

Agriculture and water quality in Ireland: new ideas for policy¹

Wellington Osawe (U of Galway), John Curtis* (ESRI), Cathal O'Donoghue (U of Galway)

ESRI Research Bulletins provide short summaries of work published by ESRI researchers and overviews of thematic areas covered by ESRI programmes of research. Bulletins are designed to be easily accessible to a wide readership.

INTRODUCTION

Agricultural production is a major pressure on water quality. Since the 1990s, many policies and programmes have been designed to mitigate this risk, including programmes such as the Rural Environment Protection Scheme (REPS); the Agri-Environment Options Scheme (AEOS); the Green, Low-Carbon Agri-Environment Scheme (GLAS); Agricultural Sustainability Support and Advisory Programme (ASSAP); and the Agri-Climate Rural Environment Scheme (ACRES). While these schemes have contributed to environmental protection, water quality problems persist. As a general assessment, policy measures have been unsuccessful in returning most water bodies to 'good' status, as defined under the EU Water Framework Directive.

The Environmental Protection Agency (EPA) has been clear on the sources of water pollution - increasing nitrogen and phosphorus loads in water bodies emanating from agriculture and urban wastewater plants, in particular. The focus of this research is the agricultural sector because it is the most challenging sector in relation to pressures on water quality. We advocate for a new framework for mitigating the risk to water quality resulting from agricultural production, essentially moving the focus from mitigation actions at the farm level to water quality targets at the catchment level.

If we are to see significant improvements in water pollution from agriculture, an immense evolution in policy is necessary.

¹ This Bulletin summarizes the findings from: Osawe, O.W., Curtis, J., & O'Donoghue, C. (2024). Agriculture and Water Quality in Ireland: New Ideas for Policy. *Biology and Environment: Proceedings of the Royal Irish Academy* 124(1), 1-15. <https://doi.org/10.1353/bae.2024.a930314>.

* Correspondence: John.Curtis@esri.ie

METHODS

Based on a literature review, and in the context of agri-environment schemes aiming to protect and improve water quality, the research outlines a framework comprising 5 key attributes that should be inherent to future agri-environment schemes.

1. Results-based incentives

Payments for agri-environment services delivered by farmers should be results-based. Such an approach aligns farmers' incentives with scheme objectives. Historically, many schemes have compensated farmers for the provision of inputs (e.g., tree planting, etc.) rather than for environmental improvements (e.g., water quality).

2. Area-based payments

Good environmental outcomes need to be delivered at scale, which means that good agricultural practice needs to occur across farms and catchments to enable a step-change in environmental outcomes. Consequentially, financial incentives should be implemented on a per-hectare basis (where relevant) to encourage participation.

3. Catchment-based

Environmental outcomes within water catchments depend on all activities occurring within the catchment, not just single farms. Therefore, agri-environment scheme outcomes should be assessed at the catchment level in the case of water quality and not on a farm-by-farm basis. This approach will ensure that environmental monitoring, outcomes, and agri-environment schemes align.

4. Simplicity

Rule books for agri-environment schemes are long and complex. A results-based scheme should facilitate a simpler rule book and less administration. If payment is ultimately based on environmental outcomes, generally, how the outcomes are achieved is not that pertinent, assuming no other adverse environmental externalities.

5. Flexibility

Historically, rule books for agri-environmental schemes were fixed and did not allow much flexibility. Schemes should be as adaptable as possible to changing conditions and knowledge such that they continue to incentivise participants to achieve the best environmental outcomes.

PROPOSAL

Based on the framework above, the paper outlines a proposal for future agri-environment schemes to achieve good water quality status, the core elements of which are briefly described.

The proposal envisages payments to farmers within a catchment proportional to water quality outcomes within the catchment. To facilitate this, environmental

monitoring should be expanded to produce assessment reports for each catchment on an annual basis so that scheme payments reflect the most recent performance and facilitate flexibility in farming practices.

With a scheme that focuses on whole-of-catchment and payments based on catchment water quality, all agricultural land within a catchment should be covered by the scheme. All farmers within a catchment would share the results-based payment.

Rather than national limits, all catchments should have bespoke nitrates (and phosphates) limits based on catchment assimilative capacity, i.e., catchment nitrates quotas. Trading quotas between farmers within catchments would facilitate the development of the most efficient or intensive farms without impinging on water quality.

The proposed scheme ultimately envisages payments to farmers within a catchment, proportional to water quality outcomes. As there will be a time lag before improvements in water quality are observable, payment could comprise three elements in a transition phase. One element of the payment would be for water quality outcomes, a second element would cover costs related to modifying farming practices to transition to a lower nitrates operation, and a final element would encompass the more traditional input-based payment (e.g., tree planting, field margins, etc.).

CONCLUSION

In some respects, the framework for agri-environment schemes proposed here is an incremental evolution of previous schemes, but in other respects, it represents a radical departure, moving away from a largely inputs-focused farm-holding level scheme to one with a focus on catchment-level outcomes. Water Framework Directive governance operates at catchment and river basin levels. Water quality pressures from the agriculture sector should be managed on a similar basis.