

INTRODUCTION

Background:

- Approx. 500,000 domestic wastewater treatment systems (DWWTS) supplying 80% of rural dwellers in the ROI; malfunctioning DWWTS pose environmental health risks.
- Rural households both source and receptor of private well contamination, with DWWTS a key point source; threat to water quality exacerbated by climate change.
- Obligations to preserve water quality under *EU Water Framework Directive* (2000/60/EC) and *Water Services Act 2007* (as amended).
- National Inspection Plan* (NIP) developed by EPA in 2012 to address regulatory and behavioural deficits; comprises min. 1,200 annual DWWTS inspections in high-risk areas and public communication strategy.

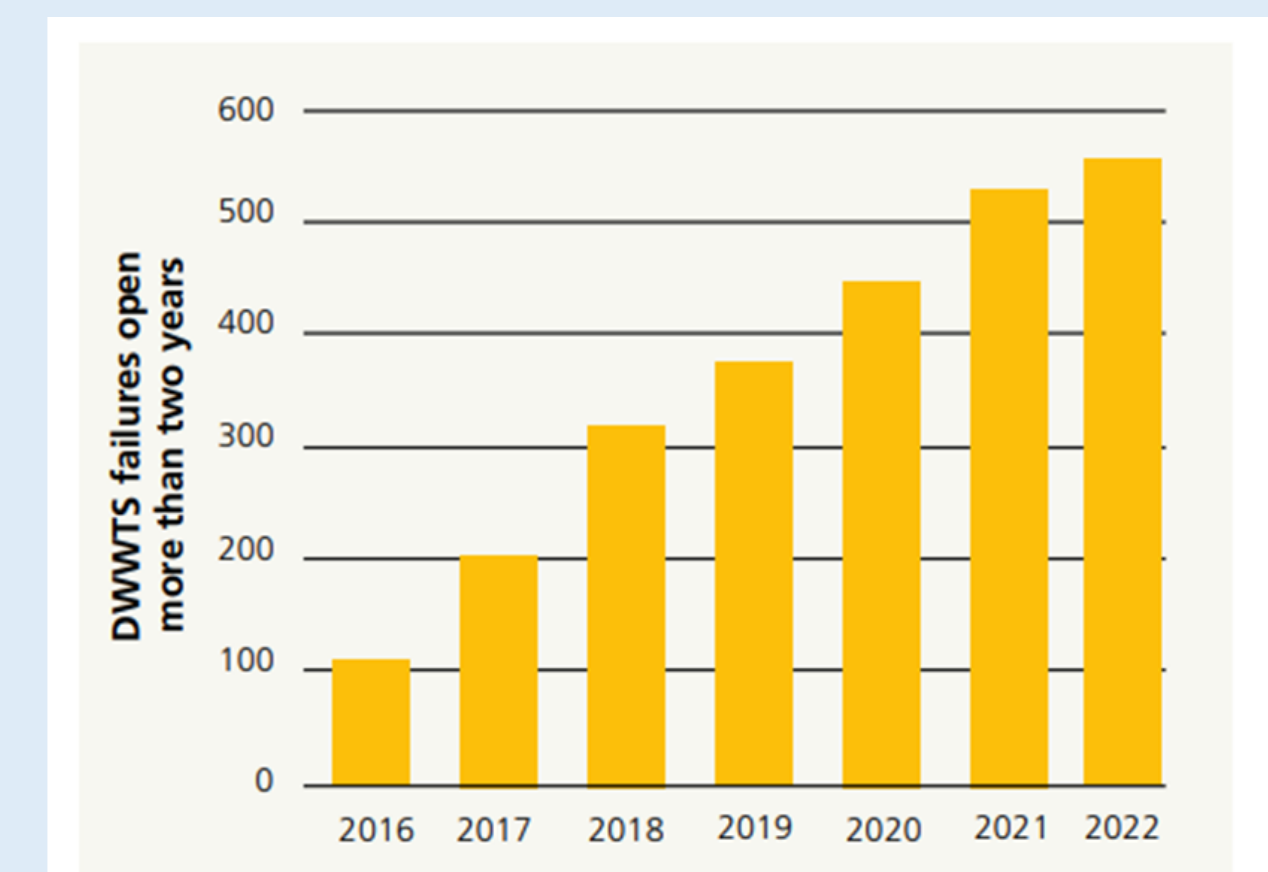
Problem:

- Failure rates persistently high (45-57% over last decade); growing number of unresolved advisory notices, with 500+ in 2022.
- Variation in fixing rates among local authorities (as low as 53%).
- Reasons unknown and warrant investigation amid high national VTEC rates associated with private well water exposure and rising climate extremes.

Figure 1: National Inspection Plan (EPA, 2021).



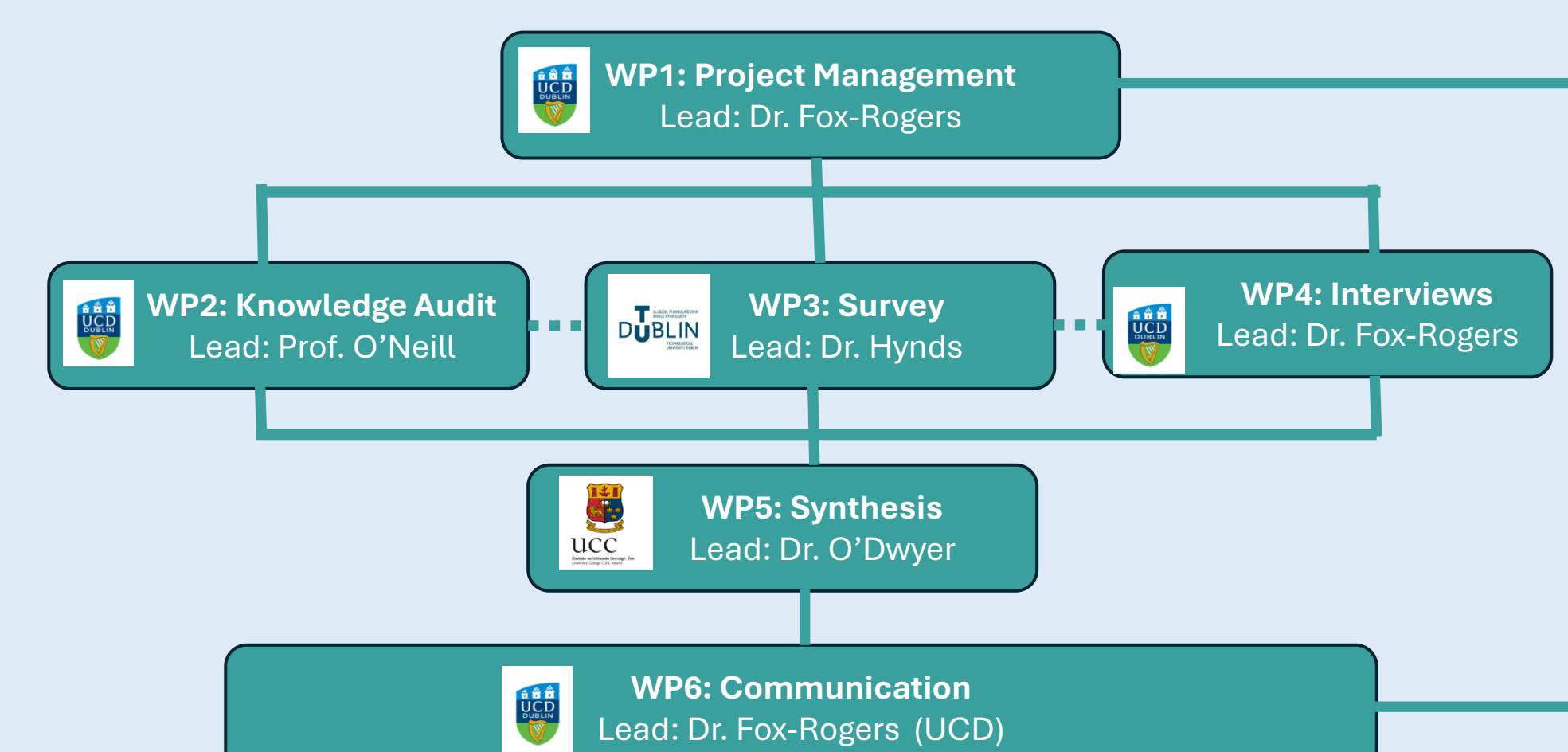
Figure 2: DWWTS failure rates (EPA, 2022).



STUDY AIMS AND OBJECTIVES

- Provide state-of-knowledge review and practice audit.
- Identify barriers to DWWTS maintenance via household survey.
- Examine factors accounting for divergence in DWWTS remediation via qualitative stakeholder interviews.
- Explore potential role of the planning system in bolstering national remediation rates.
- Develop evidence-based recommendations and transferable public communication framework.
- Harness project outputs and impacts through effective research dissemination and communication aimed at key policy makers and stakeholders.

Figure 3: Project Work Packages.



KEY WORK PACKAGES

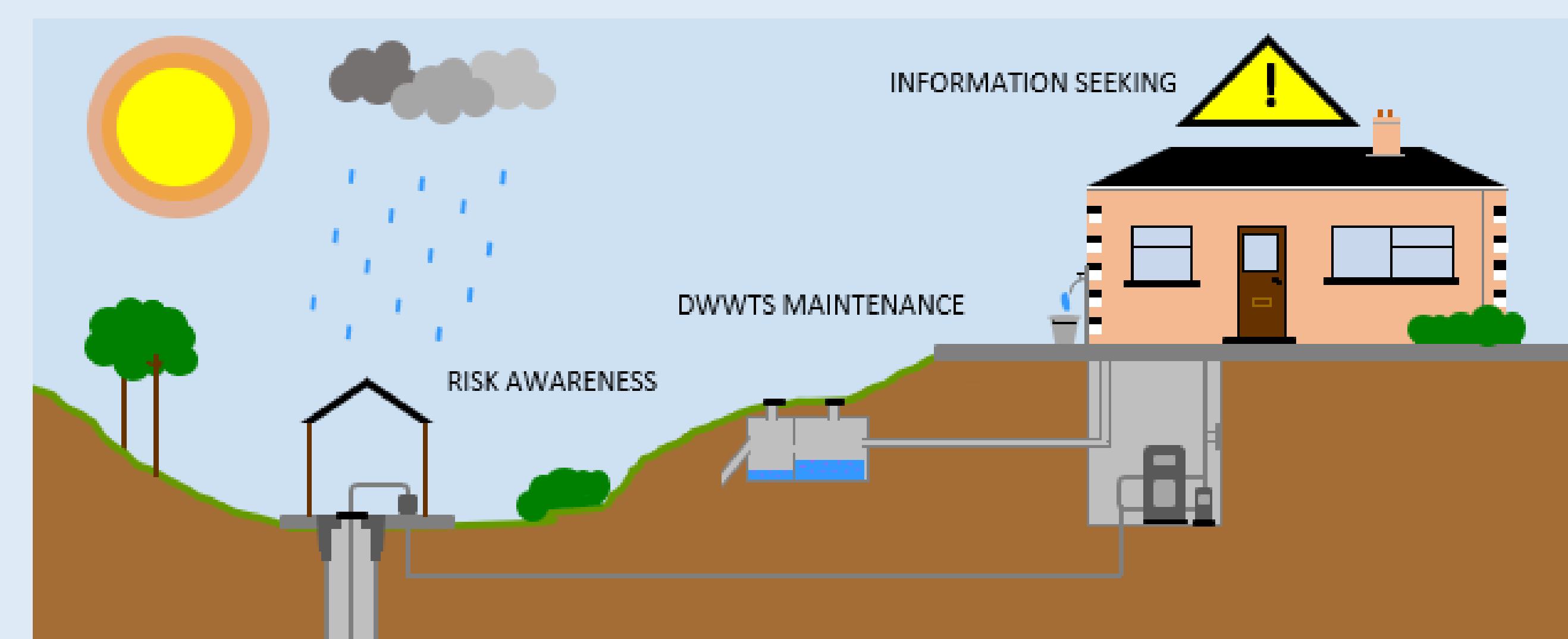
WP2: State of knowledge review and audit

- Review of existing research base on DWWTS remediation (e.g., survey studies)
- Examination of policy context and national practice audit (incl. analysis of enforcement data/grant uptake etc.)
- Audit of planning system's role in DWWTS management.

WP3: Household survey

- Survey design incl. experiential / hypothetical questions; risk perceptions; behavioural barriers; attitudes towards engagement; inspections; willingness to pay; grants.
- 6-month administration / promotion; targeting informed by NIP risk-based approach.
- Statistical analysis of behaviours; comparative analysis of attitudinal shift over time.

Figure 4: Household survey characteristics

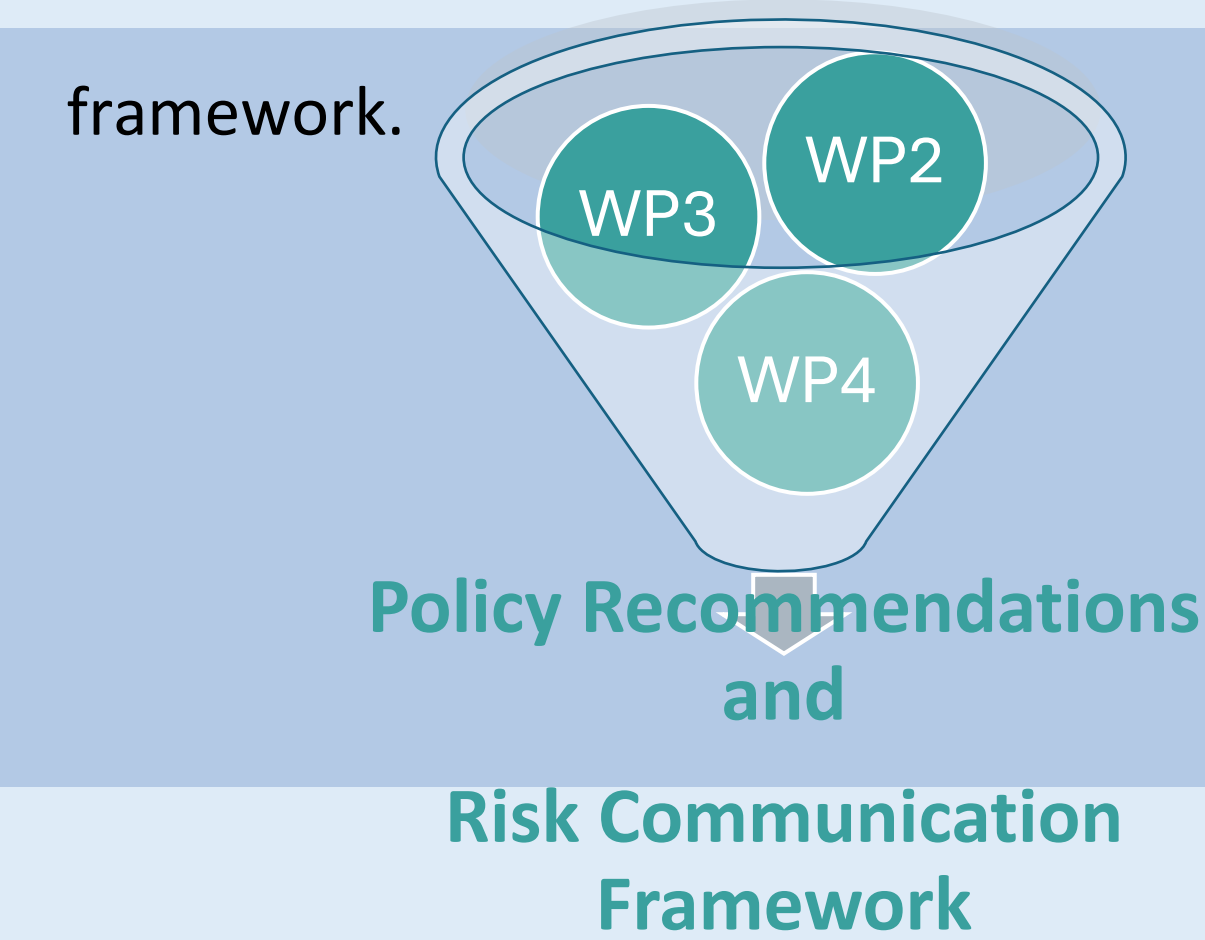


WP4: Practitioner interviews

- Design and implementation of semi-structured qual. interviews with inspectors & awareness officers (n = 15) and planners (n = 15); purposive snowball sampling.
- Targeting of officials from local authorities with high/med/low failure/fixing rates.
- Recruitment of inspectors via STIN within NIECE.
- Analysis of top-down barriers/pathways to remediation; variations in remediation rates nationally; planning system's role.

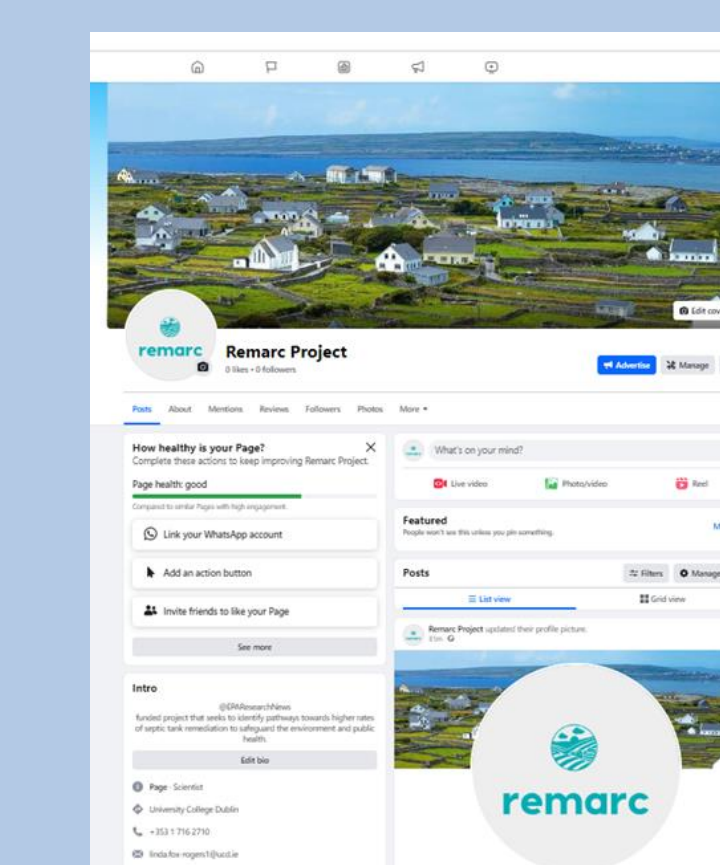
WP5: Synthesis

- Synthesise quantitative and qualitative data using agent-based modelling.
- Formulate policy recommendations and interventions to improve compliance
- Develop structured risk communication framework.



WP6: Communication + knowledge transfer

- REMARC communication plan delivery.
- Establishment + maintenance of website.
- Hosting of knowledge transfer workshop.
- Dissemination of policy brief.
- Development of academic outputs.
- Development of research report / video.



Funding and Project Status:

REMARC is a 12-month research project that launched in March 2024. It is funded under the EPA Research programme 2021-2030. The EPA Research programme is a Government of Ireland initiative funded by the Department of the Environment Climate and Communications.

To keep up to date with project updates please visit our website www.remarcproject.com or follow us on Facebook or 'X' @remarcproject.