



## SuMaNu Policy Recommendation 4

*The SuMaNu project platform has produced a set of policy recommendations to support transition towards more sustainable agriculture and efficient nutrient recycling. These policy recommendations reference and complete each other and the reader is encouraged to read them all.*

## Regional nutrient reallocation

### Recommendations

- Take account of recyclable nutrient-rich biomasses, including manure, and their spatial distribution. Compare the nutrient availability to fertilisation needs on the same regions. Use the data as a basis for developing a national strategy and consequent measures to secure sustainable nutrient use.
- Create incentives to support production of manure-based fertiliser products especially in regions of intensive livestock production.
- Create incentives to support the use of manure-based recycled nutrients to substitute mineral fertilisers and demonstration of their use.
- Support development of manure processing technologies and the demonstration of their impacts on regional level.
- Support renewable energy production in conjunction with manure processing to improve the economic feasibility.
- Support for novel solutions and tools to raise awareness on and open practical possibilities for nutrient recycling.

## Background

This policy recommendation focuses on regional nutrient reallocation to balance the supply and the demand for manure nutrients between country-specific regions.

Nutrient reallocation can offer a solution for areas of high livestock density and high supply of manure nutrients. Instead of trying to reallocate existing farm structures and animals, part of the manure nutrients could be reallocated from one region to another. In such cases especially manure phosphorus may exceed the need of regional crop production and should partly be reallocated, i.e. processed to be transported to other regions in demand of manure nutrients. Nutrient recycling would also reduce the need for mineral fertilisers and the environmental impact related to their production and use.

Manure processing in large, centralised scale is more cost-efficient than farm-scale processing and enables production of more refined fertiliser products. Still, similar solutions may also be used with simpler technologies and shorter distances to solve farm-scale oversupply of nutrients.

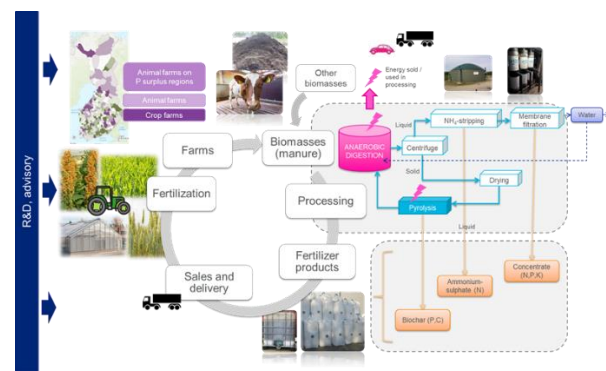
Large-scale processing plants enable production of manure-based, concentrated, and transportable recycled fertiliser products. It is one viable alternative to ensure sustainable reuse of manure nutrients, and therefore, improve water quality and enhance soil fertility. Different technologies can be used alone or as a processing chain to modify manure. They often also enable separation of nitrogen and phosphorus into different products.

To acknowledge the need for regional nutrient reallocation, regional information on the availability of manure (and other recyclable biomasses) and recyclable nutrients, actual crop nutrient needs and nutrient reservoir already in the field soils should be accounted for. This information is essential for planning and implementing sustainable nutrient reuse.

The goals and objectives of regional reallocation should be formulated into a clear strategy and measures to implement it. This could, in addition to reducing

environmental pressures in/from a given region, be linked to broader and more general objectives to boost bioeconomy, to reduce dependency on imported mineral fertilisers (circular economy, self-sufficiency) and to support R&D, business innovations and pilots based on scientific expertise or industrial activity. Nutrient reallocation may also be connected to renewable energy production, depending on the technologies used.

An example of nutrient reallocation (adapted from Luostarinen et al. 2019 <http://urn.fi/URN:ISBN:978-952-453-941-8> in Finnish).



## Recommendations in more detail

1. **Take account of recyclable nutrient-rich biomasses, including manure, and their spatial distribution. Compare the nutrient availability to fertilisation needs on the same regions. Use the data as a basis for developing a national strategy and consequent measures to secure sustainable nutrient use.**

To enable planning and implementation of country- and region-specific sustainable nutrient recycling measures, the status of which biomasses are produced and where, and what is the regional demand for nutrient needed should be known. It enables to see whether nutrient reallocation between regions is needed to use the nutrients sustainably. Usually,

manure is the most important of the recyclable biomasses.

## **2. Create incentives to support production of manure-based fertiliser products especially in regions of intensive livestock production.**

Investment subsidies for large-scale manure processing should be available to create “regional nutrient redistribution centres”. Such plants could process manure from several farms into concentrated fertiliser products to be transported over longer distances to regions in demand of nutrients.

To ensure minimal emissions, emission-reducing practices should be required in all processing steps and during end-use. These could include e.g. covered storages, proper fertilisation planning and spreading choices with reduced emissions (see: Policy Recommendations 1–3). Preconditions should also be placed to ensure safety of the manure-based fertiliser products (see Policy Recommendation 5).

Investments in manure processing could also be deployed to smaller-scale solutions enabling improved nutrient use within regions and between farms. This could include e.g. mechanical separation of slurry. Further processing into more concentrated fractions, though, is usually economically viable only on larger scale.

Logistical costs of large-scale processing (biomasses to plant, end-products to users) may be significant and require compensation, especially while the market for recycled fertiliser products is still developing and practices and services for their use becoming available. The support should be available only for verified sustainable use of the end-products and it may only be needed for a shorter period.

## **3. Create incentives to support the use of manure-based recycled nutrients to substitute mineral fertilisers and demonstration of their use.**

Direct support for the use of recycled nutrients should be made available to make them a viable alternative to mineral nutrients for farmers. The support could possibly be built into the CAP. The steering mechanisms should be sensitive and adapted for different manure types and different recycled fertiliser products, possibly with regional specifications, due to their different characteristics.

This could also mean different support to compensate for potentially increased field application costs due to the need of investing into specialised equipment or using contracting services for different types of manures or fertiliser products.<sup>1</sup> Investment support for farm structures, such as storages, should also be available. Support for businesses in contracting services specialised in recycled nutrients should also be considered.

Demonstration of using manure-based fertiliser products should be promoted to show farmers how the manure-based recycled nutrients work as fertilisers and how they should be handled in practice. Their quality and impacts must be known well to make them feasible options for existing fertiliser products. This also supports market development.

## **4. Support development of manure processing technologies and the demonstration of their impacts on regional level.**

Technology development and demonstrations of manure processing technologies should be supported. There are still development needs for technologies to be used on different scales, including their applicability and technical feasibility. Practical demonstrations are also needed to spread the best practices. Also, the impact of manure processing on practical nutrient recycling on different scales, especially the regional scale, should be demonstrated.

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<sup>1</sup> Natural Resources Institute Finland (Luke): Guide on the use of recycled fertiliser products (<http://urn.fi/URN:ISBN:978-952-326-759-6>, in Finnish).

**5. Support renewable energy production in conjunction with manure processing to improve the economic feasibility.**

Nutrient recycling with simultaneous renewable energy production for heat, electricity and/or fuel could assist in improving the economic feasibility of manure processing and nutrient reallocation. It may also help align different sectoral policies (the environment, climate, energy, transport, land use) and thus address multiple objectives. Such broader view may ensure wider commitment to the actions and enable effective steering mechanisms. Multiple end-products may give security for businesses to invest in novel technologies and services in nutrient recycling. Furthermore, the

potential emission reductions particularly for greenhouse gases can be significant especially in bio-fuel production.

**6. Support for novel solutions and tools to raise awareness on and open practical possibilities for nutrient recycling.**

There are examples of manure exchange platforms and programmes around the world in which crop farms, horticulture and gardens could team up with animal farms to make better use of manure. Such actions can be supported e.g. as voluntary initiatives by market and private actors, as local community initiatives or as more strategic regional or national programmes.



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