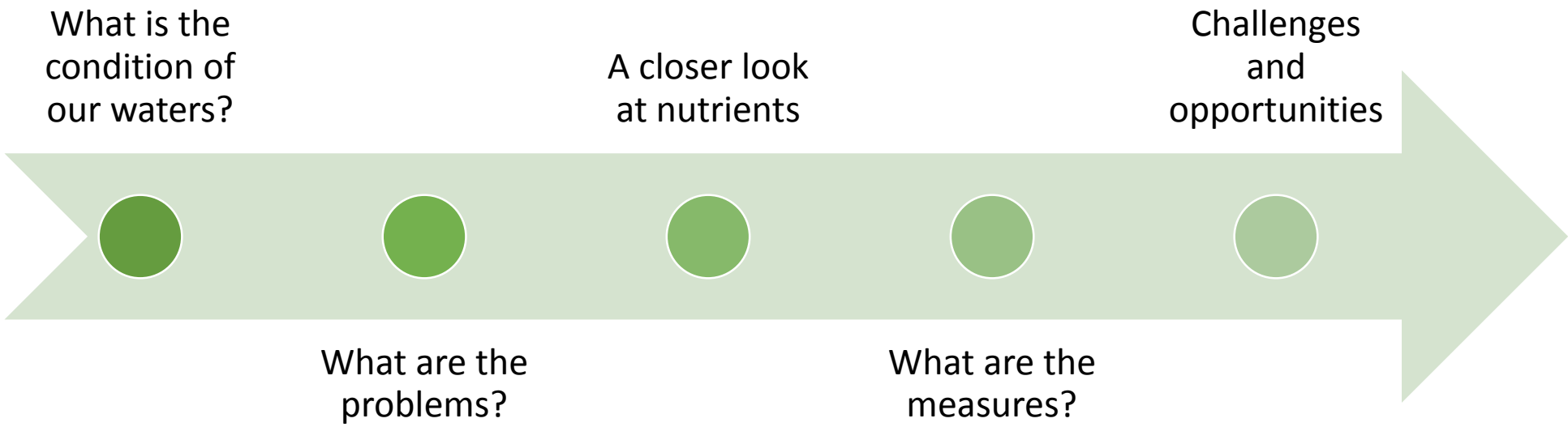
Water quality in Ireland
Where to from here?

Jenny Deakin and Eva Mockler

With thanks to colleagues from the EPA Water Programme

Outline

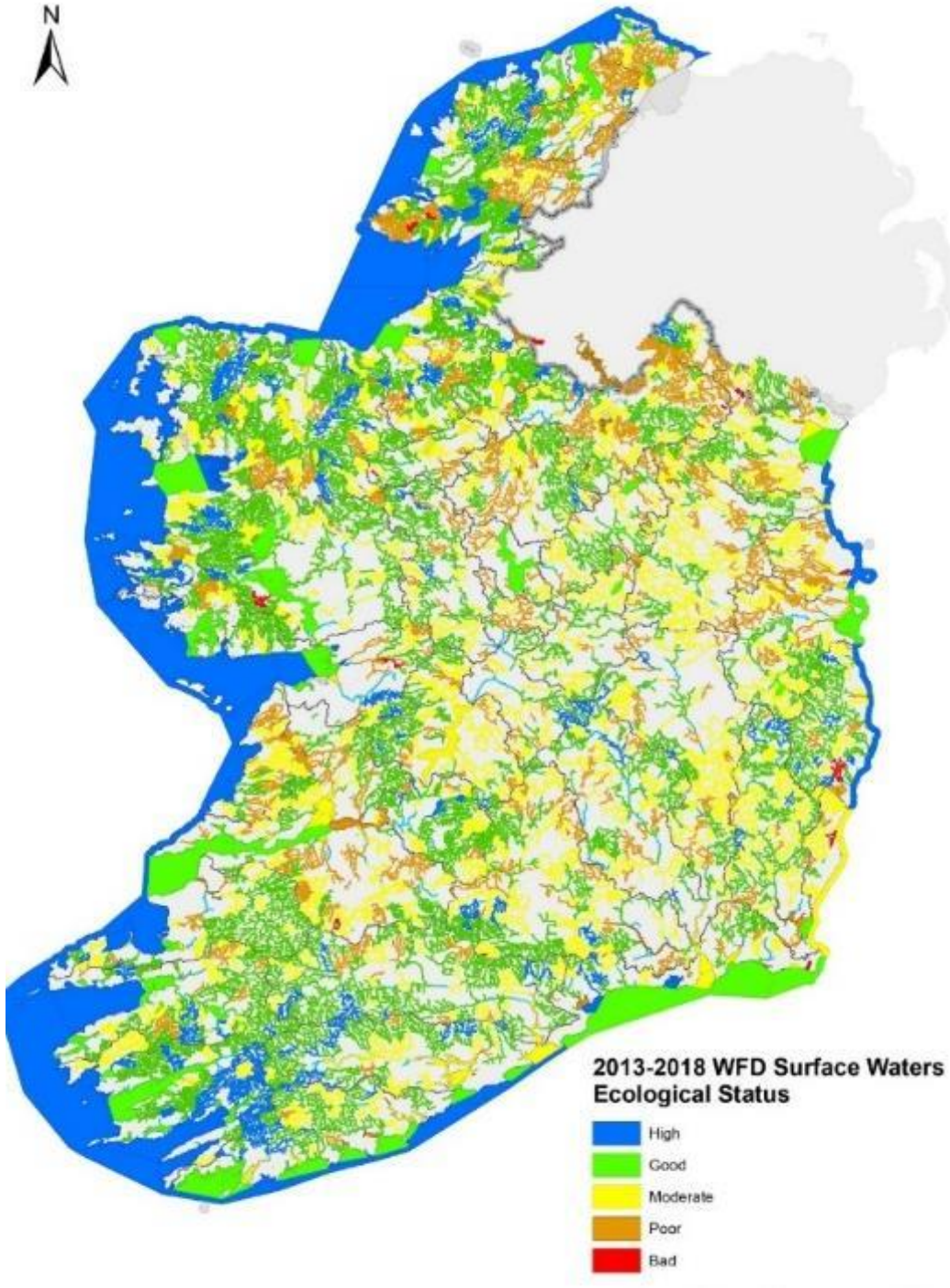
epaCatchments
Healthy • Resilient • Productive
Valued water resources supporting vibrant communities



What is the condition of our waters?

Distribution of ecological status

The problems are widespread



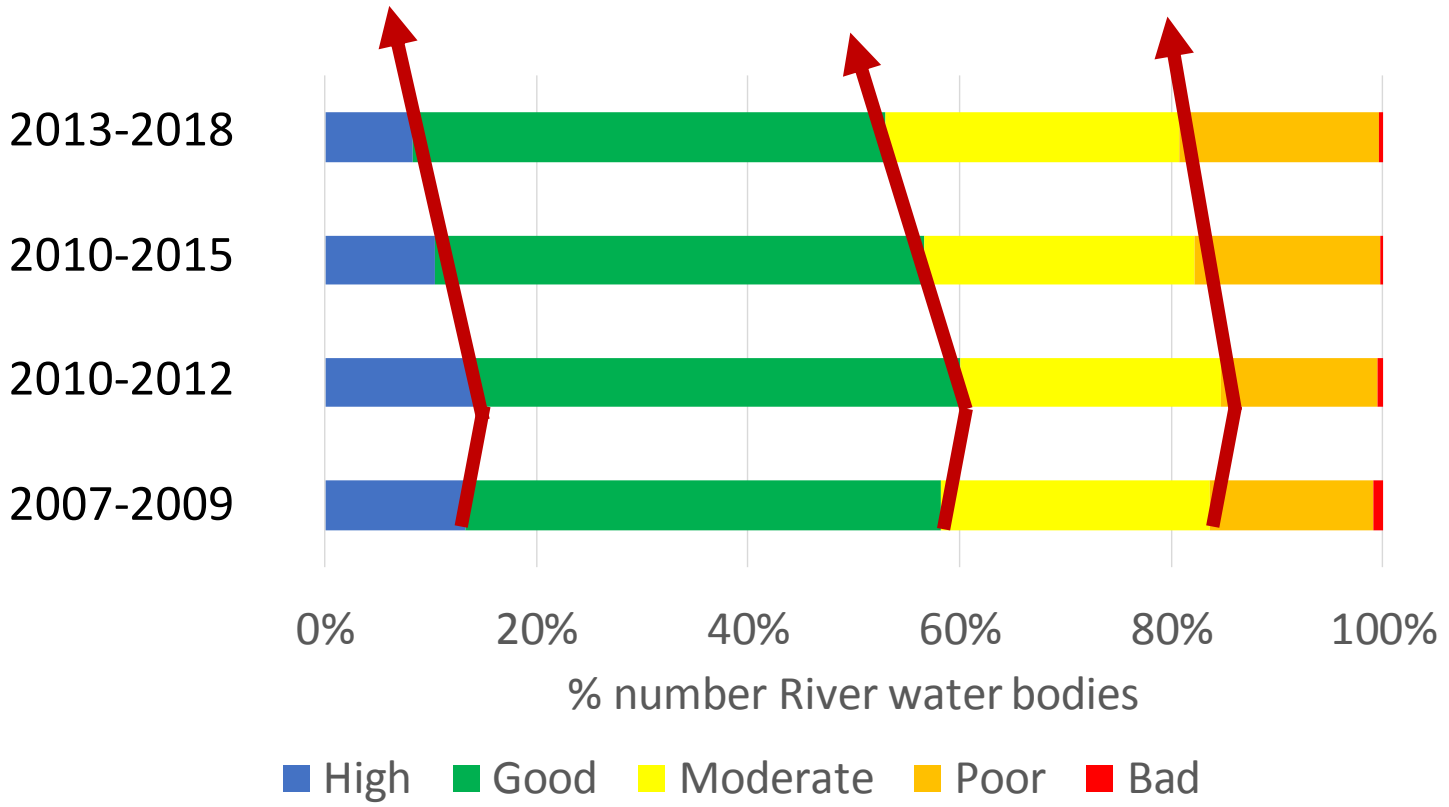
Environmental Protection Agency

Ecological status in 2018

Water body type	Satisfactory (%)	Change since 2015
Rivers	53%	5.5% ⇩
Lakes	50%	4.3% ⇧
Estuaries	38%	Stable
Coastal	80%	Stable
Canals	87%	Stable
Groundwater	92%	1% ⇧

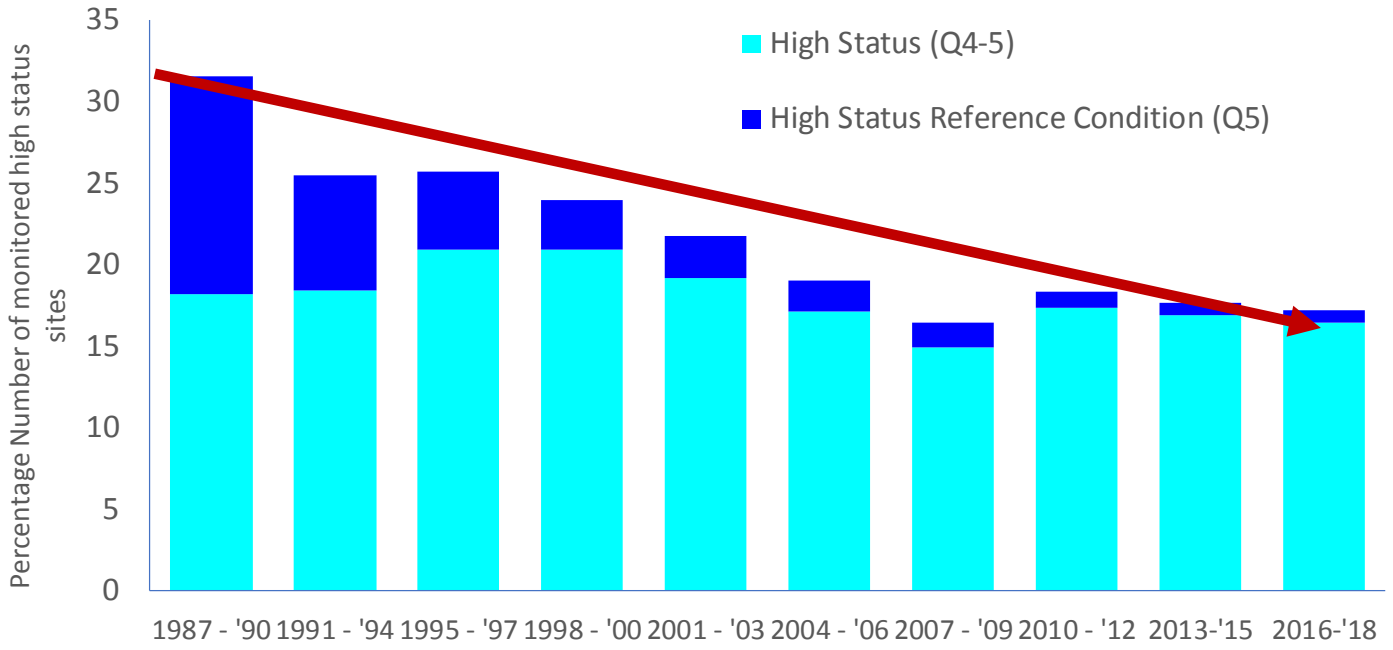
Our freshwaters and estuaries are in trouble

Trends in river waterbody status



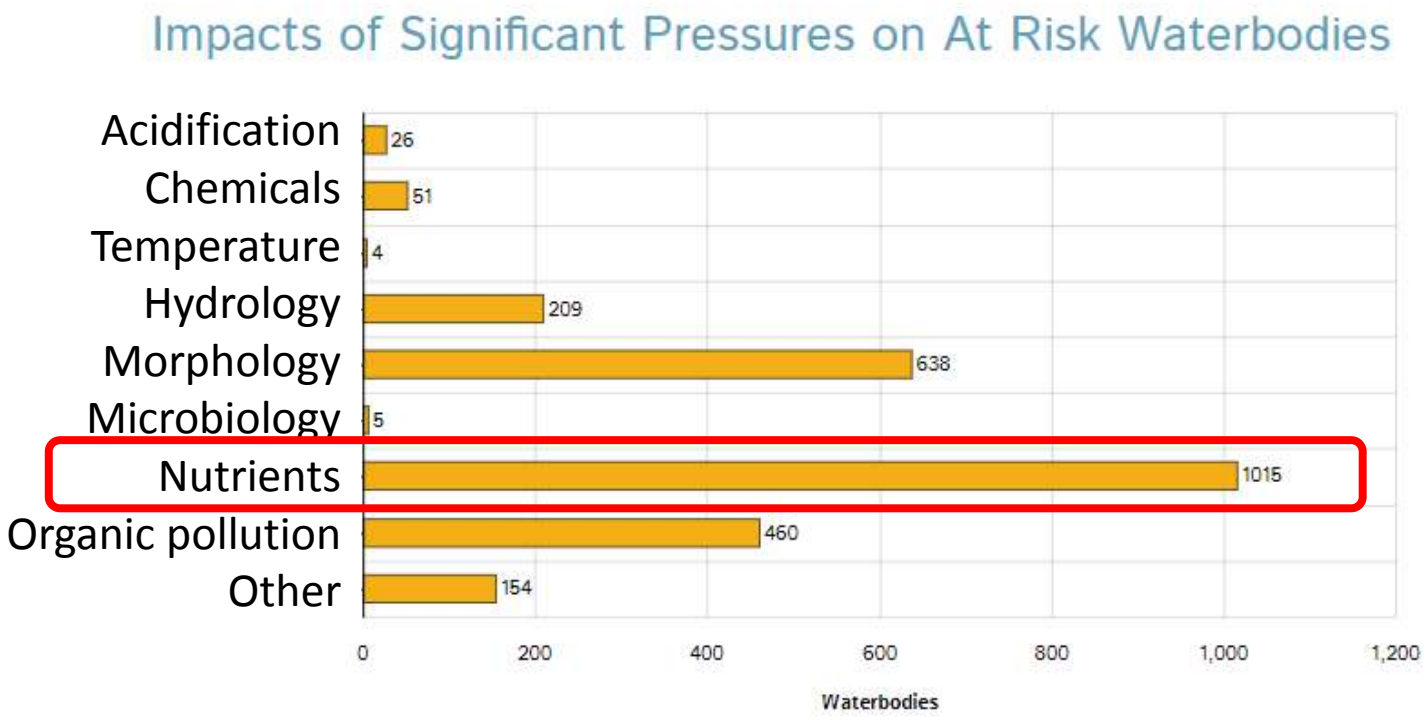
High status are in decline, Moderate/Poor are increasing

High status waters



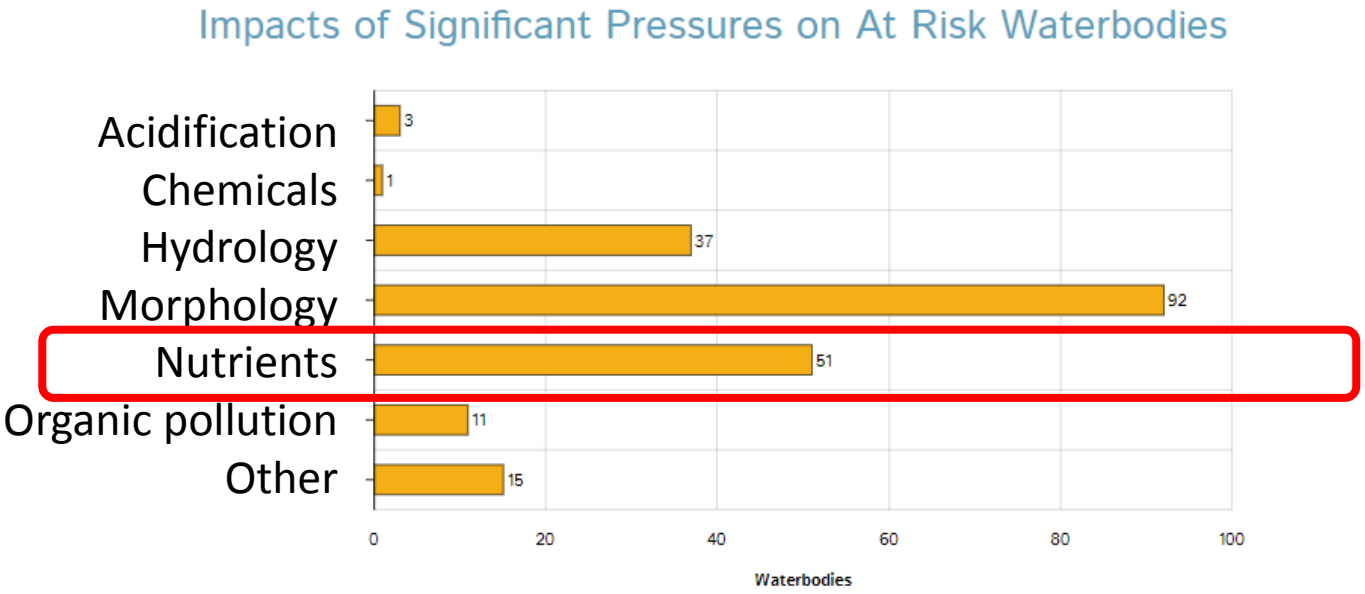
Only 20 highest quality sites left out of 500 in the 1980s

What is causing the problems?



Good status objective water bodies

1. Excess Nutrients
2. Morphology
3. Organic pollution



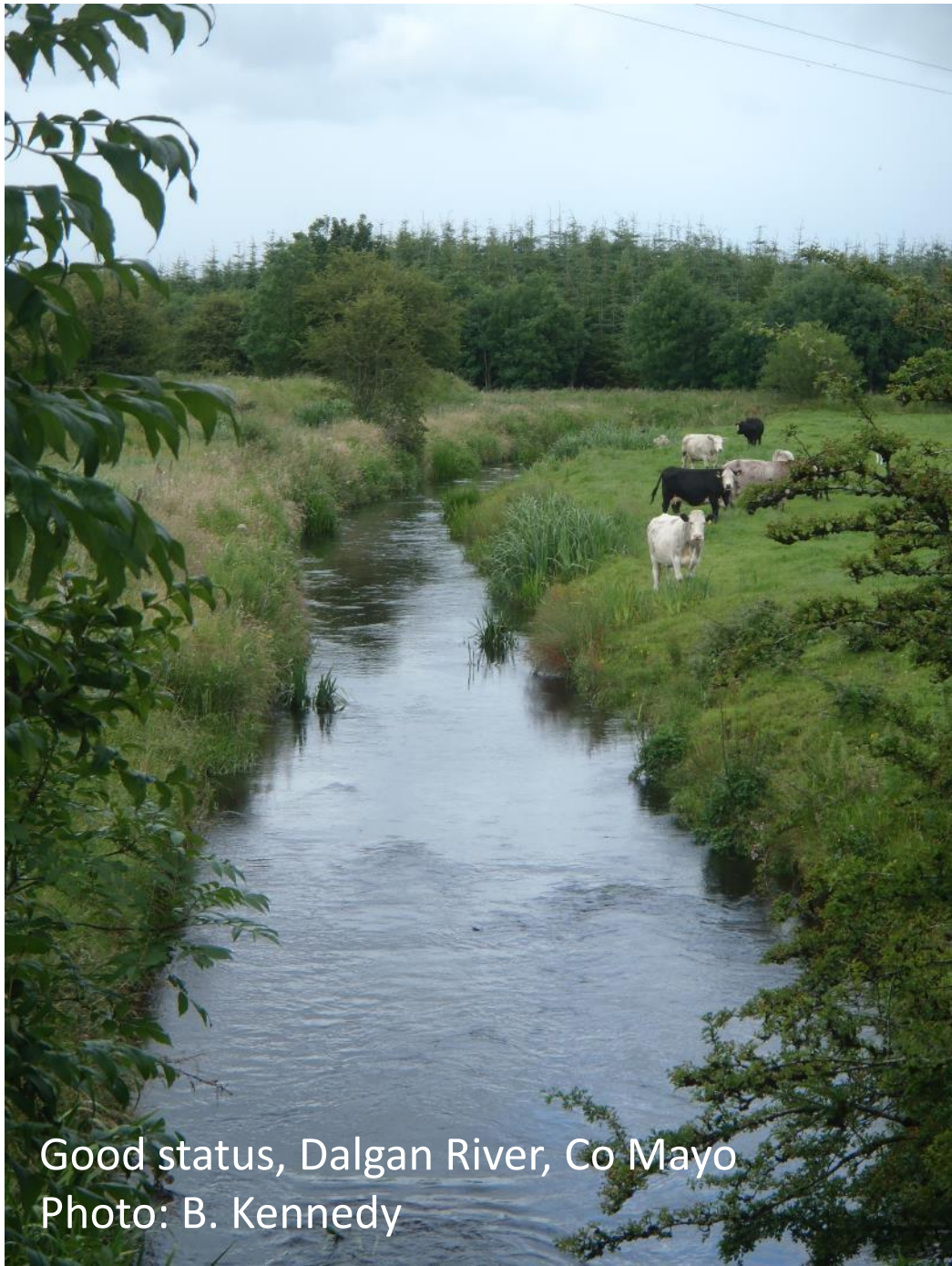
High status objective water bodies

1. Morphology
2. Excess Nutrients
3. Hydrology

Water quality impacts

More of this….

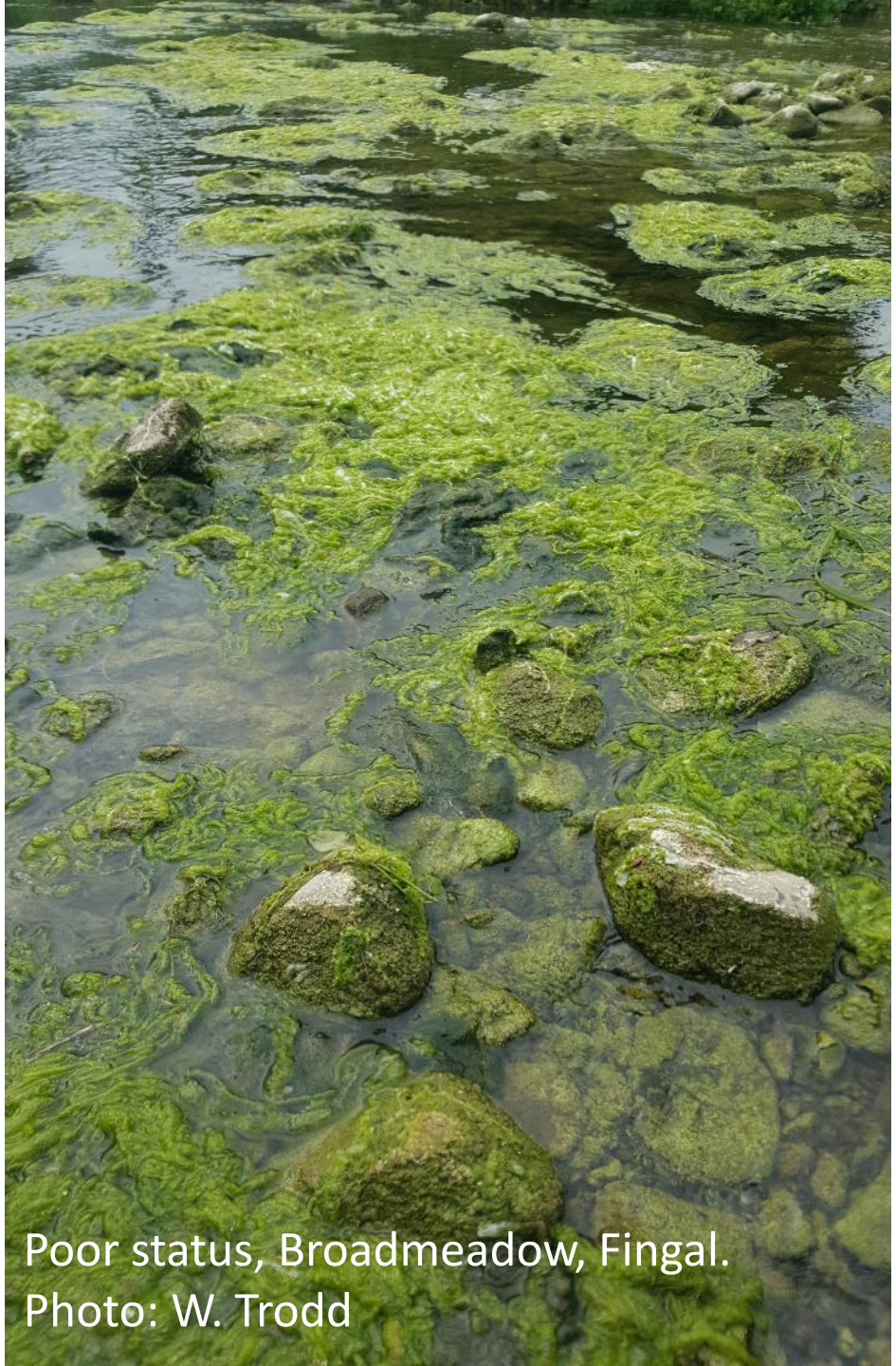
High status, Trimoge River, Co Mayo Photo: B. Kennedy



Good status, Dalgan River, Co Mayo
Photo: B. Kennedy

And less of this….

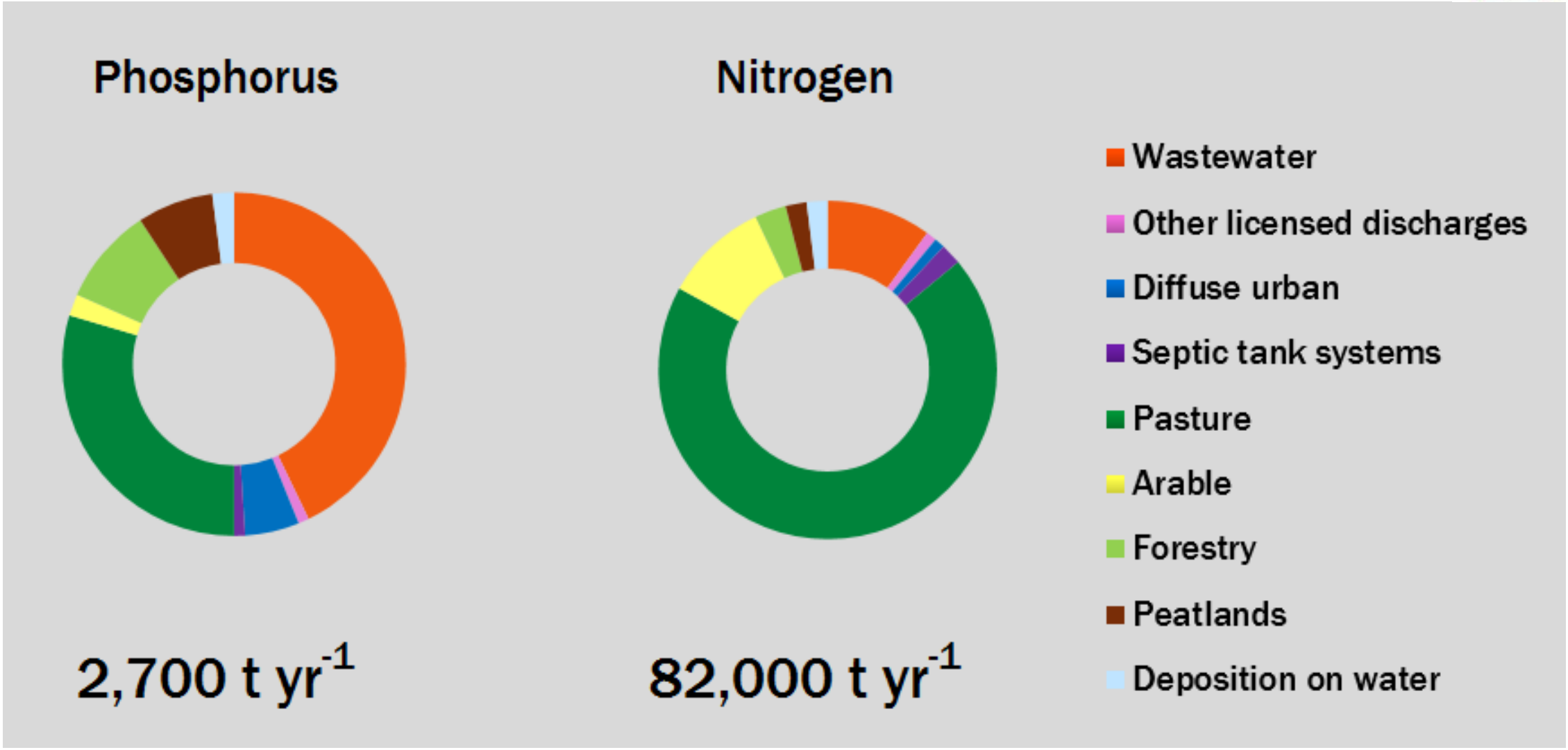
Moderate status, Lough Inchiquin, Co Clare. Photo: B. Kennedy



Poor status, Broadmeadow, Fingal.
Photo: W. Trodd

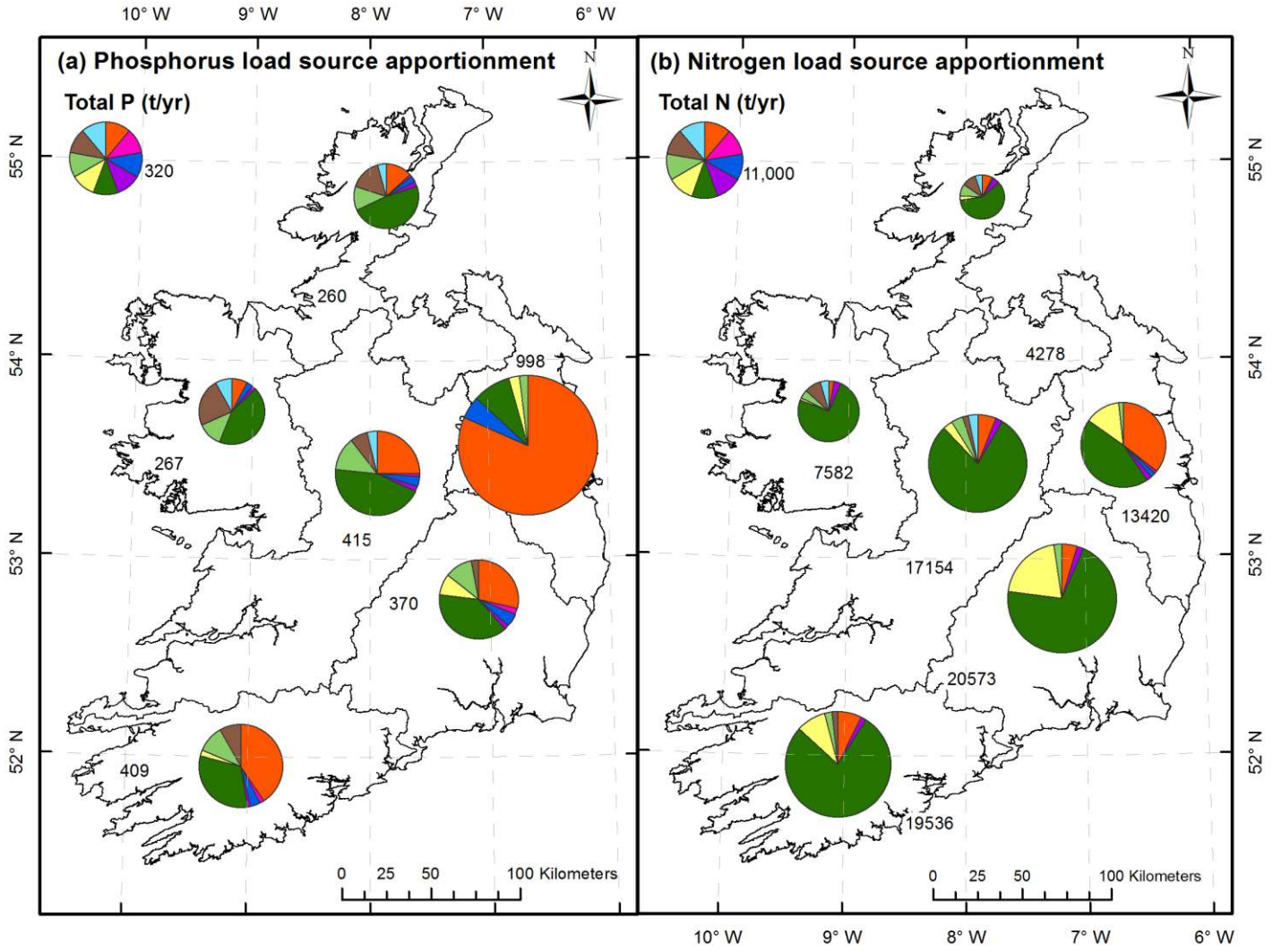
A closer look at nutrients

National Source Apportionment – emissions to water



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

Phosphorus sources Nitrogen sources



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

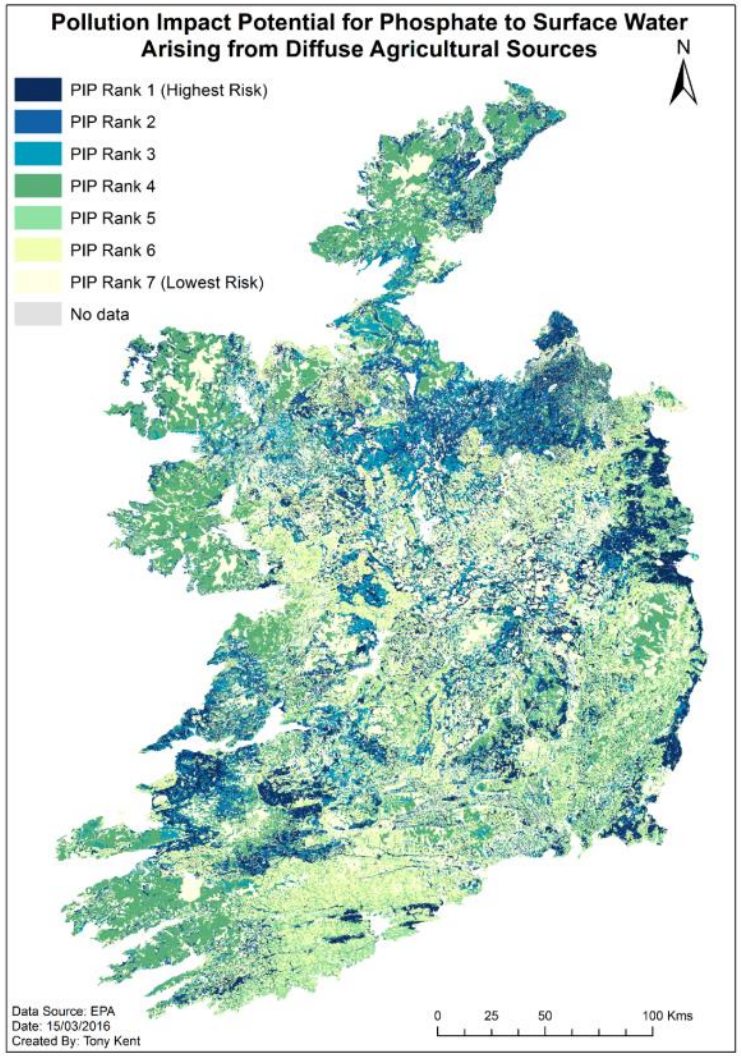
High risk for **phosphorus** loss
Poorly draining soils
Overland flow dominant
Poor correlation with intensity
Need to break the pathway
Lag time weeks to months

Mattock catchment, Co. Louth. Photo: J Deakin

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

Nuenna catchment, Co. Kilkenny. Photo: J Deakin

Critical source areas – risk of nutrient losses from diffuse agriculture

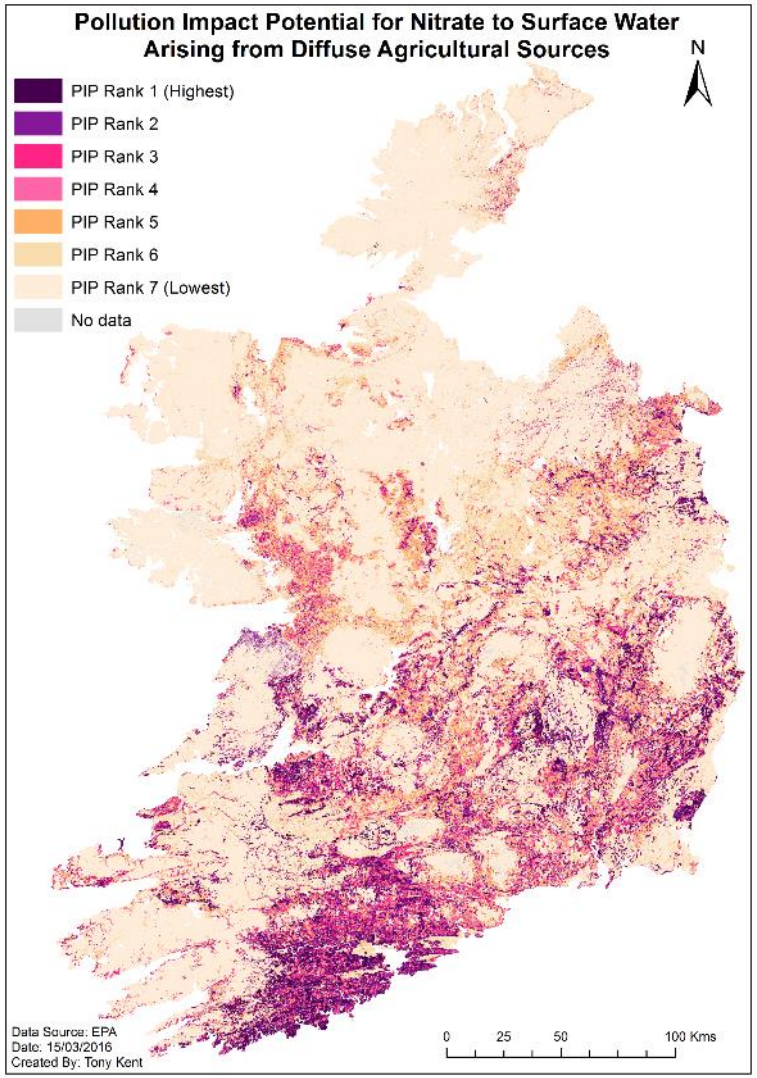


Phosphorus

Nitrate

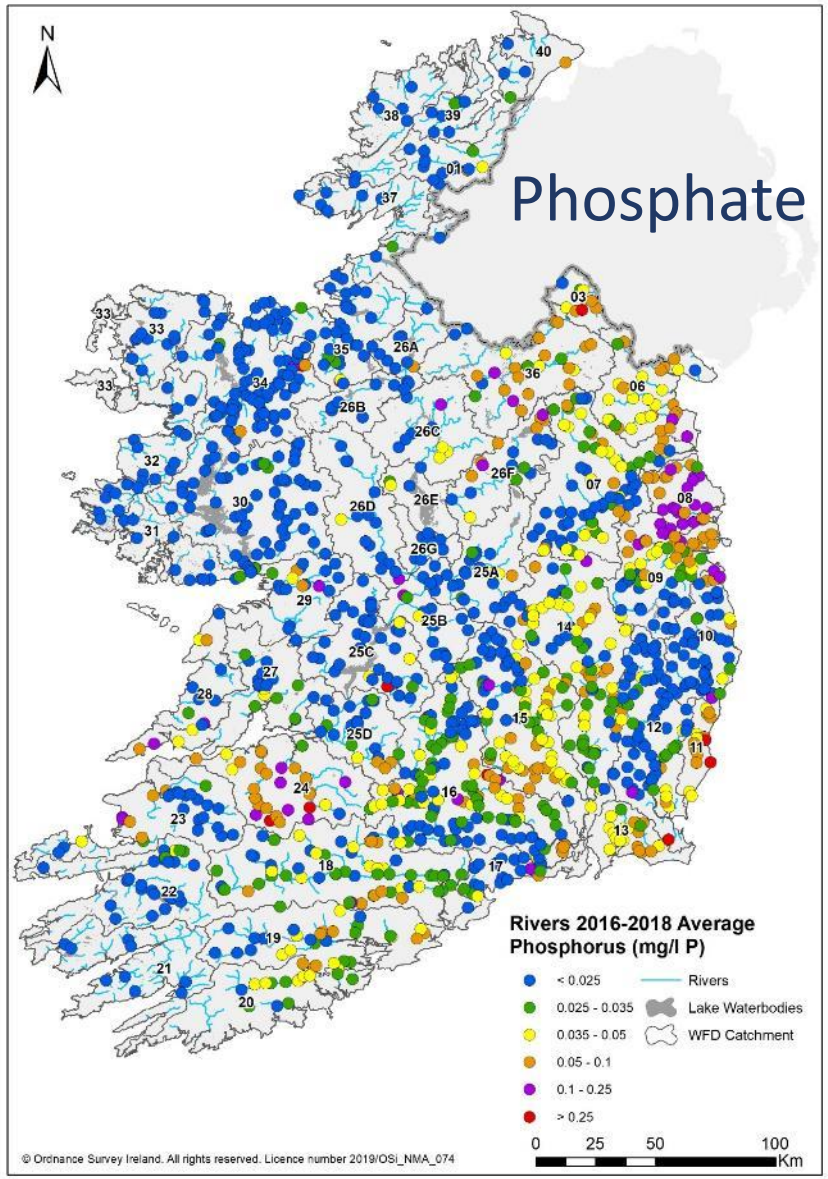
Load + susceptibility

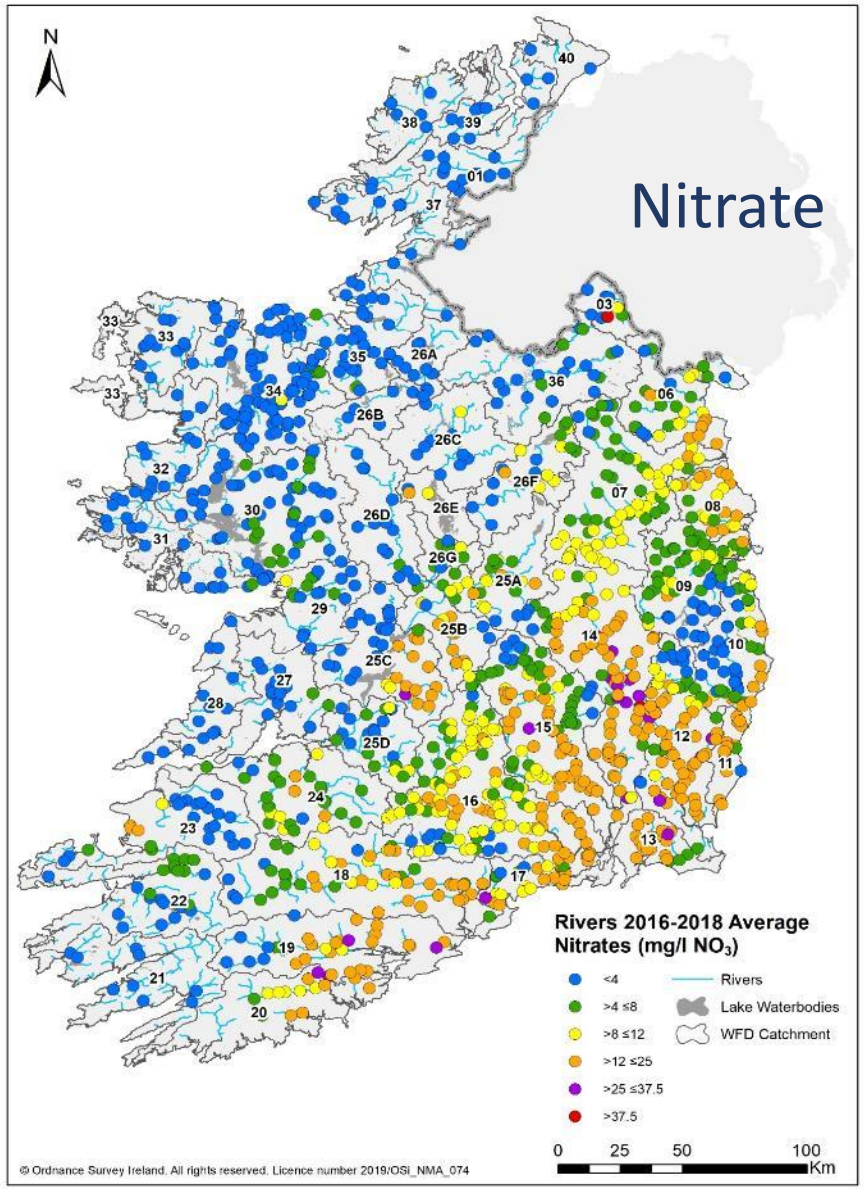
2012 DAFM data – currently being updated



River water quality 2016-2018

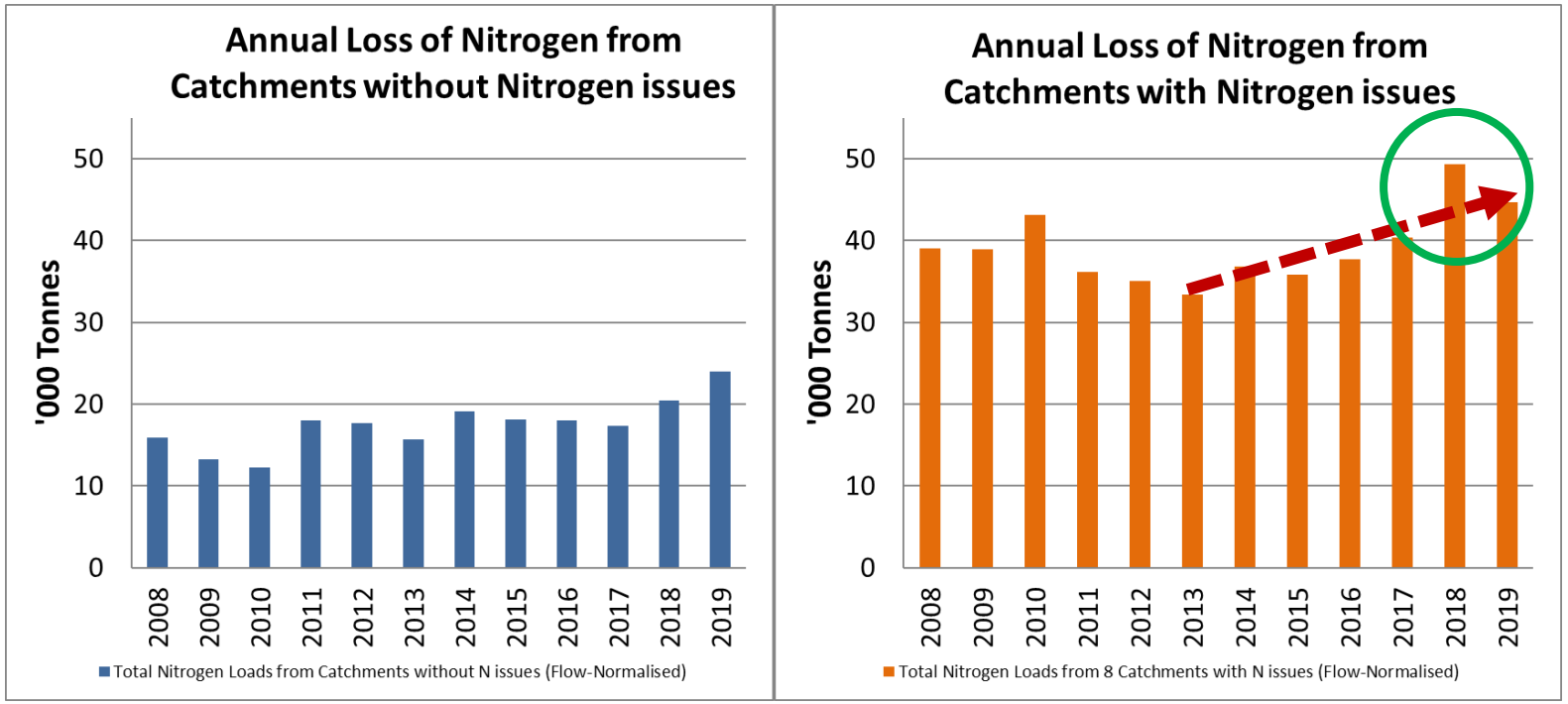
Environmental Protection Agency

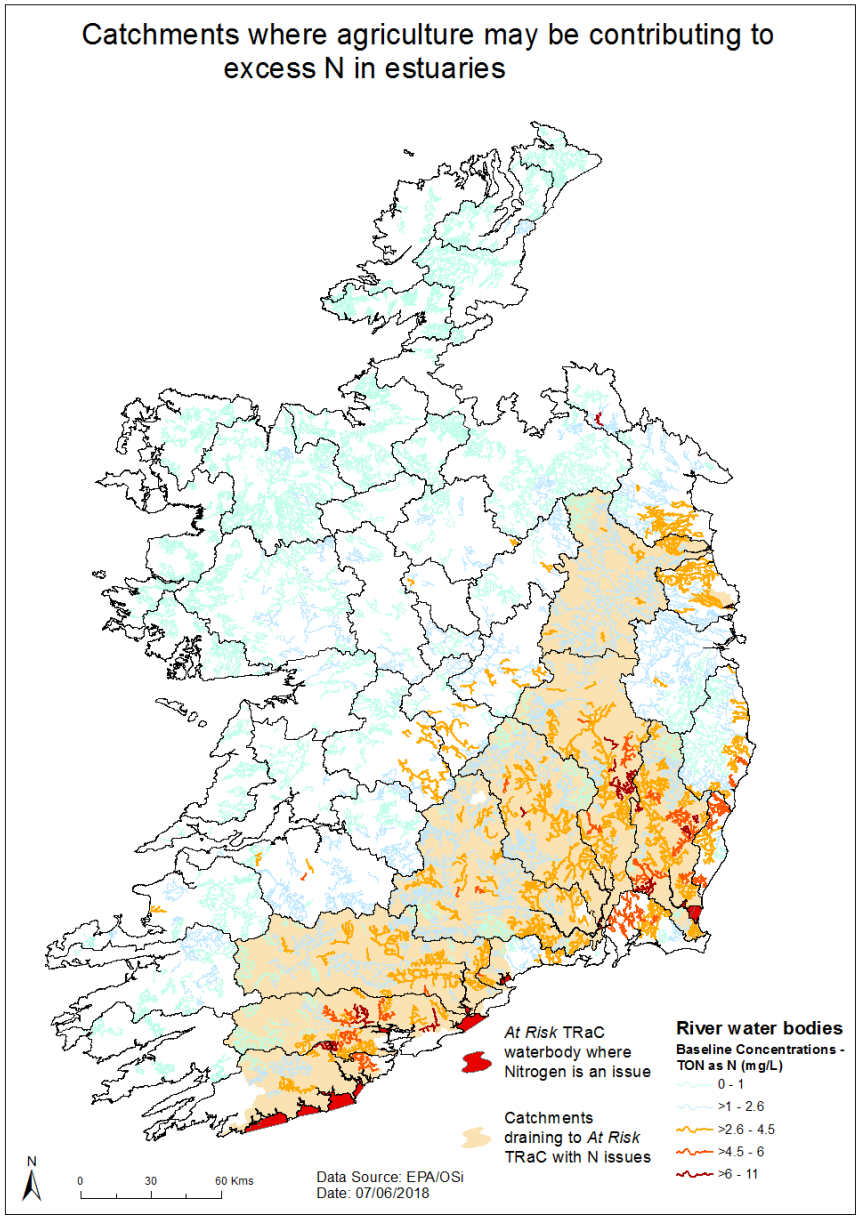




Regional agricultural nitrogen issues

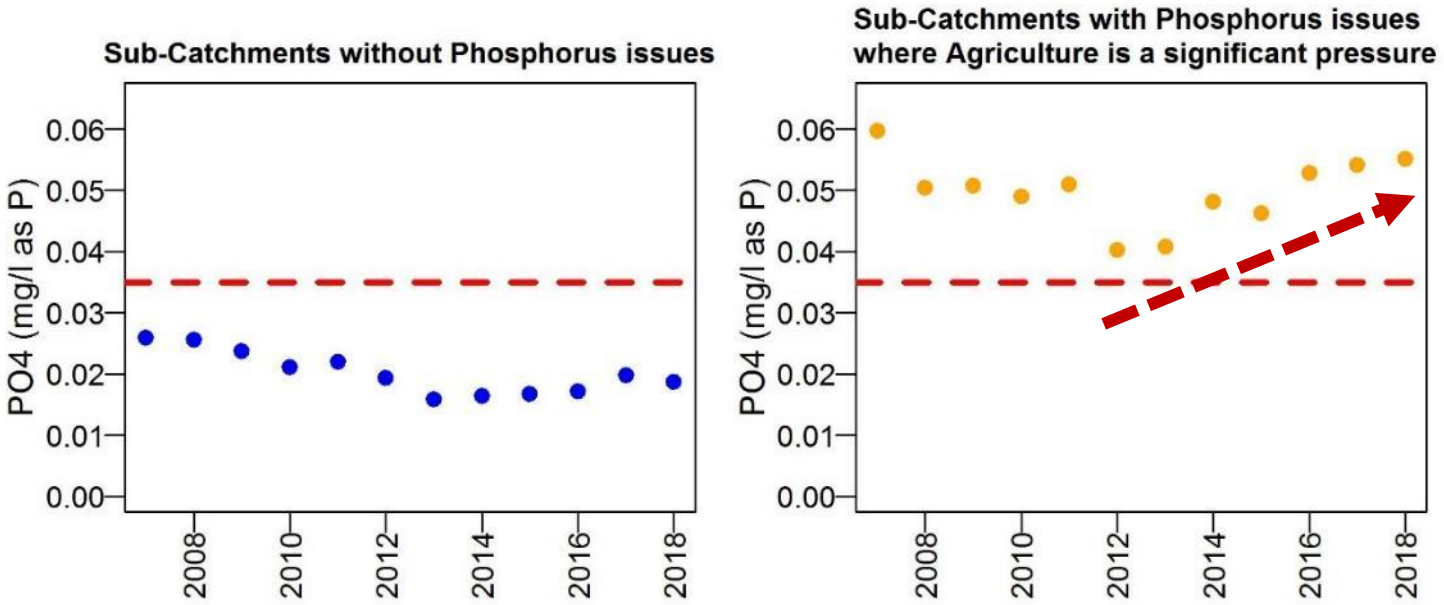
- In the freely draining catchments in the south east, nitrogen losses continue to rise, and are over double the annual losses from the west.
- Agriculture is the main source.
- Spike in losses in 2018 in a drought year. 2020?

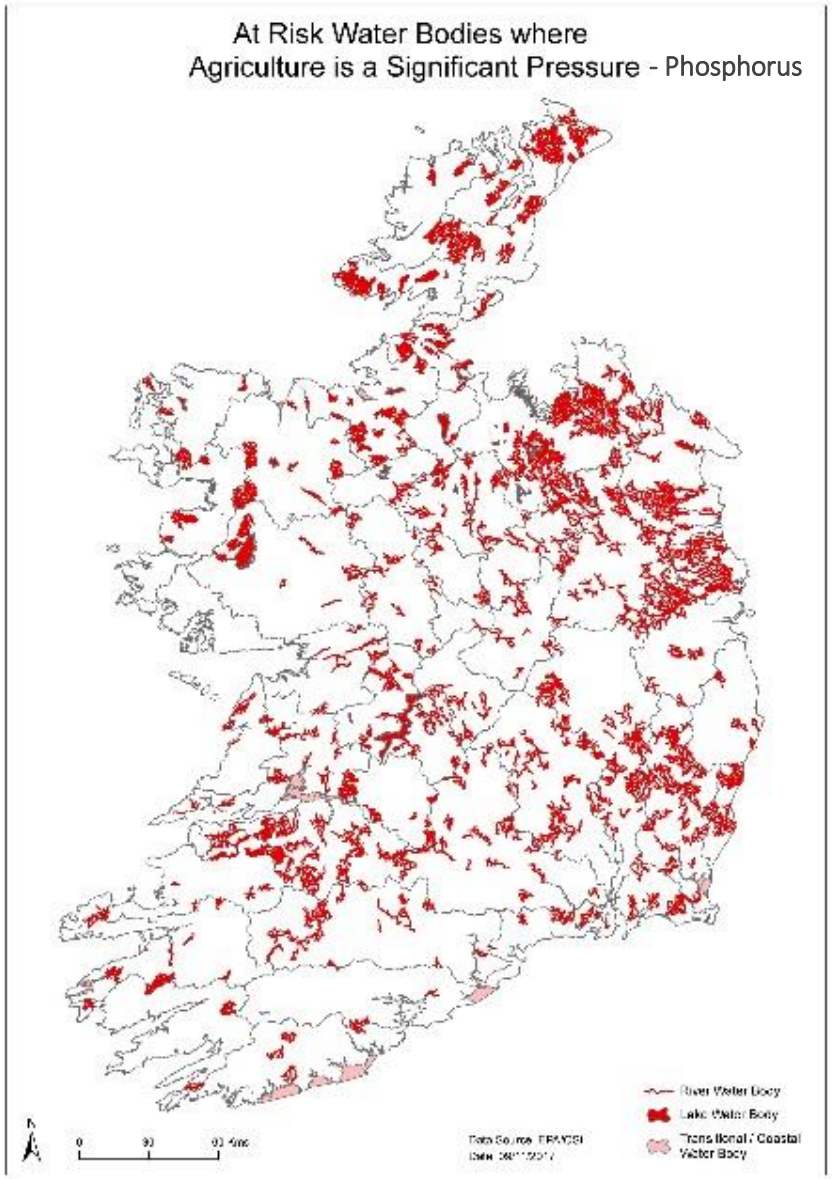




Regional agricultural phosphorus Issues

- In the poorly draining catchments, phosphorus losses are rising, and are over double the annual losses elsewhere.





Targeted Agriculture Measures for Water Quality

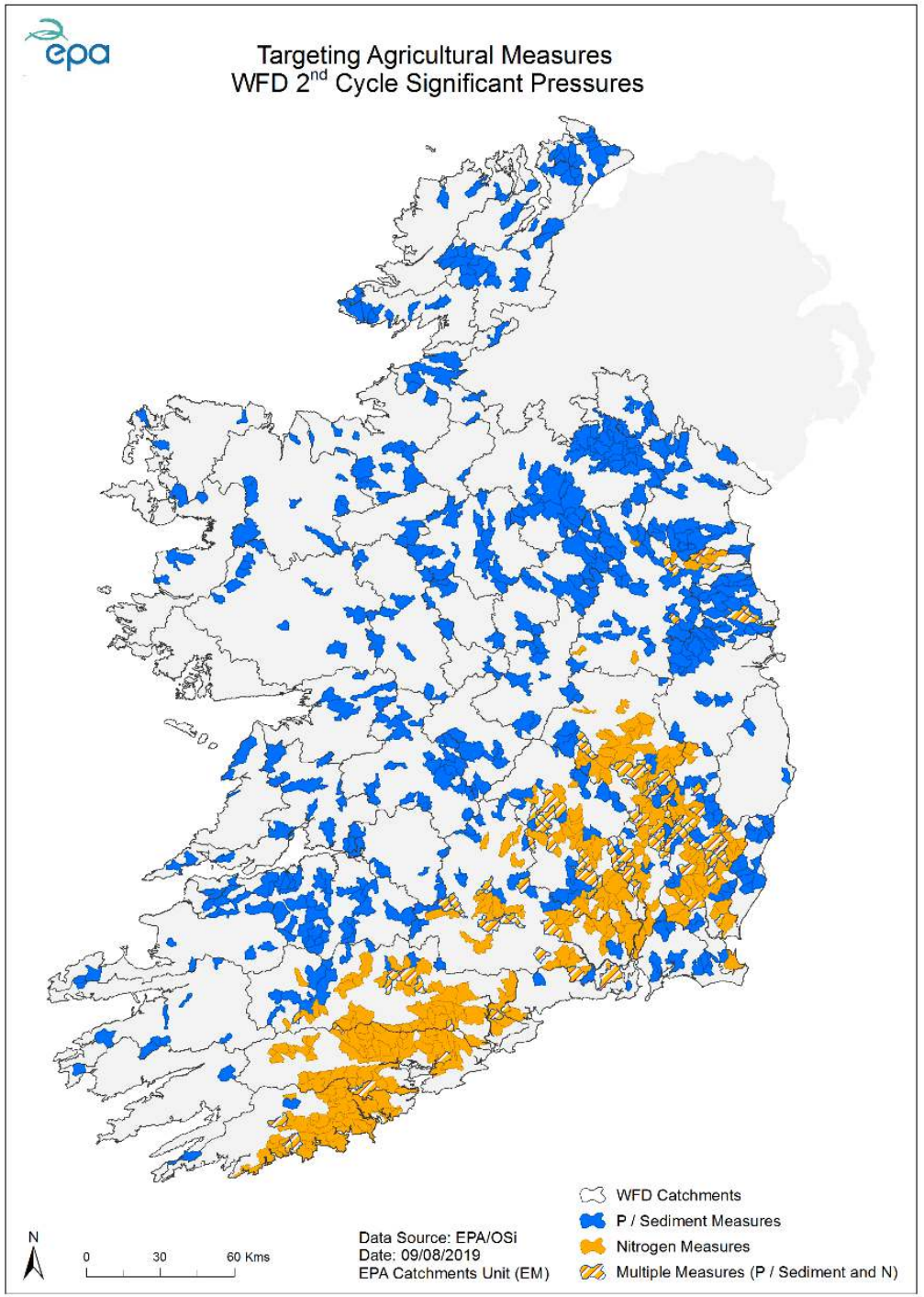
Measures to reduce phosphorus and sediment loss

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.

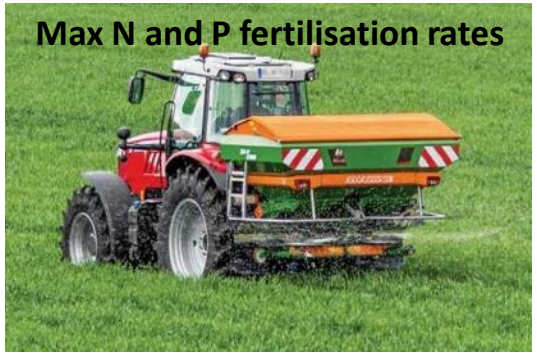
‘The right measure in the right place’



What are the measures?

“The right measure in the right place”

4th Nitrates action programme (NAP) + interim review
5th NAP in preparation



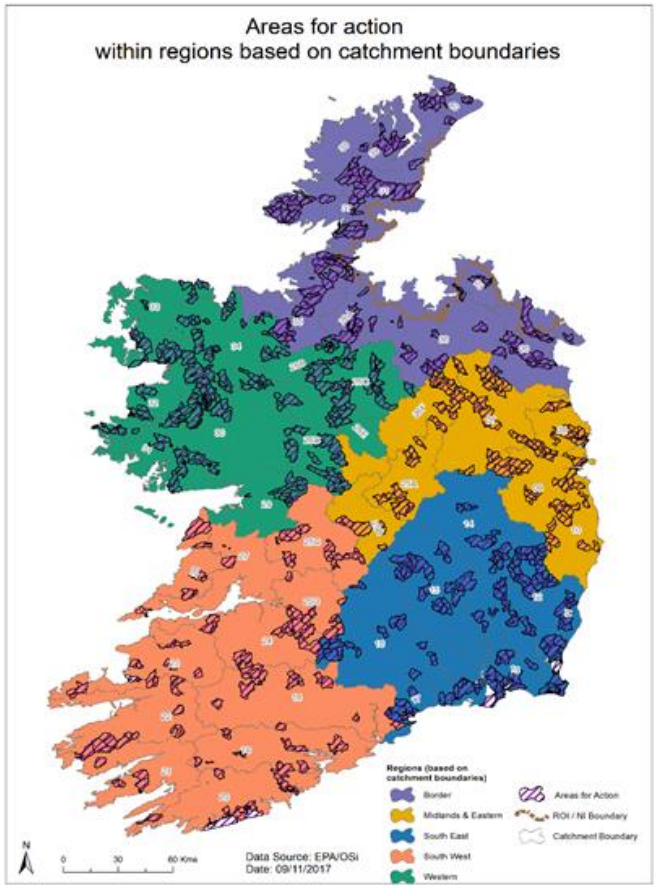
Baseline standard measures
One size fits all
Can only go so far
Not enough on its own

Rules are largely input based

Source: DAFM

WFD River basin management plan – a targeted approach

190 Priority Areas for Action



Local Authority Waters Programme
vibrant communities | catchment assessment | healthy waters

eagasc
Agriculture and Food Development Authority

Dairy Sustainability Ireland

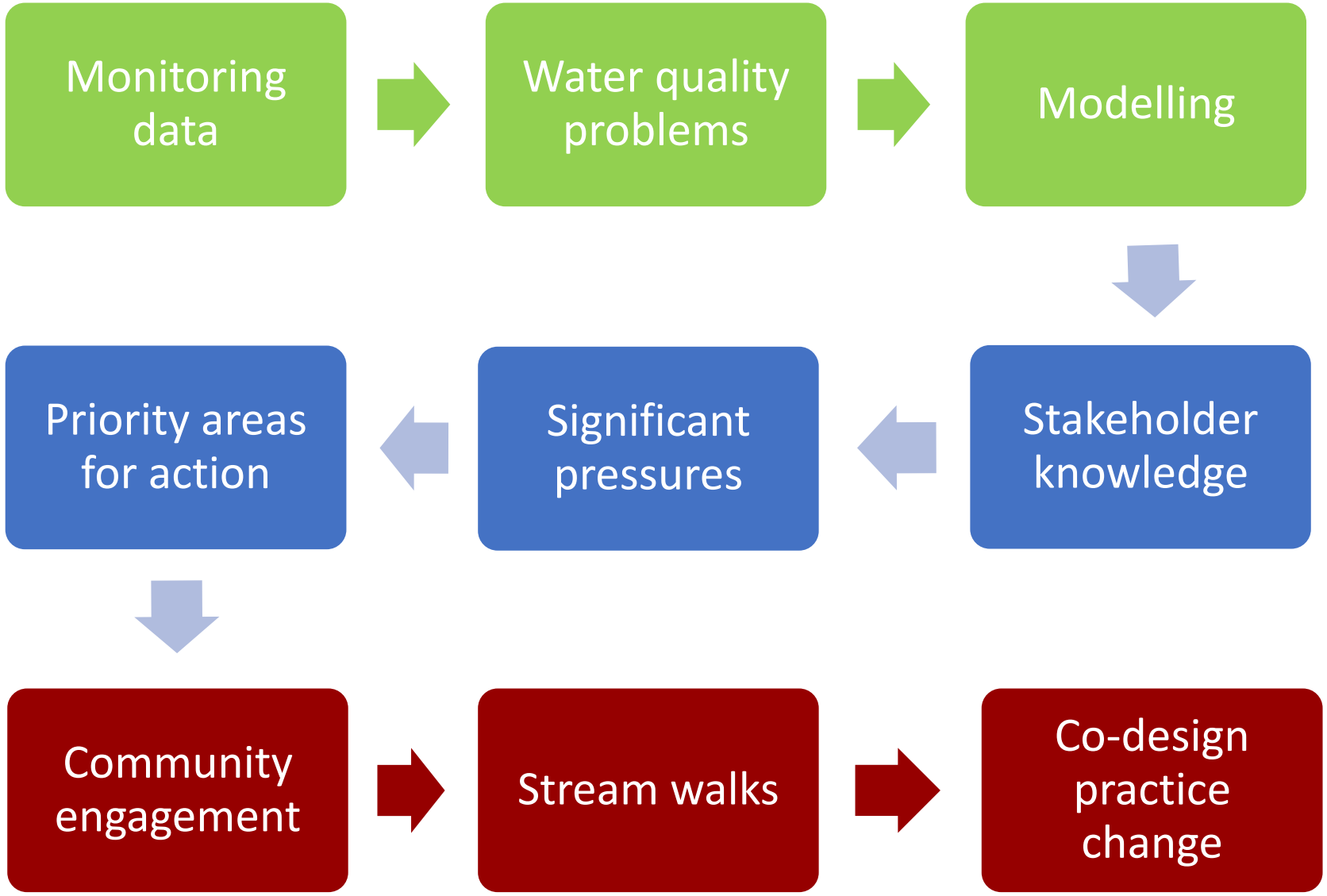
TOTAL 89

Local Authority Waters Programme
vibrant communities | catchment assessment | healthy waters

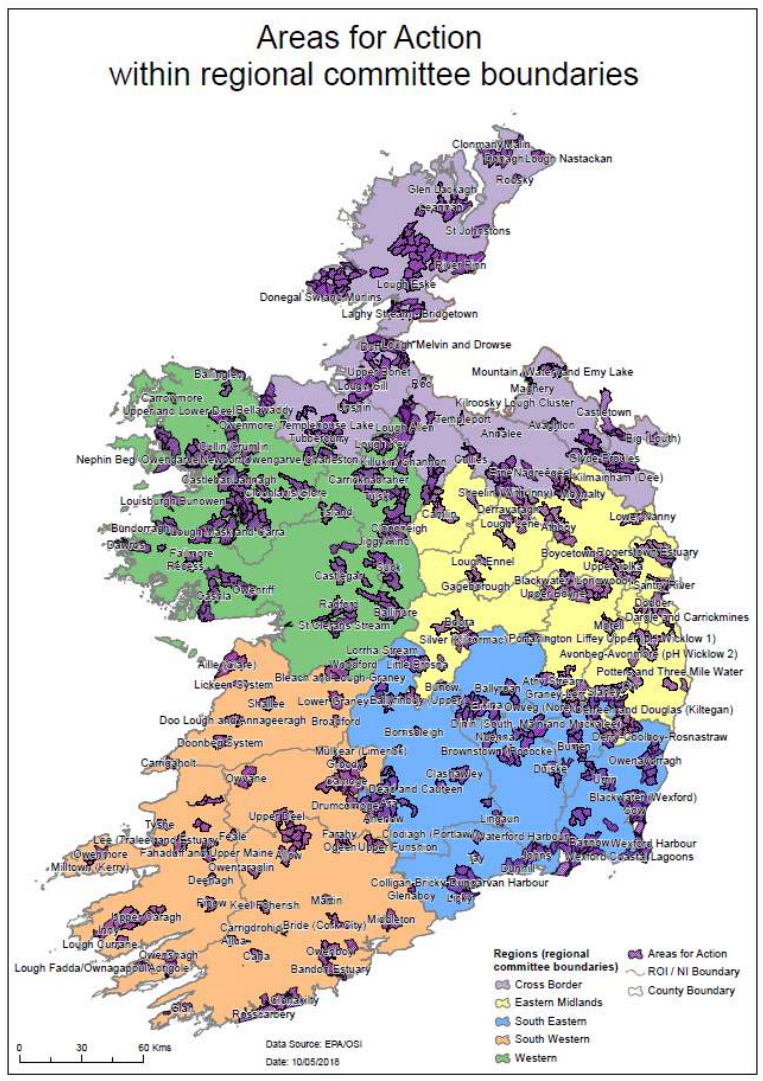
+ support staff

epa
Environmental Protection Agency

Areas for Action process – all pressures together



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


Photo: Newcastle University


Photo: B Kennedy


Photo: R Little

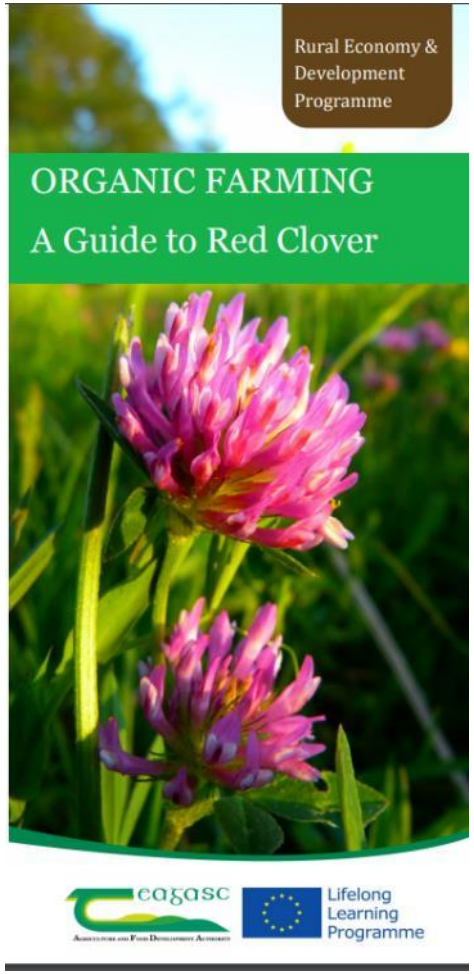

Photo: Allerton farm

Targeting measures for nitrogen:

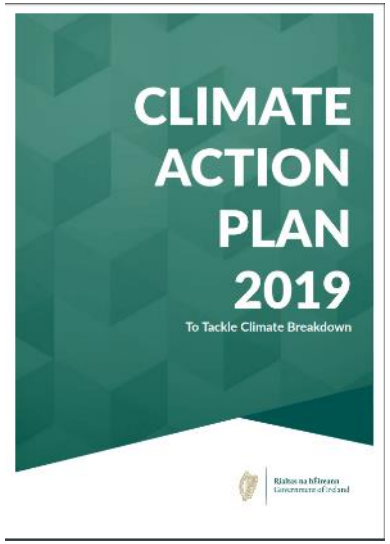
Nutrient management planning, soil fertility, protected urea, clover, less application of chemical N.

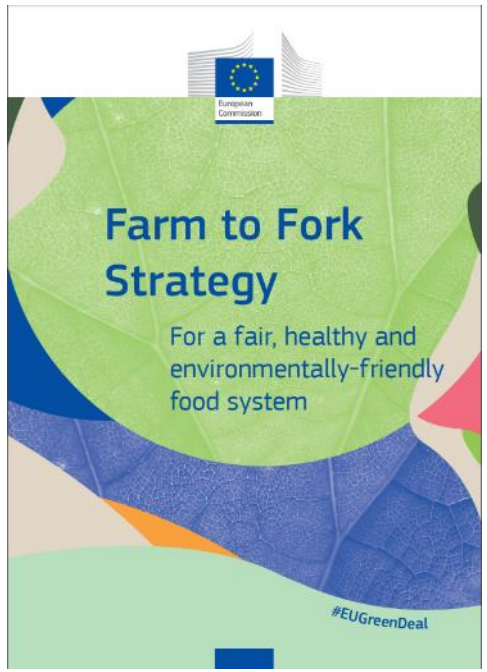
Co-benefits for ammonia, green house gases

Photo: Thatsfarming.com



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