



Towards a nutrient neutral municipality – Guide for municipal operators

The purpose of the Nutrient Neutral Municipality project of the Southwest Finland ELY Centre was to develop operating models for promoting nutrient recycling in municipalities. The key results of the project are presented in this guide. Read more: http://www.ymparisto.fi/en-US/Nutrient_Neutral_Municipality

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– GUIDE FOR MUNICIPAL OPERATORS
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Introduction

The Nutrient Neutral Municipality (RANKU) was a three-year development project managed by the Centre for Economic Development, Transport and the Environment (ELY Centre) for Southwest Finland. The project was implemented in the regions of Southwest Finland and Satakunta. The purpose of the project was to promote the recycling and utilisation of organic nutrients and related cooperation as close to their place of origin as possible and to develop a new operating model for nutrient-neutral municipalities. The project was part of the Ministry of the Environment's Raki programme aimed at promoting the recycling of nutrients and improving the status of the Archipelago Sea.

- [Ministry of the Environment's Raki programme on the web](#)
- [Nutrient Neutral Municipality project on the web](#)

A nutrient-neutral municipality - a brand new concept

The aim of the Nutrient Neutral Municipality project was to set up an operating model for a nutrient-neutral municipality that would describe their commitment to nutrient recycling. The model was developed together with the municipalities participating in the project. The key results of the work are presented in this guide, which is intended for municipal operators. It is also possible to apply the principles in other sectors, such as municipal consortiums, regions, operational areas etc.

Nutrient neutrality in municipalities

involves deliberate actions for taking nutrient recycling in a jointly agreed direction

describes trends in the operational efficiency of municipality networks and ways of improving it

requires the right choices, supported by research and development work

is included in municipal strategies and regional plans

attracts and creates new business

promotes sustainable development

Background

The use and recycling of nutrients concerns everyone. Nutrients are the source of growth in the same way as soil, water, air and sunlight. Their unsparing use leads to a waste of expensive raw materials and causes environmental emissions, spoils waters and is harmful to people. By recycling nutrients, it is possible to save production inputs, reduce environmental nuisances, improve the condition of waters, increase self-sufficiency in food production and promote food security. New practices, methods, technologies and products allow improving the efficiency of the existing activities as well as building new business around them.

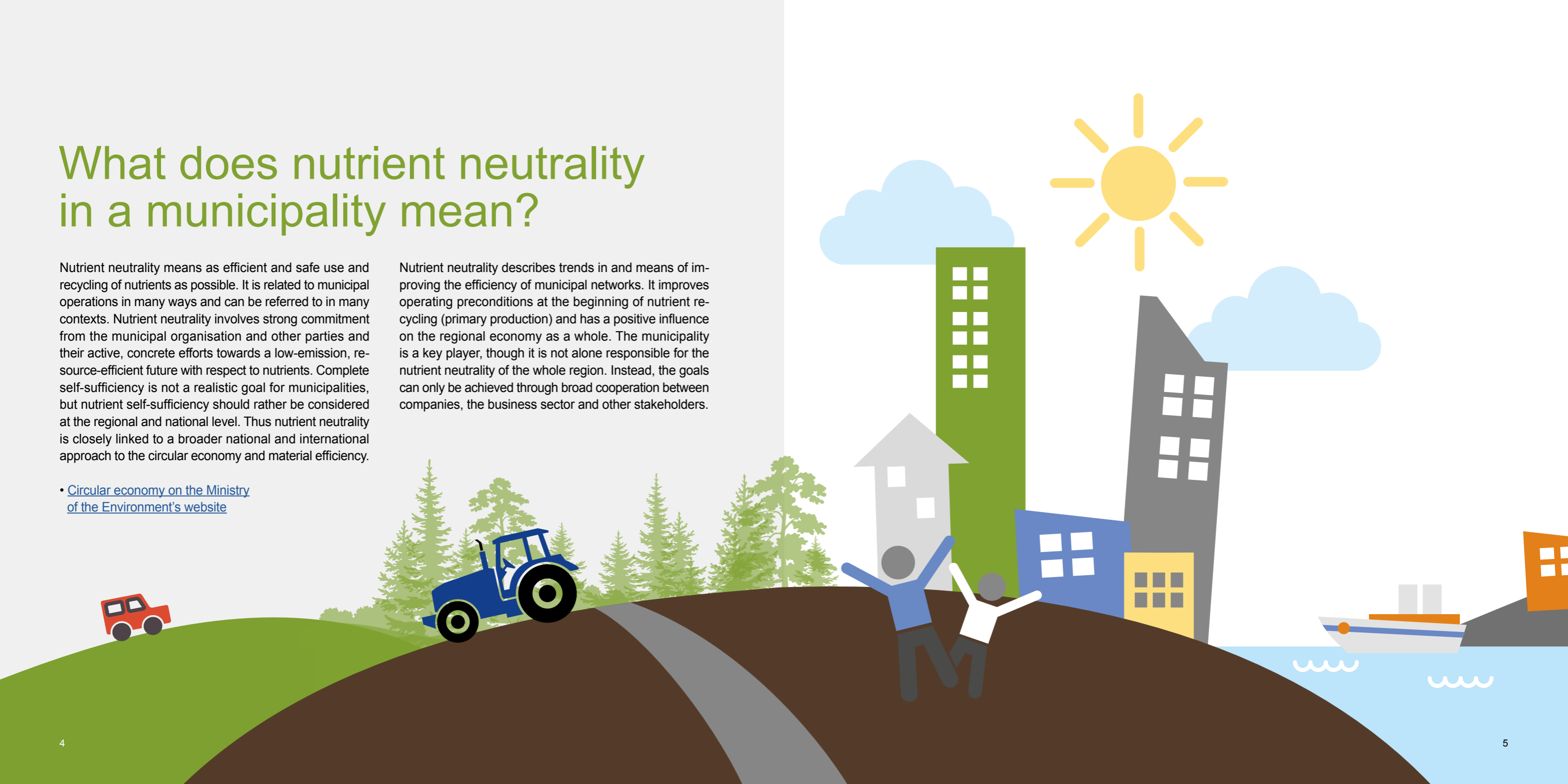
The Finnish Government already committed itself to nutrient recycling and improving the status of the Archipelago Sea in 2010 and in this respect took the role of a forerunner. Since then, different types of projects and other measures have been introduced to develop new tools, technology and practices for nutrient recycling. **The nutrient-neutral municipality concept** is a feasible approach through which this can be promoted. It offers municipalities and other areas the possibility to take the next step towards sustainable development, support innovative nutrient recycling business and promote the well-being of the environment.

What does nutrient neutrality in a municipality mean?

Nutrient neutrality means as efficient and safe use and recycling of nutrients as possible. It is related to municipal operations in many ways and can be referred to in many contexts. Nutrient neutrality involves strong commitment from the municipal organisation and other parties and their active, concrete efforts towards a low-emission, resource-efficient future with respect to nutrients. Complete self-sufficiency is not a realistic goal for municipalities, but nutrient self-sufficiency should rather be considered at the regional and national level. Thus nutrient neutrality is closely linked to a broader national and international approach to the circular economy and material efficiency.

- [Circular economy on the Ministry of the Environment's website](#)

Nutrient neutrality describes trends in and means of improving the efficiency of municipal networks. It improves operating preconditions at the beginning of nutrient recycling (primary production) and has a positive influence on the regional economy as a whole. The municipality is a key player, though it is not alone responsible for the nutrient neutrality of the whole region. Instead, the goals can only be achieved through broad cooperation between companies, the business sector and other stakeholders.





Nutrient neutrality

Nutrient neutrality involves **regional planning** through which logistically smart circular economy centres can be created and the reasonable, economic transportation of biomasses arranged.

Nutrient neutrality is also **part of the regional economic policy**, which creates preconditions for establishing or locating innovative circular economy businesses in

the region. Doing good things can also be successful business for companies.

Nutrient neutrality is **a part of sustainable food production**, in which organic nutrients are used in an efficient, economic, sensible and sparing manner based on plants' needs. In addition, the safe use of recycled nutrients is promoted.

Nutrient neutrality also involves **maintaining the good condition of the soil**, a valuable natural asset, so that nutrients can be used for promoting the growth of plants, at the same time helping improve the condition of waters by reducing the risk of nutrient runoff.

Nutrient neutrality **is connected with adapting to climate change and binding carbon**, as maintaining the soil in good condition involves adding organic matter and carbon to arable land.

Nutrient neutrality also involves **implementing public procurements** in a way that encourages other operators to develop the sparing use, recovery and re-use of nutrients.

Nutrient neutrality is also **part of water management and protection of the Baltic Sea**. In its simplest form, it is a municipal viewpoint to protecting waters and the environment, with a view to taking nutrient recycling into consideration.

Nutrient neutrality **conveys the message that the municipality is committed to environmental matters and makes the municipality appear attractive** to new inhabitants, for example.

Activities related to nutrient neutrality must be backed up by information on the area's nutrient flows and nutrient balance, where possible. It is challenging to set goals expressed in kilograms, because there are still inaccuracies in nutrient flow analyses. Of course goals of this kind can be also set.

Information about
nutrient flows
[Finnish Biomass
atlas in web](#)



How to proceed towards a nutrient-neutral municipality

The nutrient neutrality of a municipality is much more than just nutrient recycling within the agricultural sector or environment protection, so the whole organisation must commit itself to activities promoting it. It may be difficult to recognise connections to nutrient recycling at first, though municipal decision-making bodies and all sectors can influence it. Strategic decisions can direct regional planning and procurements, for instance, so that they support nutrient recycling. It is possible to propose concrete, favourable locations for nutrient recycling operations through land use planning, while the education department can increase the knowledge of the inhabitants of the sustainable use of nutrients through early childhood education, training and education.

Taking everything under control at once

If it is difficult to outline the whole made up of nutrient recycling, the municipality may set out from a concrete matter, such as the need to refurbish a wastewater treatment plant in the future, acquiring root vegetables for municipal catering kitchens or revising its forest utilisation plans. Launching discussion about nutrient



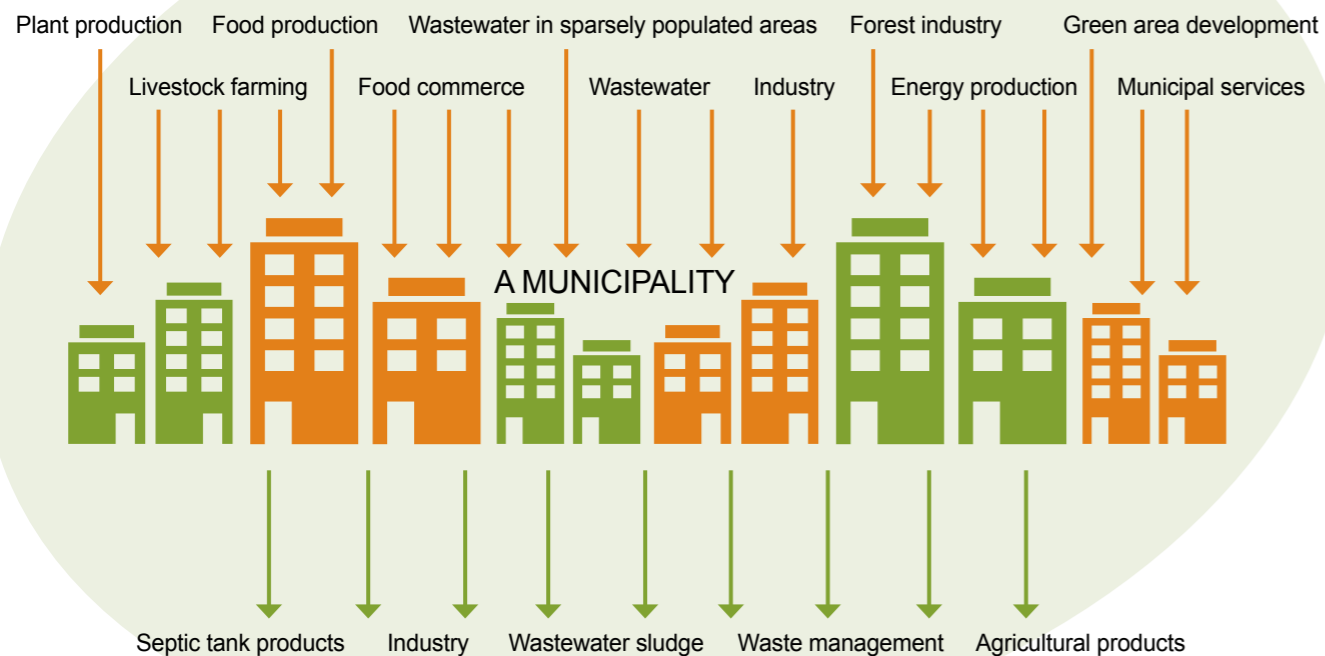
recycling in a specific sector and gradually extending dialogue to other sectors. A quicker and more resource-efficient way is to take everything under control at once. Regardless of the approach you select, first gather experiences about actions taken so far.

Nutrient flows and nutrient recycling opportunities are investigated as broadly as possible, taking into consideration all fields and sectors as well as the environment and the resources and economic structure of the municipality. In the next phase, attention can be paid to more relevant aspects most important in view of the future. For example, if there is already other circular economy business in the municipality, expanding it into nutrient recycling can be promoted.

Do not hesitate to ask about recycling!

- Read what the pilot municipalities in the RANKU project have to say about nutrient neutrality and contact them for more information!
- The circular economy programmes of [Motiva](#) and the Finnish Innovation Fund [Sitra](#) contain a number of good tips for starting nutrient recycling in your municipality.
- Also remember that asking an outsider sometimes tells you more than your own considerations.

Assessing nutrient flows in municipalities



The simplest way to look at municipal nutrient flows is to use the diagram above, especially if the various sectors are sufficiently broadly represented in the planning group. With the help of the diagram, the municipality can consider the nutrient flows entering its area, how they are used locally, and the types of nutrient flows generated in the municipality and exiting its area. This type of an assessment is usually sufficient in small municipalities. However, if a more comprehensive picture is desired of the local nutrient flows, the analysis should be commissioned with the help of experts. Different types of modelling and counters are also useful.

Steps of a nutrient neutral municipality

Steps are presented here through which the municipality as an organisation can approach nutrient neutrality and what it can do to promote this. Although the steps are meant for the municipal organisation, all the relevant parties operating within the municipality should be involved.



In its strategy, the municipality commits itself to solutions that promote nutrient recycling and supports this through its decisions

The municipality knows the local nutrient flows and their utilisation potential

Properties of a nutrient-neutral municipality; goals and examples

In its strategy, the municipality commits itself to solutions that promote nutrient recycling and supports this through its decisions

Strategy work is very important, as shared guidelines will help proceed with matters and provide individual operators and the various municipal sectors with a clear framework and goals. The special features of areas and municipalities are taken into consideration in the strategy work. This often calls for sector-specific investigations and surveys that support decision-making. Strategy work involving all stakeholders is pursued across municipal boundaries, where necessary.

- Commitment is described with clear examples in the municipal strategy and the municipal programme.
- Operative responsibility is assigned to every institution according to the topic in question.
 - > Procurement goals taking environmental aspects into consideration or the goals of corporate governance are recorded in strategies and procurement programmes.

The municipality knows the local nutrient flows and their utilisation potential

Knowledge and understanding of the local nutrient flows and their utilisation potential are needed to support decision-making. Economic potential in particular is investigated, and the ways how the sustainable use and recycling of nutrients contribute to pleasant living and the environment are also highlighted. Industries are often dependent on a clean environment, and the well-being of the inhabitants produces indirect economic benefits.

- Despite the fact that the various sectors of the municipality have information about nutrient flows, a separate survey is needed in order to provide a more specific overall picture. The investigation of material flows is also useful for other circular economy activities in the municipality.
 - > The regional government reform, for example, offers an opportunity to arrange regional counselling, which can be given by a regional recycling planner, for example. This will also promote sustainable procurement processes.

The municipality tests and develops new methods for nutrient recycling

The municipality actively creates opportunities for nutrient recycling

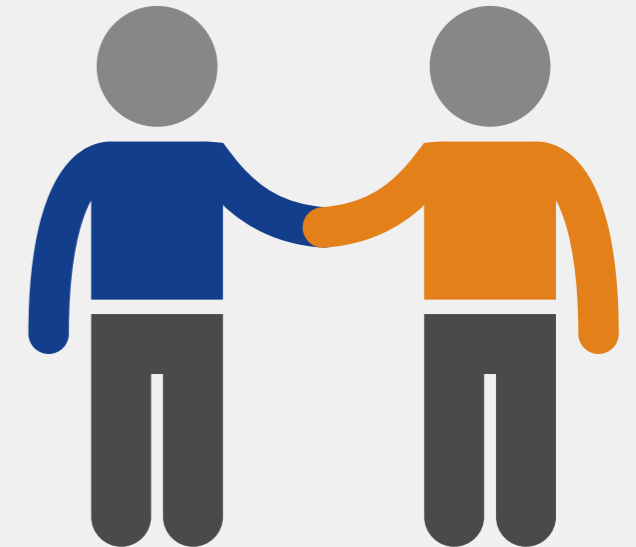
The municipality tests and develops new methods for nutrient recycling

The municipality actively tests new methods and practices and promotes their deployment. This calls for development and investment money specifically intended for municipalities.

- New innovative wastewater treatment methods are constantly being developed. They can be tested in wastewater treatment plants in need for refurbishment, for example.

The municipality actively creates opportunities for nutrient recycling

The municipality creates opportunities for nutrient recycling in its area through land use planning and by implementing a business policy that supports the establishment of circular economy companies in the municipality. The municipality provides counselling services to multi-sector operators, helps them recognise opportunities and creates cooperation. The municipality implements development and investigation projects of common interest that individual companies could not execute on their own, thereby offering them new opportunities for development work.



- Important partners here are the inhabitants and companies of the municipality and the NGOs.
- The municipality maintains and develops an infrastructure that supports nutrient recycling, ranging from power supply networks to transport solutions.
 - > A multi-sector company network based on food security and the circular economy, as well as corporate cooperation, for example, promote local business activities.

The municipality recycles nutrients, showing an example and encouraging others to take sustainable action

The municipality recycles nutrients, showing an example and encouraging others to take sustainable action

The municipality is an important forerunner and pathfinder for local entrepreneurs in pursuing environmentally saving, ecological activities and using technology. The actions taken by the municipality also encourage its inhabitants to pay attention to sustainability. The municipality has a wealth of opportunities. Here are a few:

- Innovative procurements
 - > Municipalities can utilise new selection criteria in their procurements, thereby creating demand for new methods and earning possibilities for companies.
 - > In procurements, the product range and expertise of actors in the local or nearby area are first investigated.
 - > Procurements are also assessed with respect to recycling nutrients and minimising environmental impacts.
- Permits and supervision should be actively provided and based on guidance
 - > When issuing a permit/preparing land use plans for local biogas plant investments, for example, the municipality and other operators in the area together evaluate the flow of local inputs to the plant and actual opportunities for utilising digestate in the area.

- Attention to industries
 - > The municipality can promote the circular economy and nutrient recycling through its economic policy.
 - > The municipality supports new solutions for processing insufficiently utilised nutrients so that new commercial products can be introduced based on livestock manure or industrial sidestreams, for example.
- Involving regional planning and land use planning
 - > Land use planning promotes the establishment of circular economy clusters and decentralised energy production, such as biogasing local organic masses or utilising industrial sidestreams, close their place of origin
 - > The logistics needs of recycling materials are taken into consideration in infrastructure planning.
- Improving the health and pleasantness of the common environment
 - > Food supervision and other health sector bodies and authorities are involved in discussion about nutrient recycling and the circular economy.
 - > The benefits of a pleasant environment for people's health and well-being are taken into consideration in decision-making.

The municipality pursues active cooperation and promotes resource-wise solutions in nutrient recycling together with other municipalities and operators locally and regionally

- Getting rid of food waste
 - > Food waste in catering kitchens and institutions is reduced through counselling and by showing good example in the municipality. The concrete economic benefits of reducing food waste are also stated.
- The municipality develops food circle distribution and surplus food collection in its area.
- An exemplary land owner
 - > The municipality as a land owner promotes the recycling of nutrients.
 - > In renting out municipally owned agricultural land, for instance, the municipality pays special attention to improving and maintaining soil structure. Customised rental agreements can be concluded in order to promote good cultivation practices and water conservation in agriculture.
 - > The municipality also takes care of forest management areas, parks and recreational areas using the principles of circular economy, utilising fertilisers made of recycled nutrients, for example.

The municipality pursues active cooperation and promotes resource-wise solutions in nutrient recycling together with other municipalities and operators locally and regionally

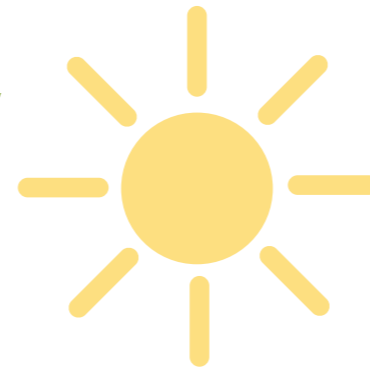
• A networked approach is the precondition for profitable operations in many cases. Clear synergy

benefits are available through the symbiosis between operators at different levels. The roles of the public and private sector must be clearly defined but flexible.

- Corporate governance
 - > Municipalities should exercise their corporate governance more strongly e.g. in waste management and in wastewater treatment plant cooperation. Municipalities can together develop the operation of regional treatment plants in order to improve the recyclability of wastewater sludge or influence wastewater flows before they enter the treatment plants.
- Different symbiosis models
 - > The municipality contributes to developing cooperation with primary production, the industry and municipality or participates in cooperation symbioses between industrial companies.
- The municipality promotes cooperation and resource-wise solutions for nutrient flows in functional urban areas/sub-regions.
 - > The municipality plays an active role in its consortiums.
 - > The municipality can promote comprehensive planning regionally and nationally in terms of logistics, for example.

Nutrient neutral municipality

Nutrient neutrality can be determined and aspired to at different regional levels, such as a nutrient neutral municipality, a nutrient neutral municipal consortium, a nutrient neutral region, a nutrient neutral farm etc. Nutrient neutrality means that the nutrients of a specific area are utilised as safely and efficiently as possible, which benefits the local economy, people and the environment. When the municipality commits itself to promoting nutrient recycling, and this shows concretely in the operation of the municipality as well as the local companies and other parties, it can be considered nutrient neutral.



A nutrient neutral municipality is **a municipality** or some other continuous area where the municipality is an **active** nutrient recycling operator. The area makes efficient, **economic use** of **organic nutrients**, taking into consideration **the local inhabitants** and **the environment**, as close to their place of origin as possible.

