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interventions available to reduce ammonia emissions from agriculture and their effectiveness

Case study of France and Netherlands



Ammonia (NH₃) – French environmental programs

France is the highest contributor to ammonia emissions in Europe (18% of the EU NH₃ emissions in 2010, due to agricultural activities (97%) and in particular livestock breeding)

France has implemented several governmental programs aiming at reducing ammonia emissions in agriculture (livestock manure and nitrogen-based fertilizers)

→ Regulatory Framework

- France follows the European Union's Directive : National Emission Ceilings (NEC) (2016/2284), Habitats Directive (92/43/EEC), Industrial Emissions Directive (2010/75/EU)
- mandates a reduction in ammonia emissions
- France's commitments target emissions reductions of 13% by 2030 compared to 2005 levels

→ Promotion of Agroecology

- French agricultural policies encourage practices that limit nitrogen use and optimize manure management
- This includes better feed strategies to reduce nitrogen excretion in animals
- Improving the efficiency of nitrogen fertilizers to prevent excess application

→ Precision Farming

→ Adoption of Methanisation

- Converting of organic agricultural waste, such as manure, into biogas (renewable energy but also reduces ammonia emissions from stored manure)

→ Financial Incentives and Support

- France provides financial support to farmers to adopt ammonia-reducing practices, including subsidies for equipment and infrastructure that minimize emissions

Ammonia (NH₃) – Best practices promoted in France

To reduce ammonia emissions from agricultural farms, France has implemented and promoted several best practices with a scheme of investment aid program of 19,2 millions euros

→ Improved Manure Management

→ Covered Manure Storage: Storing manure in covered facilities reduces ammonia volatilization. France supports the construction of covered manure storage systems to minimize emissions.

→ Low emission spreading equipment

→ Subsidies for equipment : 40%(75%) of investment (ceiling 200 000 euros)

→ Optimized Nitrogen Fertilizer Use

→ Precision Fertilization

→ Farmers are encouraged to use precision farming tools

→ Methanization

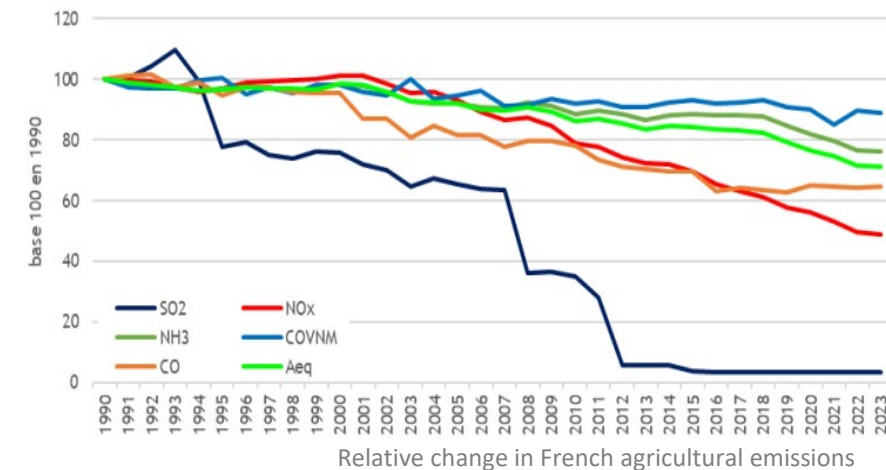
→ This practice is being scaled up in France to both reduce emissions and generate renewable energy

→ 80% bank loans, 10% own capital and 10% subsidies (45/MWh up to a maximum of €700k per project)

→ Adjusting Livestock Diet

→ Lower Protein Diets policy includes the promotion of adjusted feed formulations as part of its broader ammonia reduction strategy

→ These practices are supported by governmental programs, such as subsidies and financial assistance for farmers adopting new technologies, to ensure a more sustainable and eco-friendly agricultural sector



Agriculture – Environmental programs Netherlands

The Netherlands has implemented several governmental programs to reduce ammonia emissions from agriculture

Integrated Approach to Nitrogen -Programmatic Approach Nitrogen (PAS) Initially introduced in 2015, this program aimed to balance economic activities with nitrogen reduction

- later deemed non-compliant with European environmental standards
- led to stricter nitrogen policies focusing on reducing ammonia from livestock manure and chemical fertilizers

Nitrogen Emission Reduction Targets (integrated and area-based approach)

- The government set targets for reducing nitrogen emissions by 50% by 2030
- The reduction is particularly focused on areas near sensitive ecosystems (e.g., Natura 2000 areas), which have been significantly affected by ammonia deposition

Farm-Level Regulations

- New regulations for farmers include balancing nutrient inputs and outputs more effectively, modernizing manure management, and using technology to measure and reduce emissions on individual farms

Voluntary Buyouts and Innovation

- To help achieve these goals, the Dutch government is offering voluntary buyout schemes for livestock farmers and promoting innovative sustainable farming practices
- the purchase price will be between 100 to 120% of the value of their business, with the farmer still able to retain the land (750 farmers located near natural reserve signed-up in 2023)

Despite these measures, the agricultural sector has expressed significant concerns, leading to farmer protests due to the economic impact of these stringent regulations

Agriculture – Environmental programs Netherlands

The Netherlands has implemented several GAP for reducing ammonia emissions from agricultural farms, with a strong focus on sustainable nitrogen management and compliance with strict environmental regulations.

Practices are supported by a combination of government regulations, financial incentives, and technology adoption, making the Netherlands a leader in ammonia emission reduction from agriculture

Manure Management Improvements

→ Covered Manure Storage : Dutch farms are required to store manure in covered or closed systems

Low emission spreading (manure Injection)

→ The Netherlands has been a leader in this practice, and it is widely adopted by Dutch farmers

Precision Agriculture/Optimized Nitrogen Use

Feed Adjustments

→ Low-Protein Diets for Livestock

Practice is promoted across the Netherlands as part of a broader strategy to improve nutrient management

→ Methanization

Similar to France, Dutch farmers are encouraged to adopt anaerobic digestion systems that convert manure into biogas and digestate

Livestock Housing Adaptations

→ Ammonia Scrubbers and Air Filtration

Voluntary Buyouts and Land Use

→ Voluntary buyouts to farmers

particularly those near sensitive nature areas, to reduce overall livestock numbers and ammonia emissions



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Thank you!

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