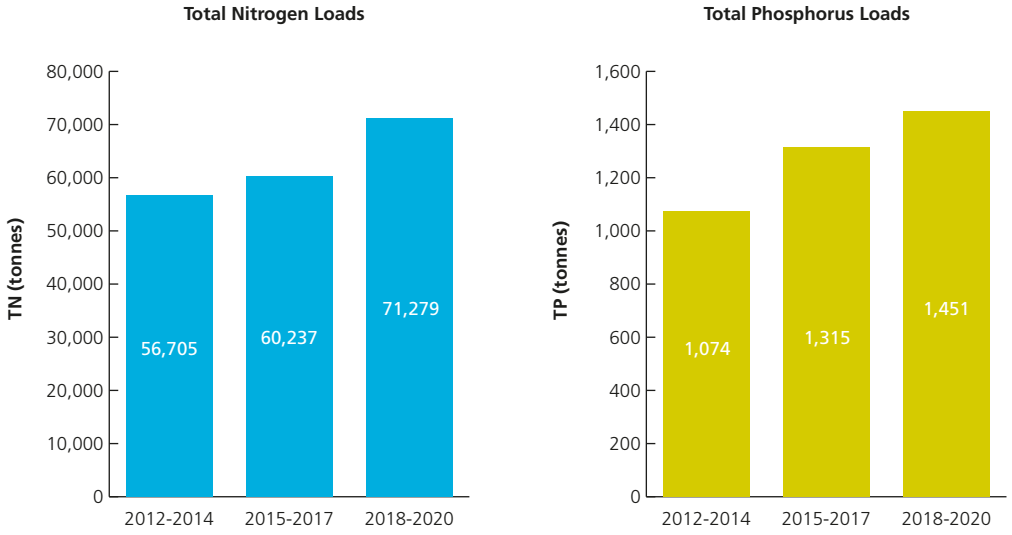
Indicator: Nutrient Inputs to the Marine Environment

The inputs of total phosphorus and total nitrogen from 19 major rivers into the marine environment are monitored to provide an indicator of the loss of nutrients from land-based sources[25].

Findings

Loads of total nitrogen have increased to reach a three-year average of 71,279 tonnes in 2018-2020. This represents a 26% (14,574 tonnes) increase since the 2012-2014 period. Most of this loading is coming from catchments in the south, southeast and east of the country.

Loads of total phosphorus have also increased to reach a three-year average of 1,451 tonnes in 2018-2020, representing a 35% (377 tonnes) increase since 2012-2014.



The recent EPA analysis of nitrogen reductions needed to improve water quality highlighted the following catchments where nitrogen reductions are needed in order to protect and improve water quality - the Maigue/Deel, Bandon, Lee, Blackwater, Suir, Nore, Barrow, Slaney, Tolka/Liffey and the Boyne river catchments[26].

25 The inputs are calculated based on nutrient concentrations, which are measured 12 times a year, and river flow, which is measured continuously. Inputs are presented as three-year averages to reduce the effects of annual fluctuations. Changes due to river flow between years are accounted for.

26 https://www.catchments.ie/assessment-of-the-catchments-that-need-reductions-in-nitrogen-concentrations-to-achieve-water-quality-objectives/

Indicator: Nitrate in Groundwater

Groundwater flows through spaces or fractures in the subsoil or bedrock to streams, rivers, lakes and estuaries. It can be an important contributor of nitrate from pollution sources into surface water bodies. During periods when there is little or no rain, almost all the water flowing in streams and rivers originates from groundwater.

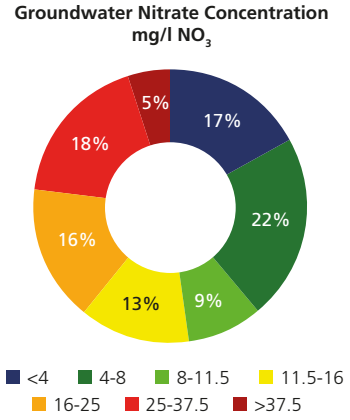
This indicator is based on the annual average nitrate concentration for 194 groundwater monitoring sites.

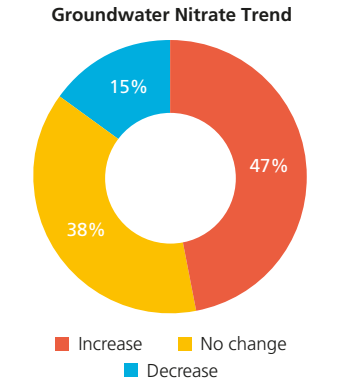
Findings

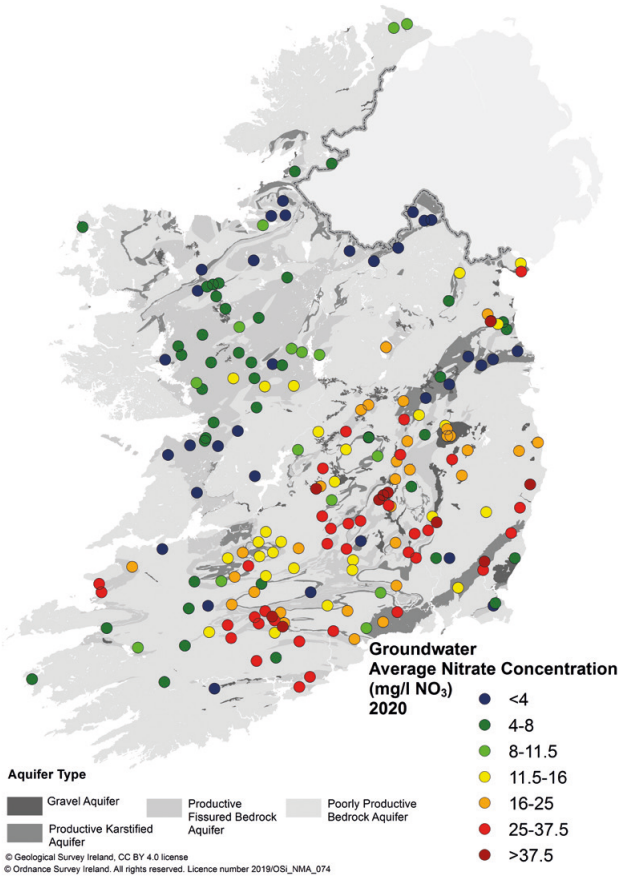
The average nitrate concentration exceeded the threshold of 37.5 mg/l NO_3 at 10 (6%) monitoring sites and exceeded the drinking water standard of 50 mg/l NO_3 at three (2%) monitoring sites[27].

Almost a quarter (24%) of sites had concentrations greater than 25 mg/l NO_3 (considered a high nitrate concentration). This is an increase of approximately 7% since 2018. Generally, nitrate concentrations in groundwater are highest in the south and southeast of the country.

A trend analysis over the period 2013 to 2020 indicates almost half (47%) of sites have increasing nitrate concentrations. Reducing nitrate concentrations were observed in 15% of sites. The most substantial nitrate increases are occurring in the southeast and southwest in areas with intensive agriculture over freely draining soils.







27 Nitrate concentrations in groundwater higher than 10 mg/l NO_3 are usually indicative of inputs relating to human activities, anything above 25 mg/l NO_3 is considered an elevated nitrate concentration. The Irish groundwater WFD threshold value is 37.5 mg/l NO_3. Groundwater is widely abstracted for drinking water in Ireland and the drinking water standard of 50 mg/l NO_3 relates to the potential for harm to human health.

Conclusions

Just over half of our rivers and lakes are in good or high biological quality, meaning there is still a substantial amount of work to be done to bring the remaining waters back to a satisfactory standard. There are positive signs, however, that some rivers are showing evidence of improvement, particularly in the Priority Areas for Action (PAAs), and there has also been an increase in the number of river sites at high biological quality.

While this is a cause for hope, the number of river water bodies that have declined in quality (230 water bodies) is still too high. Unless this is addressed, sustained and progressive improvements in water quality will be difficult to achieve. It must also be noted that water bodies that improve in quality may still not be at a satisfactory quality e.g. a water body can improve from poor to moderate but still not meet its water quality objective of good or high quality.

The indicators show us that nutrient levels are too high in many of our waters, and in some areas trends are still going in the wrong direction. High nitrates are predominantly found in our rivers, groundwaters and estuaries in the south and southeast of the country, areas with intensive agriculture over freely draining soils. These areas are also exhibiting rising nitrate concentrations.

This is leading to an increase in the amount of nitrate reaching our coastal waters with inputs of nitrogen increasing by 26% since 2012-2014. There are strong indications that these nitrate inputs are increasing the level of pollution in our marine environment. Over a fifth of our estuarine and coastal waters have too much nitrogen in them, areas with the highest concentrations are in the south and southeast, and this is causing a problem by triggering nuisance algal blooms in many of our estuaries.

Agriculture and waste water are the predominant sources of nutrients in our waters. Recent analysis[28] by the EPA shows that up to 85% of nitrogen in rivers in predominantly rural catchments in the south and southeast comes from agriculture. It is essential for the protection of our rivers, groundwaters and estuaries that urgent and focussed action is taken to reduce the nitrate losses to our waters or we are in danger of losing our excellent coastal water quality.

Ireland's Nitrates Action Programme is designed to prevent pollution of surface waters and groundwater from agricultural sources and to protect and improve water quality. The review currently underway of the Nitrates Action Programme must deliver reductions in nitrate losses to our waters, and there needs to be full implementation of existing regulations by the Local Authorities and the Department of Agriculture Food and Marine. Full implementation of the climate measures identified in the Ag Climatise Roadmap and AgriFood 2030 strategy offer significant potential to deliver water quality and biodiversity improvements, but measures must be targeted in the right place.

While progress is being made by Irish Water in reducing the number of waste water plants on the EPA's priority action list, continued and sustained investment is needed to address water quality issues from urban waste water and to meet our Water Framework Directive objectives.

28 https://www.catchments.ie/assessment-of-the-catchments-that-need-reductions-in-nitrogen-concentrations-to-achieve-water-quality-objectives/

Our health and wellbeing are inextricably linked to our environment. Water is needed to sustain life and is an important and integral part of our everyday existence. Clean, healthy water is essential to our health and well-being; providing our raw water for drinking and food preparation, and the location for our recreational activities such as swimming and angling. Clean water is essential for our economy; from tourism to agriculture and industry. Clean water is also essential for wildlife; our rivers, lakes, estuaries and coastal waters are home to thousands of plant and animal species ranging from tiny river insects to birds and animals such as kingfishers and otters, to name but a few.

The most prevalent human activities that impact on water quality are agriculture, hydromorphology (physical changes), forestry and urban waste water discharges. The next River Basin Management Plan is due to be published in 2022. It is essential that this plan delivers action and improvements across each of the main water quality pressures, builds on the progress made in the PAAs, and puts a particular focus on protecting water quality and preventing further declines in order to protect this precious resource.

Further information

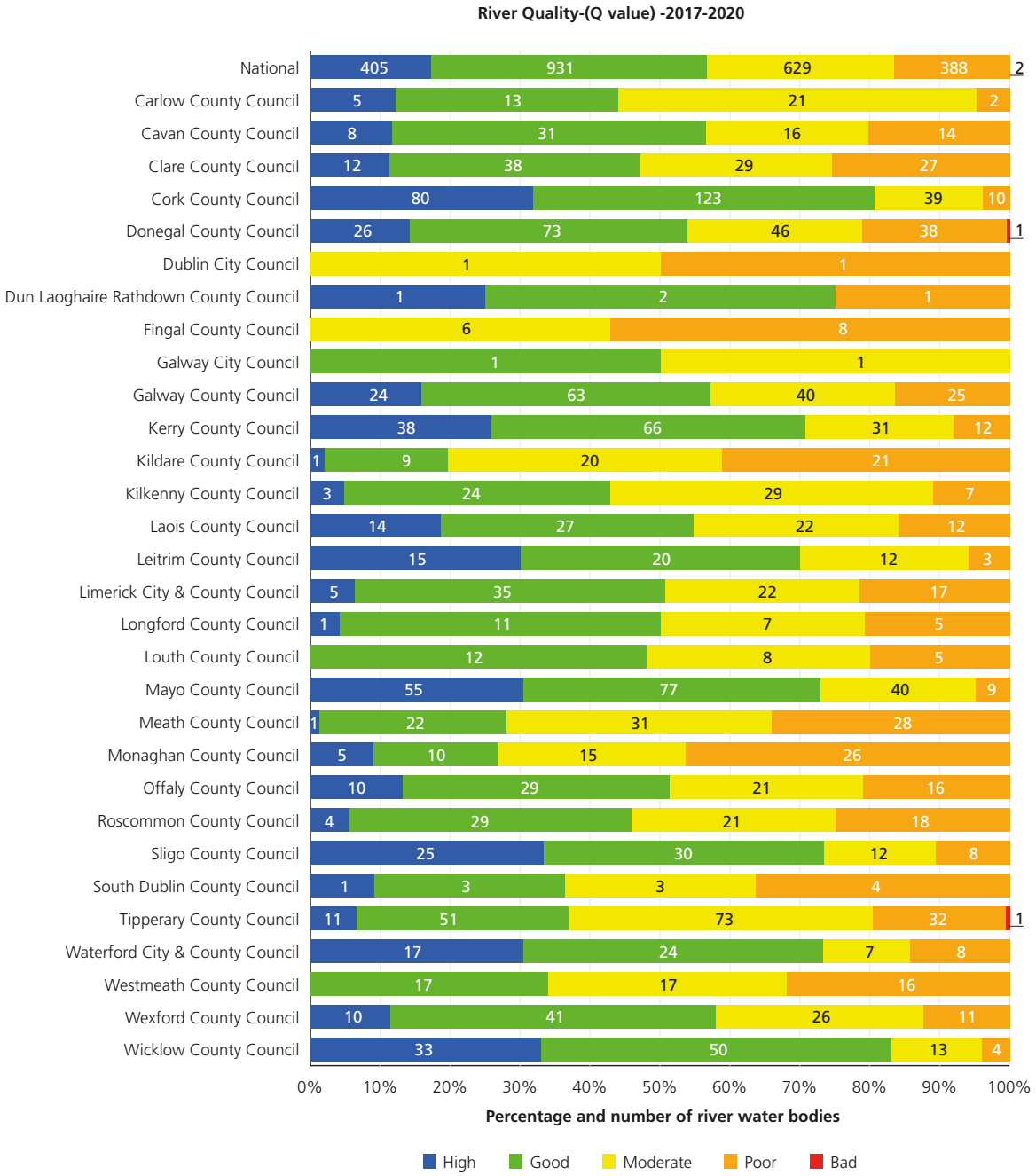
Detailed information and data on water quality in Ireland can be found at https://www.catchments.ie/.

A series of fact sheets providing information about the different elements of the Water Framework Directive monitoring programme can be found at Monitoring & Assessment: Freshwater & Marine Publications | Environmental Protection Agency (epa.ie).

To find out more about how to get involved in protecting and managing your local waters visit the Local Authority Waters Programme website at http://watersandcommunities.ie/get-involved/.

Appendix

A breakdown of river quality (Q value) by Local Authority area for the 2017-2020 period.



An Ghníomhaireacht Um Chaomhnú Comhshaoil

Tá an GCC freagrach as an gcomhshaol a chosaint agus a fheabhsú, mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ar thionchar díobhálach na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

- **Rialáil:** Rialáil agus córais chomhlíonta comhshaoil éifeachtacha a chur i bhfeidhm, chun dea-thorthaí comhshaoil a bhaint amach agus díriú orthu siúd nach mbíonn ag cloí leo.
- **Eolas:** Sonraí, eolas agus measúnú ardchaighdeáin, spriocdhírithe agus tráthúil a chur ar fáil i leith an chomhshaoil chun bonn eolais a chur faoin gcinnteoireacht.
- **Abhcóideacht:** Ag obair le daoine eile ar son timpeallachta glaine, táirgiúla agus dea-chosanta agus ar son cleachtas inbhuanaithe i dtaobh an chomhshaoil.

I measc ár gcuid freagrachtaí tá:

Ceadúnú

- Gníomhaíochtaí tionscail, dramhaíola agus stórála peitril ar scála mór;
- Sceitheadh fuíolluisce uirbigh;
- Úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe;
- Foinsí radaíochta ianúcháin;
- Astaíochtaí gás ceaptha teasa ó thionscal agus ón eitlíocht trí Scéim an AE um Thrádáil Astaíochtaí.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Iniúchadh agus cigireacht ar shaoráidí a bhfuil ceadúnas acu ón GCC;
- Cur i bhfeidhm an dea-chleachtais a stiúradh i ngníomhaíochtaí agus i saoráidí rialáilte;
- Maoirseacht a dhéanamh ar fhreagrachtaí an údaráis áitiúil as cosaint an chomhshaoil;
- Caighdeán an uisce óil phoiblí a rialáil agus údaruithe um sceitheadh fuíolluisce uirbigh a fhorfheidhmiú;
- Caighdeán an uisce óil phoiblí agus phríobháidigh a mheasúnú agus tuairisciú air;
- Comhordú a dhéanamh ar líonra d'eagraíochtaí seirbhíse poiblí chun tacú le gníomhú i gcoinne coireachta comhshaoil;
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Dramhaíola agus Ceimiceáin sa Chomhshaol

- Rialacháin dramhaíola a chur i bhfeidhm agus a fhorfheidhmiú lena n-áirítear saincheisteanna forfheidhmithe náisiúnta;
- Staitisticí dramhaíola náisiúnta a ullmhú agus a fhoilsiú chomh maith leis an bPlean Náisiúnta um Bainistíocht Dramhaíola Guaisí;
- An Clár Náisiúnta um Chosc Dramhaíola a fhorbairt agus a chur i bhfeidhm;
- Reachtaíocht ar rialú ceimiceán sa timpeallacht a chur i bhfeidhm agus tuairisciú ar an reachtaíocht sin.

Bainistíocht Uisce

- Plé le struchtúir náisiúnta agus réigiúnacha rialachais agus oibriúcháin chun an Chreat-treoir Uisce a chur i bhfeidhm;
- Monatóireacht, measúnú agus tuairisciú a dhéanamh ar chaighdeán aibhneacha, lochanna, uiscí idirchreasa agus cósta, uiscí snámha agus screamhuisce chomh maith le tomhas ar leibhéil uisce agus sreabhadh abhann.

Eolaíocht Aeráide & Athrú Aeráide

- Fardail agus réamh-mheastacháin a fhoilsiú um astaíochtaí gás ceaptha teasa na hÉireann;
- Rúnaíocht a chur ar fáil don Chomhairle Chomhairleach ar Athrú Aeráide agus tacaíocht a thabhairt don Idirphlé Náisiúnta ar Ghníomhú ar son na hAeráide;
- Tacú le gníomhaíochtaí forbartha Náisiúnta, AE agus NA um Eolaíocht agus Beartas Aeráide.

Monatóireacht & Measúnú ar an gComhshaol

- Córais náisiúnta um monatóireacht an chomhshaoil a cheapadh agus a chur i bhfeidhm: teicneolaíocht, bainistíocht sonraí, anailís agus réamhaisnéisiú;
- Tuairiscí ar Staid Thimpeallacht na hÉireann agus ar Tháscairí a chur ar fáil;
- Monatóireacht a dhéanamh ar chaighdeán an aeir agus Treoir an AE i leith Aeir Ghlain don Eoraip a chur i bhfeidhm chomh maith leis an gCoinbhinsiún ar Aerthruailliú Fadraoin Trasteorann, agus an Treoir i leith na Teorann Náisiúnta Astaíochtaí;
- Maoirseacht a dhéanamh ar chur i bhfeidhm na Treorach i leith Torainn Timpeallachta;
- Measúnú a dhéanamh ar thionchar pleananna agus clár beartaithe ar chomhshaol na hÉireann.

Taighde agus Forbairt Comhshaoil

- Comhordú a dhéanamh ar ghníomhaíochtaí taighde comhshaoil agus iad a mhaoiniú chun brú a aithint, bonn eolais a chur faoin mbeartas agus réitigh a chur ar fáil;
- Comhoibriú le gníomhaíocht náisiúnta agus AE um thaighde comhshaoil.

Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta agus nochtadh an phobail do radaíocht ianúcháin agus do réimsí leictreamaighnéadacha a mheas;
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha;
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta;
- Sainseirbhísí um chosaint ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Ardú Feasachta agus Faisnéis Inrochtana

- Tuairisciú, comhairle agus treoir neamhspleách, fianaise-bhunaithe a chur ar fáil don Rialtas, don tionscal agus don phobal ar ábhair maidir le cosaint comhshaoil agus raideolaíoch;
- An nasc idir sláinte agus folláine, an geilleagar agus timpeallacht ghlan a chur chun cinn;
- Feasacht comhshaoil a chur chun cinn lena n-áirítear tacú le hiompraíocht um éifeachtúlacht acmhainní agus aistriú aeráide;
- Tástáil radóin a chur chun cinn i dtithe agus in ionaid oibre agus feabhsúchán a mholadh áit is gá.

Comhpháirtíocht agus líonrú

Oibriú le gníomhaireachtaí idirnáisiúnta agus náisiúnta, údaráis réigiúnacha agus áitiúla, eagraíochtaí neamhrialtais, comhlachtaí ionadaíocha agus ranna rialtais chun cosaint chomhshaoil agus raideolaíoch a chur ar fáil, chomh maith le taighde, comhordú agus cinnteoireacht bunaithe ar an eolaíocht.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an GCC á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóir. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inbhunaitheacht i leith Cúrsaí Comhshaoil
- An Oifig Forfheidhmithe i leith Cúrsaí Comhshaoil
- An Oifig um Fhianaise agus Measúnú
- An Oifig um Chosaint ar Radaíocht agus Monatóireacht Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tugann coistí comhairleacha cabhair don Ghníomhaireacht agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.