Water quality in Ireland
Where to from here?

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With thanks to colleagues from the EPA Water Programme
Outline

What is the condition of our waters?

A closer look at nutrients

What are the problems?

What are the measures?

Challenges and opportunities
What is the condition of our waters?
Distribution of ecological status

The problems are widespread
Ecological status in 2018

<table>
<thead>
<tr>
<th>Water body type</th>
<th>Satisfactory (%)</th>
<th>Change since 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers</td>
<td>53%</td>
<td>5.5% ▼</td>
</tr>
<tr>
<td>Lakes</td>
<td>50%</td>
<td>4.3% ▲</td>
</tr>
<tr>
<td>Estuaries</td>
<td>38%</td>
<td>Stable</td>
</tr>
<tr>
<td>Coastal</td>
<td>80%</td>
<td>Stable</td>
</tr>
<tr>
<td>Canals</td>
<td>87%</td>
<td>Stable</td>
</tr>
<tr>
<td>Groundwater</td>
<td>92%</td>
<td>1% ▲</td>
</tr>
</tbody>
</table>

Our freshwaters and estuaries are in trouble
Trends in river waterbody status

- High status are in decline
- Moderate/Poor status are increasing
High status waters

Only 20 highest quality sites left out of 500 in the 1980s
What is causing the problems?
Impacts of Significant Pressures on At Risk Waterbodies

Good status objective water bodies
1. Excess Nutrients
2. Morphology
3. Organic pollution

High status objective water bodies
1. Morphology
2. Excess Nutrients
3. Hydrology
More of this....

High status, Trimoge River, Co Mayo Photo: B. Kennedy.

Good status, Dalgan River, Co Mayo Photo: B. Kennedy.
And less of this....

Moderate status, Lough Inchiquin, Co Clare. Photo: B. Kennedy

Poor status, Broadmeadow, Fingal. Photo: W. Trodd
A closer look at nutrients
National Source Apportionment – emissions to water

Based on 2012 DAFM data + 2014 UWW. Currently being updated

Phosphorus: 2,700 t yr\(^{-1}\)
Nitrogen: 82,000 t yr\(^{-1}\)
Urban sources of P are large but are most important in the coastal settlement areas. Elsewhere its mainly diffuse agricultural sources.

Diffuse agricultural sources of nitrogen are much larger than urban sources.
N and P behave very differently in the landscape

High risk for **phosphorus** loss
- Poorly draining soils
- Overland flow dominant
- Poor correlation with intensity
- Need to break the pathway
- Lag time weeks to months

High risk for **nitrogen** loss
- Freely draining soils
- Groundwater pathway dominant
- Strong correlation with intensity
- Needs source control
- Lag time months to years

Mattock catchment, Co. Louth. Photo: J Deakin

Nuenna catchment, Co. Kilkenny. Photo: J Deakin
Critical source areas – risk of nutrient losses from diffuse agriculture

Load + susceptibility
2012 DAFM data – currently being updated
River water quality 2016-2018

Phosphate

Nitrate
Regional agricultural nitrogen issues

- In the freely draining catchments in the southeast, nitrogen losses continue to rise, and are over double the annual losses from the west.
- Agriculture is the main source.
- Spike in losses in 2018 in a drought year. 2020?
Regional agricultural phosphorus Issues

• In the poorly draining catchments, phosphorus losses are rising, and are over double the annual losses elsewhere.
Targeted Agriculture Measures for Water Quality

**Measures to reduce phosphorus and sediment loss**
On poorly draining soils - breaking the pathway between farm runoff and the receiving waters likely to be most effective.

**Measures to reduce nitrogen losses**
On more freely draining soils – improved nutrient management, clover, reduction of chemical N likely to be most effective.

‘The right measure in the right place’
What are the measures?

“The right measure in the right place”
4th Nitrates action programme (NAP) + interim review

5th NAP in preparation

Max 170 kg N/ha manure
Derogation farm 250 kg N/ha

Max N and P fertilisation rates

Minimum manure storage requirements

Green cover requirement on tillage crops

Closed period for spreading of organic and chemical fertilisers

Derogation farms must soil sample and get NMP. 50% slurry out by June 15

Baseline standard measures
One size fits all
Can only go so far
Not enough on its own

Rules are largely input based

Source: DAFM
WFD River basin management plan – a targeted approach

190 Priority Areas for Action

TOTAL 89

New farm advisors 30
Catchment scientists 35
Community water officers 12

+ support staff
Areas for Action process – all pressures together

1. Monitoring data
2. Water quality problems
3. Modelling

4. Priority areas for action
5. Significant pressures
6. Stakeholder knowledge

7. Community engagement
8. Stream walks
9. Co-design practice change
Early signs of progress in the Areas for Action

River WBs in PAAs 2013-2018

- 303 - no change
- 132 - improved
- 51 - declined

Net improvement of 16.7%

River Q values in PAAs 2019

- 389 - no change
- 74 - improved
- 22 – declined

Net improvement of 10.7%
Targeting measures for phosphorus:
Riparian zones, buffer strips, engineered ditches, wetlands, ponds.
Co-benefits for biodiversity, sediment, pathogens.
Targeting measures for nitrogen:
Nutrient management planning, soil fertility, protected urea, clover, less application of chemical N.
Co-benefits for ammonia, green house gases
Other drivers

It’s a busy landscape!
Challenges and opportunities

• Join up the messaging, actions and supports
• Identify and support measures that achieve multiple benefits - for water quality, air quality (ammonia), biodiversity, climate, natural flood mitigation, amenity and health and well-being
• Share cross-disciplinary knowledge, data and training – collaborative working
• Set outcome, results based targets, as well as activity targets. Track progress towards them and share the learnings
Thank you

Find out more on www.catchments.ie

Photo: Emma Quinlan