

Joint Feedback on the Nitrates Directive Evaluation of European Research Projects

ABOUT THE EUROPEAN RESEARCH PROJECTS About the European Research projects

We welcome the opportunity to give feedback on the Evaluation of the Nitrates Directive.

The EU has made enormous progress in the implementation of circular economy solutions. Due to a continued commitment to research (2020) and practical implementation (INTERREG), the recovery and use of nutrients from wastes and residues is stimulated and facilitated. This is in line with the new legal framework within the Circular Economy Action Plan (CEAP)¹ (FPR, WFD, CAP-Farm to Fork) under the EU Green Deal².

The European Commission has mandated and demanded a number of EU projects across different frameworks (H2020, Horizon Europe, INTERREG) to provide both Europe and the EC with scientific technical evidence and policy-oriented advice, on topics related to circular economy in general and nutrient (re)cycling in particular. In this light, the projects subscribing to the current call feedback call, have joined forces to provide the following Feedback letter. Our feedback compiled feedback is based on the insights from the various project activities.

The Biodiversity³ and the Farm to Fork⁴ strategies set a common objective of reducing nutrient losses in the environment by at least 50% by 2030, while preserving soil fertility. Council Directive 91/676/EEC⁵ concerning the protection of waters against pollution caused by nitrates from agricultural sources ("the Nitrates Directive") is a key piece of legislation to achieve this target and other objectives of the EU Green Deal².

The Nitrate Directive has been introduced more than 30 ago and has not been amended since. Whereas the goal of the Directive remains relevant, the Directive itself urgently needs to be aligned with other legislation such as the Fertilising Product Regulation and the Animal By-Product Regulation. Nitrates Directive.

The current wording and strict interpretation of the definition of livestock manure, and the delay of the flagship achievement ReNure are seriously obstructing the market entry and use of valuable recycled N-fertilising products. Moreover, it also counteracts other EU goals for circularity that are laid down in other pieces of EU law.

¹ [COMMUNICATION FROM THE COMMISSION - A new Circular Economy Action Plan For a cleaner and more competitive Europe COM/2020/98 final](#)

² [Communication from the Commission - The European Green Deal, COM/2019/640 final](#)

³ [Communication from the Commission - EU Biodiversity Strategy for 2030 - Bringing nature back into our lives, COM/2020/380 final](#)

⁴ [Communication from the Commission - A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system, COM/2020/381 final](#)

⁵ [Council Directive \(91/676/EEC\) concerning the protection of waters against pollution caused by nitrates from agricultural sources](#)

The topics have been taken up by the Policy working group of the European Sustainable Nutrient (ESNI) Community, in which the experts of EU-funded projects in the field of nutrient recycling exchange knowledge and views. <https://www.biorefine.eu/nutrient-recycling/>.

EU-funded research projects within the ESNI that are active in this field have been involved in these discussions and have committed themselves to the message by undersigning the Joint position with their logos upon formal approval by their respective coordinators. The research project consortia are composed mainly of universities and research institutes, which operate independent of market parties and do not aim to represent the views of association or lobbying bodies.

Hence, based on the R&D and policy advise mandate of the subscribing projects, we jointly wish to raise awareness on this burden to market entry of this category of circular N-fertilising products arising from the Nitrate Directive. We come forward with solutions to amend the Nitrate Directive that can and need to be implemented.

IMPLEMENTATION OF THE ReNure CRITERION

The EU is facing environmental challenges and combatting threats to water quality. The Nitrates Directive aims to reduce the contamination of our waters from excess nitrates from agricultural sources. The application of manure is limited by the Nitrates Directive as it inherently results in run-off and leaching because the timing of nitrogen mineralisation from manure cannot be completely aligned with the nitrogen uptake by plants.

This inherent problem can be partially tackled through nutrient recovery techniques. The EU is the front runner in technologies for the recycling nutrients from manure which will help close the nutrient cycle of agriculture. This recovery of nutrients from manure has gained even more urgency, as outlined in recent communication of the Commission on Safeguarding food security and reinforcing the resilience of food systems[1].

Manure treatment can be an effective way to combine the challenges of the circular economy and geographical independence of the EU, whilst preserving our environment and waters. It is considered as the way forward in the latest 4-yearly report by the European Commission on the implementation of the Nitrates Directive [6]: *"Considerable progress has been made regarding the development of manure processing technologies. Recovered nitrogen that replaces inorganic fertilisers reduces CO2 emissions, while recuperated phosphates reduce dependency of imported phosphate rock and remaining organic fractions can be used on local fields. However the most advanced technologies are not yet widely used and there are a number of economic barriers due to the high costs of these processes, the transport costs and the frequent need to pay the farmers for the application of these products on their fields. Furthermore, the maximum level of nitrogen from manure that can be applied under the Nitrates Directive includes also manure in a processed form."* [6]

The EC-JRC has evaluated a number of these manure-derived products from processing technologies within the SAFEMANURE/ReNure research project [2]. Major outcome of the study was that certain manure-derived products can be safely used as replacement of chemically produced nitrogen fertilisers without increasing risk for nitrate leaching, if a set of strict criteria is followed.. Therefore, products adhering to these ReNure criteria can be safely exempted from the restrictions on the soil application of manure in Nitrate Vulnerable zones (NVZ) as imposed by the Nitrates Directive and National Action Programmes.

ReNure is considered as one of the four the flagship achievement mentioned in the latest 4-yearly report by the European Commission on the implementation of the Directive (2021) [6]. Yet, the implementation of the ReNure criteria within the current legal framework is still being postponed, posing a barrier to the use of recovered nitrogen. No official explanation is given as to why the implementation of ReNure criterion is being delayed and no time frame or concrete action plan is presented.

Flagship achievement 4 - 'REcovered Nitrogen from manURE': RENURE

The Circular Economy Action Plan⁶ promotes the recycling of nutrients from manure and other organic sources to replace chemical fertilisers, whose production is associated to drawbacks of resource management for P⁷ or environmental impact for N⁸.

While on one side they increase organic carbon in the soil and the soil fertility, organic fertilisers on the other side can release more nutrients in the environment compared with inorganic fertilisers, thus posing higher risks of water and air pollution. The main challenge is therefore to obtain recycled nutrients that minimise losses in the environment.

The Commission Joint Research Centre completed a study⁹ on recovered nitrogen from manure and proposed criteria for its safe use above the threshold established by the Nitrates Directive in a similar way as a non organic fertilizer. The concerned materials are called RENURE, from 'REcovered Nitrogen from manURE'. The Commission is currently considering the options for the implementation of this criterion within the current legal framework.

The continuing delay of the ReNure criterion implementation bolsters the often-held view that the Nitrates Directive is used to enforce a decrease in livestock density in certain areas. In nitrate vulnerable zones (NVZ) farmers are not allowed to use the ReNure materials instead of the artificial fertilisers, despite the advantages of ReNure materials and the contribution to other goals of the EU: reduction of CO₂ emissions, reduced dependence of the EU on the import of gasses and fertilisers from third countries, circularity and recovery of resources [1], [6], [7].

The delay is undermining the credibility of the Nitrates Directive and diminishing farmers willingness to adopt the measures that are implemented at national level as part of the Good Agricultural Practices Code to decrease nitrate leaching from agricultural fields.

Transparency and reliability are needed to (re)gain farmers trust. Ultimately, it will be the farmers that are applying the Good Agricultural Practices from the Nitrates Directive Action plans. Implementing the ReNure criterion is very much needed to convince farmers that the Commission is indeed supporting the development of manure processing technologies that it is considering it as the way forward and a flagship achievement.

As the technologies are developed, installations are ready to produce, farmers are in need of nitrogen fertilisers, and the EU needs to decrease the energy consumption by fertiliser production [1], the implementation of the ReNure criteria must not be delayed anymore.

In addition, to create a fair level playing field between the manure processing plants in the different countries of the EU, the criteria for the use of the ReNure products should be transparent. To be reliable, the implementation of ReNure should not be subject to derogation negotiations as the time frame for investments exceeds the 4-year timeline for the Nitrate action plans.

⁶ [Communication from the Commission - A new Circular Economy Action Plan For a cleaner and more competitive Europe COM/2020/98 final](#)

⁷ [Phosphorus is included in the list of EU Critical Raw Materials.](#)

⁸ [The Haber–Bosch process used of N mineral fertiliser production is currently one of the largest global energy consumers and greenhouse gas emitters, responsible for 1.2% of the global anthropogenic CO₂ emissions](#)

⁹ [Study on Technical proposals for the safe use of processed manure above the threshold established for Nitrate Vulnerable Zones by the Directive, JRC \(2020\)](#)

The implementation of ReNure will also align the Nitrates Directive to the goals of the other pieces of legislation under the Green Deal and Circular Economy package, such as the recycling of valuable resources from organic materials, reduction of CO₂ emissions and decrease of the geopolitical dependency on the imports of P, energy of synthetic N-fertilisers. In the current situation, the inflexibility of the Nitrates Directive framework is obstructing the achievement of these goals.

Manure-derived N-products that meet the ReNure criterion do not pose an increased risk for nitrate leaching or adverse environmental effects as compared to synthetic N fertilisers. These ReNure products should therefore be exempted from the 170 kg N ha⁻¹ limit that is imposed on manure application following the Nitrates Directive. The Nitrates Directive should be amended accordingly.

However, implementation of the ReNure criterion should not be delayed anymore. The ReNure implementation should not await the outcomes of the Evaluation feedback study and a possible following future revision of the Nitrates Directive.

LEGAL STATUS OF AMMONIUM SALTS FROM OFF-GASES

One type of products that result from manure treatment are ammonium salts (ammonium nitrate or ammonium sulphates) that result from the ammonium stripping and scrubbing during manure treatment. DG GROW has implemented legislation with the aim to include these very pure ammonium salts as components for fertilisers.

However, the current strict and broad interpretation of the definition of livestock manure in the Nitrates Directive is blocking the use and market uptake of the ammonium salts.

Under the interpretation of the definition of manure in the Nitrates Directive the ammonium salts could be considered as a manure. The reason to consider the ammonium salts recovered from the off-gases of manure and manure-derived products- as a manure stems from the definition of manure in the Nitrates Directive: *'livestock manure': means waste products excreted by livestock or a mixture of litter and waste products excreted by livestock, even in processed form.*

As processed form is not further defined, this could be interpreted as meaning that the off-gasses would be a processed form of manure. The interpretation of off-gases as processed manure is contrary to other EU legislation. Namely, the Animal By-Products regulation, the Fertilising Product Regulation, and the Emission Control Directive, which do not consider manure off-gases a processed form of manure, but instead as an emission that has lost the physical link to the manure.

For example, the Animal By-Product Regulation (EC 2009/1069 and EU 142/2011) defines manure as: *"Manure 'means any excrement and/or urine of farmed animals other than farmed fish, with or without litter', and "Manure-derived product: products obtained from one or more treatments, transformations or steps of processing of manure".* Here, the term 'processed manure' refers to manure treated with one of the sanitation methods mentioned in Annex IV of the Animal By-Product Regulation.

Furthermore, ammonium salts from off-gases are high quality products which can be used as a component material for the production of EU fertiliser under the regulation EU/2019/1009. This CMC 15 RECOVERED HIGH PURITY MATERIALS includes:

*"recovered high purity material, which is ammonium salt, sulphate salt, phosphate salt, elemental sulphur, calcium carbonate or calcium oxide, or mixtures thereof, of a purity of at least 95 % dry matter of the material. The high purity material shall be recovered from waste generated from: "..."
(b) a gas purification or emission control process designed to remove nutrients from off-gases derived from one or more of the following input materials and facilities: "... (viii) manure within the meaning of Article 3, point 20, of Regulation (EC) No 1069/2009 or derived products thereof; or (ix) livestock housing facilities."*

Following this wording, the ammonium salts from off-gases of manure or manure-derived products are considered as materials that are recovered from emission control processes, not as part of the manure processing. This was also explained by the JRC-report on the criteria for high purity materials recovered from waste (CMC 15):

"Off-gases of manure are not covered under the Regulation (EC) No 1069/2009 on animal by-products, and fall within the scope of this CMC WW/15."

This is underlined by the Commission Expert group on Fertilising Products in their FAQ [4]:

“ 5.12 Are high purity materials out of off-gases generated by manure derived products within the scope of the Animal by-products Regulation?

No. Off-gases from manure are not animal by-products or derived products within the scope of the Animal by-products Regulation, as defined in Article 2 of that Regulation. Therefore, the recovered high purity materials out of such off-gases are not within the scope of the said Regulation either and no end-point in the manufacturing chain has to be determined under the animal by-products rules for the use of such materials in EU fertilising products.”

This opinion of DG GROW is in line with the statement from DG SANTE (Health and Food Safety) [5]:

“question on nitrogen recovery from off-gases from manure treatment, manure storage, or livestock stables I confirm that off-gases from manure are not subject to Regulation (EU) No 1069/2009, since emissions are not within the scope of that Regulation.”

Despite the Animal By-Products regulation and the Fertilising Product Regulation make it clear that products from manure off-gases are not manure, some member states do consider these products as animal by-products (ABP) and manure using a very strict interpretation of the manure definition in the Nitrates Directive. This severely restricts their recycling in the circular economy. Therefore, all DGs, member states, and the EC must urgently adopt an unambiguous definition of ammonium salts recovered from manure off-gases and manure treatment processes to clarify their legal status.

Because of the unambiguity arising from the unclear interpretation of the definition of manure in the Nitrates Directive, the legal status of ammonium salts differ between the EU countries. Some EU countries consider the ammonium salts as waste-derived pure products (in line with the logic of the FPR and the ABP-regulations, where the scrubbing salts are seen as waste product from purification of off-gases, (EG 1069/2009 on animal by-products).

Other member states make a distinction:

- Ammonium salts derived from scrubbing of air from stables are considered waste that are derogated to be used as a fertiliser. The ammonium off-gases in the stable air -emitted as a natural process- are considered to have lost the direct physical and chemical link with the manure.
- However, if the ammonium salts are derived from scrubbing and stripping of emissions to air that is originating from processing manure or derived products (controlled emission) they are considered to remain a manure product and hence an animal by-product. The argument that the ammonium off-gases have lost the direct physical and chemical link to the manure treatment product that they originate from is not followed here.

Furthermore, the manure-ABP status does not contribute to the goals of the Nitrates Directive to protect water quality. As ammonium salts recovered from off-gases are defined as ReNure products and have been evaluated as equivalent to chemical fertilisers and safe to be exempted from the 170 kg N ha⁻¹ application limit of the Nitrates Directive. In effect, the ReNure status should be seen as an ‘end-of-manure’ under the Nitrates Directive. Therefore, it is unnecessary to confer the status of manure or animal by-product to the ammonium salts under the Nitrates Directive.

The manure/ABP status limits market uptake as it poses a complex set of prerequisites on transport, handling and storage of the products (laid down in EC 1069/2009 and 142/2011) and requires registration, approval, control and certification of all facilities, vehicles, and actors along the market chain. This forms a logistical and administrative burden that further complicates and

hinders the market entry and acceptance of the products. The different interpretation between member states also causes an unfair level playing field for producers in the different countries.

The difference in interpretation of the legal status of the ammonium salts has far reaching consequences that will not be solved by the implementation of the ReNure criteria or inclusion in FPR CMC 15! A clear statement from DG ENV is needed to clarify that ammonium salts originating from off-gas processing does not belong under the definition of livestock manure under the Nitrate Directive and is not to be considered as a manure.

Harmonizing the views regarding the status of ammonium-salts originating from off-gas cleaning between the various branches of the European Commission (DG GROW, DG SANTE, DG ENV, DG AGRI) and member states is a prerequisite for circular economy processes and associated products to enter the market as sustainable, renewable alternatives to synthetic nitrogen fertilizers which are produced from conventional chemical processes using fossil resources (natural gas).

In concreto, the views expressed in the various documents and communications by DG GROW [4] and DG SANTE [5] are supportive of this transition, whereas ambiguous interpretation towards the remaining status as 'manure' for such products *vis-à-vis* the Nitrates Directive in other proclaimed positions by the European Commission may hinder or delay the transition towards more circularity in mineral nitrogen flows in European agriculture.

The Nitrates Directive should be amended to align with other pieces of legislation, especially on the definitions of manure, processed manure, and manure derived products.

In the short term however, DG ENV needs to make a clear statement -aligning with DG GROW and DG SANTE- that the ammonium salts derived from off-gases of manure or manure treatment processes are not to be interpreted as a manure in processed form under the Nitrates Directive.

This joint position is undersigned by the following European research and innovation projects.



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