Integrated Strategies for air and climate mitigation measures to reduce emissions of Ammonia, Nitrogen and Methane from the Agricultural Sector in the Nordic Countries

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Purpose of the project

- Identify and compile measures to reduce CH_4, NH_3, and other reactive nitrogen emissions from agriculture in the Nordic countries.
- Propose scientifically-based strategies that can simultaneously have a positive effect on both climate change and air pollution.
- Identify measures that can help Nordic countries meet national and international commitments.

Method and Scope

- Literature and data review, calculations of emission reduction potentials, identification of most important synergetic measures:
  - Policies, laws, directives, and policy goals & commitments,
  - Mitigation measures of direct relevance for CH4 and reactive nitrogen emissions,
  - Quantification of the measures' potential effects on air pollution and climate change (thank you CIAM for providing ECLIPSE v5a BSL and MTFR scenarios)
- Scope
  - Focus on emissions of ammonia (NH_3), reactive nitrogen (Nr), and methane (CH_4) from agriculture
  - Countries covered: Sweden, Denmark, Finland, Iceland, and Norway
  - Also includes consideration of nitrogen oxide (NO_x) and nitrous oxide (N_2O) when relevant

Examples of effective integrated measures to reduce climate change and air pollution

- Of the 160 types of measures identified, **30 were classified as integrated measures**, based on an analysis of synergies, since they were reported to have a **positive effect** (emission reduction) for both **air (NOx or NH_3) and climate (CH_4 or N_2O)**.
- By calculating the reduction potential of the integrated measures, a list of **17 types of measures** was compiled and selected as particularly effective for reducing emissions of ammonia, reactive nitrogen, and methane from agriculture in the Nordic countries.
- These measures include a combination of technical and practical solutions, such as **improved manure management, biogas production, precision farming, and land use techniques**.
- A common feature among the majority of the highlighted measures is their **focus on the handling or use of manure and fertilizers**, and they show strong potential for creating synergies between reduced climate emissions and improved air quality.

Discussion – implementation of measures

- Effective implementation requires coordinated efforts between policymakers, farmers, and stakeholders,
- Joint platform for coordination (between authorities) would facilitate the development of synergetic policies,
- Also important to develop effective systems for monitoring and of emissions, even at farm level.

Conclusions

- The Nordic countries should continue to focus on the implementation of integrated measures that address both air pollution and climate change.
- Particularly important is improving the management of manure and the application of fertilizers.
- Take into account that emissions from biological processes can vary significantly between the Nordic countries and locally, influenced by factors such as climate, soil type, and farming practices.

Thank you for your attention

Report available at:
https://www.norden.org/en/publication/integrated-strategies-air-and-climate-measures

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Questions?

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