

# Water Quality Indicators and the Evidence Base

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### Introduction

- What is water quality?
- How is water quality in Ireland?
  - overall status
  - latest data: 2022 Indicators
- Pressures on water quality and the evidence base
- Action needed





# What I talk about when I talk about water quality...





#### Water quality objectives





#### How is water quality in Ireland?





### **Ecological Status 2016-2021** (rivers, lakes, estuaries & coastal)

54% of surface waters in good or high ecological status (satisfactory)

46% in moderate, poor or bad status (unsatisfactory)

### 2022 Indicator: river biology



#### River biology – Q values

2019-2022 (n=2362)	393				924			643		400	- 2
2019-2021 (n=2358)	386	386			924			652		395	
2016-2018 (n=2318)	357	357			939			598		417	
2013-2015 (n=2307)	359	359			1009			540		394	- 5
2010-2012 (n=2271)	394	394			1030			500		337	- 10
2007-2009 (n=2157)	336	336			977			493		332	- 19
2004-2006 (n=2281)	392	392		939				537		377	36
2001-2003 (n=2312)	459	459		841				512		454	46
1998-2000 (n=2318)	5	510			804			482		474	48
1995- 1997 (n=2296)	5	528			747			442		519	
1991 - 1994 (n=2335)	50	507			827			438		513	50
1987-1990 (n=2326)		619		790				342		484	
	0% 109	6	20%	30%	40%	50%	60%	70%	80%	90%	100%
					-						

Percentage and number of river water bodies

High Good Moderate Poor Bad

2022 671 monitored 84 improved 77 declined

No major change

3 more Q5 sites (now 35)

#### 2022 Indicators: N and P in Rivers







2020-2022 40% of sites have unsatisfactory nitrate levels (above 8mg/I NO<sub>3</sub>)

28% of sites have unsatisfactory phosphate (above 0.035mg/I P)

#### Nitrates in rivers - regional view





- – Level to maintain high river water quality
- – Level to maintain good river water quality
- – Level to maintain good water quality in marine waters

#### Levels in the southeast are too high Nitrates increased between 2021 and 2022



## 2022 Indicator: N in Estuaries and Coastal



2020-2022 20% of water bodies unsatisfactory for nitrogen

Majority of water bodies with nitrogen issues are in south and south east.



## Summary of 2022 indicators



- No significant change in river or lake biology
- Nitrate concentrations are unsatisfactory in 40% of rivers and 20% of estuaries
- Nitrate concentrations in rivers and groundwaters increased between 2021 and 2022
- Phosphate concentrations are too high in 28% of rivers and 36% of lakes but are generally stable in recent years
- Nitrogen and phosphorus loadings to the marine were higher in 2022 than 2021

#### Pressures on water quality





Pressure assessment is based on monitoring results and knowledge of the types of activities, soils, geology etc

Water quality is impacted by a range of human activities

A waterbody can be impacted by one or more pressure type

### Where do the nutrients come from?



#### Source Load Apportionment Model (SLAM)



- Wastewater
- Other licensed discharges
- Diffuse urban
- Septic tank systems
- Pasture
- Arable
- Forestry
- Peatlands
- Deposition on water

- estimates the nutrient load from various sectors
- most N comes from agriculture
- most P comes from agriculture and wastewater

#### Targetting measures



#### **Agricultural measures**



#### Nitrogen reduction needed

**EPA** water

27%

11%

13% 53%

57%

31%

8%

17%

1%

22% 27%

10%

Catchment

BOYNE

TOLKA

LIFFEY

SLANEY

SUIR

LEE

DEEL MAIGUE

BARROW NORE

BLACKWATER

BANDON

# assessment % Reductions needed\* \*Based on mean of 2017-19

#### Wastewater measures

Single

Single

Multiple

Aultiple

#### Targetting agricultural measures



#### **PIP** maps





# Flowpath and delivery points



## What needs to happen?



- Nutrient levels in our waters need to decrease
- Measures need to be targeted in the right place to make improvements
- Need full implementation of Nitrates Action Programme with additional targeted measures
- Uisce Éireann must prioritise investment in areas where wastewater is impacting on water quality
- River Basin Management Plan 2022-2027 must provide a comprehensive plan to address all the pressures on our water environment

#### **Thanks for listening**

## Water Quality Reports available on www.epa.ie

Water quality data available on www.catchments.ie



