

OPTIONS FOR REDUCING GASEOUS EMISSIONS FROM IRISH AGRICULTURE

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A marginal abatement cost analysis was used in order to assess the abatement potential of a range of mitigation measures, as well as their associated costs/benefits on both GHG and ammonia emissions for the period 2020-2030. This analysis was necessitated a) by increases in Irish agricultural output that have occurred post milk-quota removal and as a consequence of the national FoodWise 2025 initiative and b) requirements to achieve national GHG and ammonia reduction targets. Irish dairy production has expanded by over 40% to 7.6 billion litres since the abolition of milk quotas. Irish agriculture accounts for 33% of national greenhouse gas emissions (GHG) and 98% of ammonia emissions. Agricultural emissions of GHG and ammonia have increased by c. 13% since 2011. The Irish governments Climate Action Plan, published in June 2019, has set a target for Irish agriculture to reduce emissions to 17.5 to 19 MT CO₂-e yr⁻¹. In addition agriculture has been tasked to deliver the total LULUCF flexibility allocated to Ireland of 2.68 MT CO₂-e yr⁻¹. How can Irish agriculture reduce emissions? Measures were sub-divided into four different categories: a) Measures with reduced agricultural GHG (i.e. directly reduce methane and nitrous oxide); b) measures that reduced ammonia, c) Measures which enhance CO₂ removals from the atmosphere in terms of land management or Land-Use, Land-Use Change in Forestry (LULUCF), and d) reductions from displacement of fossil fuels via enhanced cultivation of biomass and/or adoption of anaerobic digestion. The total level of GHG abatement of all three categories averaged over the period 2021-2030 was 6.19 MT carbon dioxide equivalents (CO₂-e) per year. The ammonia abatement potential was estimated between 17-21 kT NH₃ yr⁻¹ by 2030, with urea substitution, N management, low-emission landspreading of manures and slurry acidification identified as the primary strategies. The GHG related measures have been included in the Irish National Climate Action plan 2019 and the ammonia measures will be included in the forthcoming Code of Good Practice to Reduce Ammonia emissions (DAFM). The challenge now is to encourage widespread adoption of these measures and this will require significant knowledge transfer efforts to practice change.

Editor's note: An extended manuscript has not been submitted for this presentation.
