



HÄMEEN LIITTO  
*Regional Council of Häme*

# Road Map for Circular Economy in Kanta-Häme

27.1.2022



Vipuvoimaa  
EU:lta  
2014–2020





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Why move to a circular  
economy?



# Why move to a circular economy?

We still live in many ways in a linear economic model where products are made, consumed and thrown away. The use of natural resources globally has tripled in the last 50 years and, according to the [OECD](#), is expected to almost double again from 90 gigatonnes in 2017 to 167 gigatonnes by 2060. The limits of the Earth's carrying capacity have been met and in the future it will be impossible to implement a linear economic model based on disposable culture and consumption.

An alternative to this linear model is a circular economy, where no more products are constantly produced, but consumption is based on services instead of ownership: renting, sharing and recycling. In this way, the value attached to the materials is preserved in society for as long as possible.



In a circular economy, economic growth is not dependent on the consumption of natural resources. In their respective strategies, the EU and Finland have strongly emphasised the circular economy and its key role as a way of working in the future.

In practice, the circular economy means, for example, reducing the amount of waste to a minimum. When a product reaches the end of its life cycle, the aim is to reuse its materials whenever possible, thus creating added value. By investing in more efficient use of material resources, the pressure on natural resources will be reduced, bringing significant benefits to both biodiversity and the climate. Circular economy operating models can be implemented by any organisation and company.





# Circular economy business models.

Sitra has defined five different business models for implementing a circular economy, which make it possible to develop the organisation's operations towards a sustainable circular economy.



# Circular economy business models



## PRODUCT LIFE EXTENSION

When the product is used for as long as possible, the need to buy and manufacture new products is reduced. Natural resources are saved and the environmental damage caused by manufacturing is reduced. The product must be designed to be easy to maintain and repair, and the product can be upgraded or remanufactured.



## PRODUCT AS A SERVICE

The customer does not have to own all the products or goods they need - in which case the company sells them as services. The product can be offered, for example, under a lease or rental agreement. Alternatively, the customer pays for a service, such as a specific activity or end result.



## SHARING PLATFORM

The digital sharing platform allows consumers and businesses to easily borrow, rent, sell or otherwise share their own resources, such as their goods, facilities and know-how.



## RENEWABILITY

Renewable, recyclable and biodegradable materials are already selected in product design. For example, a company may manufacture and sell renewable raw materials and related know-how to other companies. Renewable energy is used instead of fossil fuels.



## RECOVERY & RECYCLING

The product, its manufacturing and the entire value chain are designed to use materials and energy efficiently. New raw materials and products are made from waste, surplus materials and used products. It is important that products and materials are returned and recycled.



# Introduction to the roadmap.



# Road Map for Circular Economy in Kanta-Häme

Kanta-Häme is a home to strong know-how and successful business in both the sustainable use of natural resources as well as in the bioeconomy and circular economy. The roadmap, together with local stakeholders, will provide a joint plan for measures to move towards a sustainable, resource-efficient circular economy.

The circular economy work in Kanta-Häme is carried out in extensive co-operation with organisations in the region and is coordinated by the provincial circular economy work group.





# Objectives

1

Sustainable  
well-being

2

No over-  
consumption

3

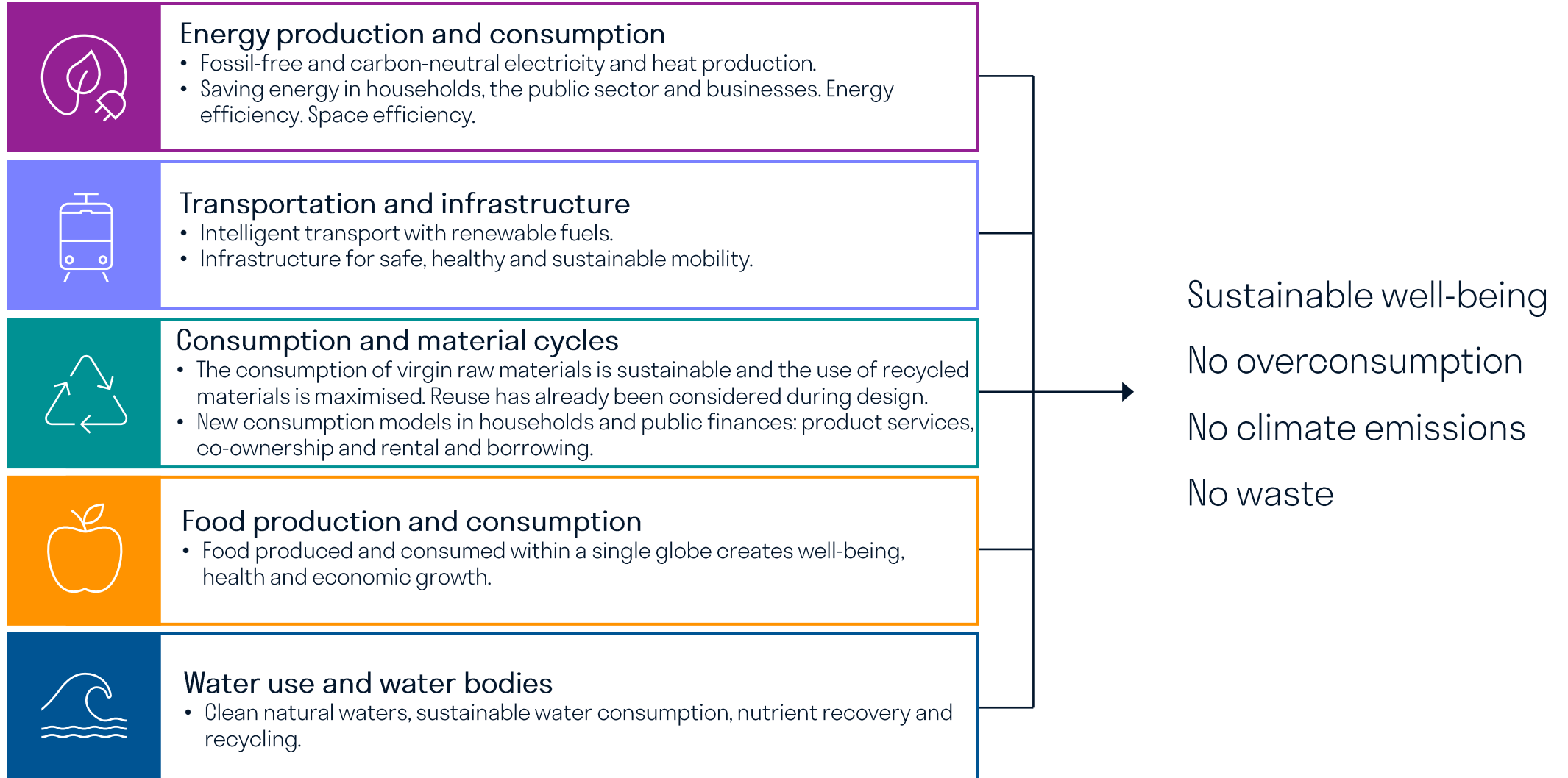
No climate  
emissions

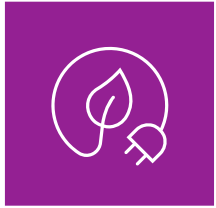
4

No  
waste



# The sub-areas of the circular economy roadmap, i.e. Lanes





# Energy production and consumption

## Long term goals for 2035

- The entire public real estate stock has been renovated or a decision has been made on a renovation plan for energy category C
- Smart building technology in use in all public properties as well as most residential properties
- Kanta-Häme's energy production and consumption are carbon neutral

## Indicators (links in Finnish)

1. [Reduced CO2 emissions](#)
2. [Share of different energy sources / renewables in total energy consumption](#) (national)

### Possible future indicators:

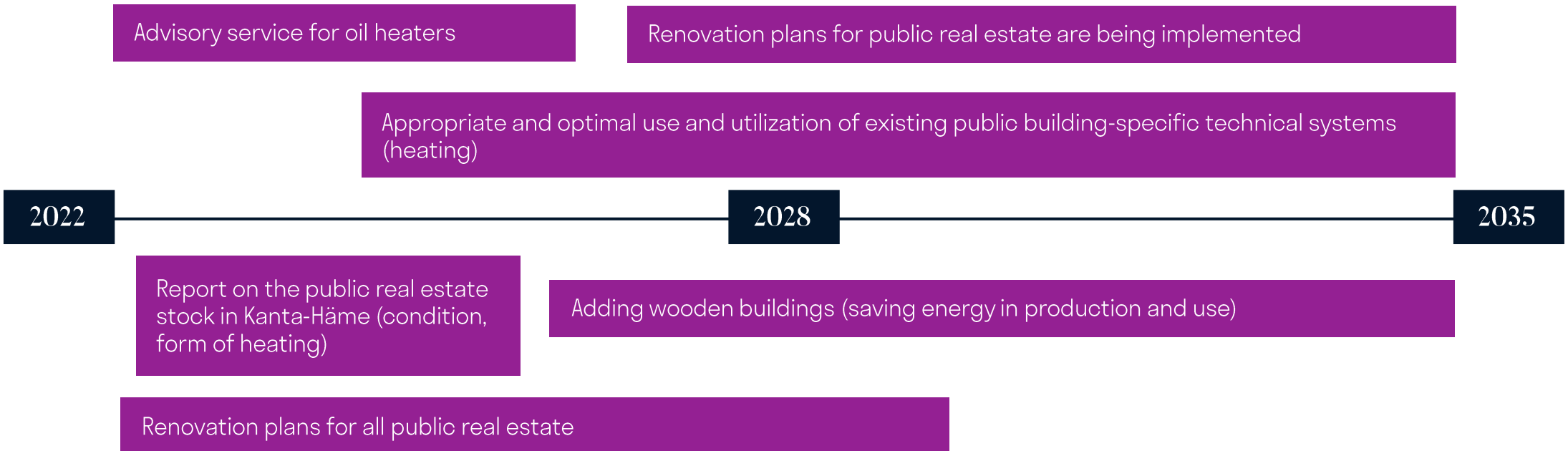
- Number of public real estates converted to renewable energy
- Number of smart (and monitored) public properties



ACTIONS

# Energy production and consumption

Long term goal: The entire public real estate stock has been renovated or a decision has been made on a renovation plan for energy category C



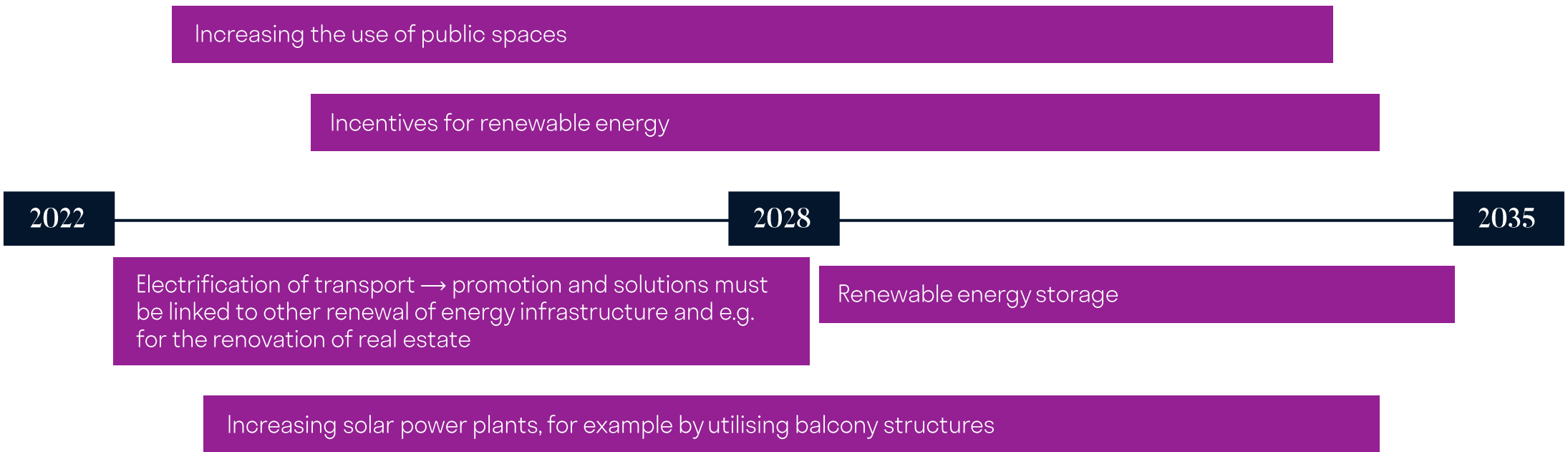
**Implementers:**  
Cities, municipalities, energy companies, HAMK



ACTIONS

# Energy production and consumption

Long term goal: Smart building technology in use in all public properties as well as most residential properties



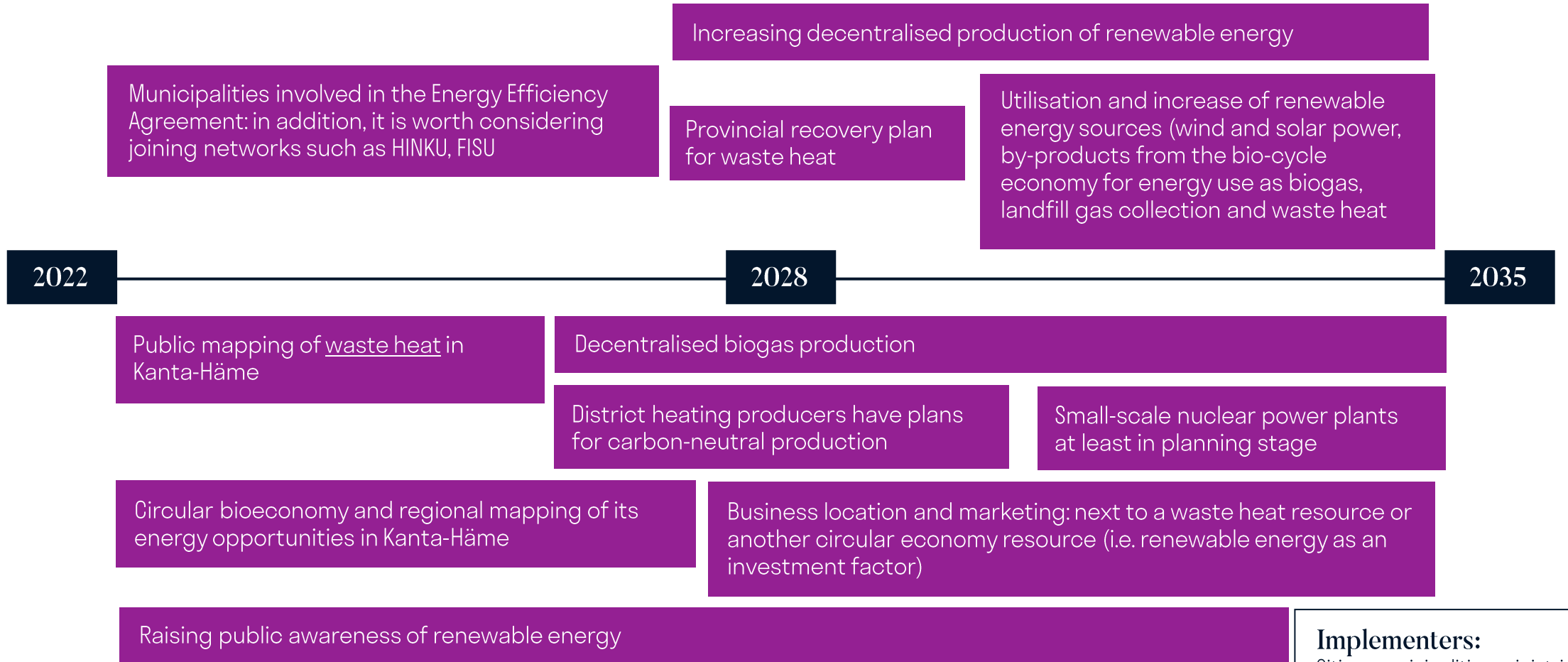
**Implementers:**  
Cities, municipalities, ministries / political decision-making, Regional Council of Häme, Motiva, companies



ACTIONS

# Energy production and consumption

Long term goal: Kanta-Häme's energy production and consumption are carbon neutral



**Implementers:**  
Cities, municipalities, ministries / political decision-making, Regional Council of Häme, Motiva, companies



# Transportation and infrastructure



## Long term goals 2035

- The need to move has decreased
- The volume of pedestrian and bicycle traffic has increased
- A carbon-neutral transport system and a community structure that supports biodiversity
- Carbon sinks have increased
- The countryside remains alive

## Indicators (links in Finnish)

1. [Provincial carbon balance](#)
2. [Traffic distribution monitoring and traffic performance](#)
3. [Coverage of the pedestrian and bicycle transport network](#)
4. [Geographical distribution of the population](#)



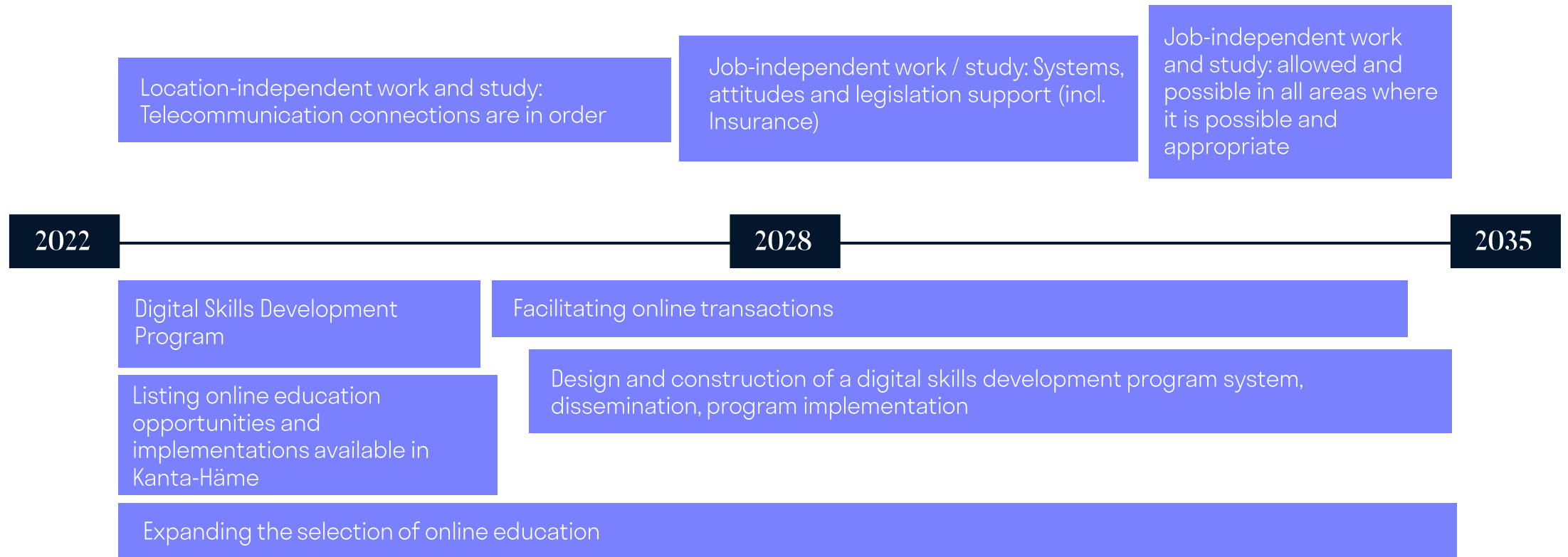


ACTIONS



# Transportation and infrastructure

Long term goal: The need to move has decreased



**Implementers:**

Cities, municipalities, HAMK, Sykli,  
service providers, Fai, Tavastia,  
Hyria

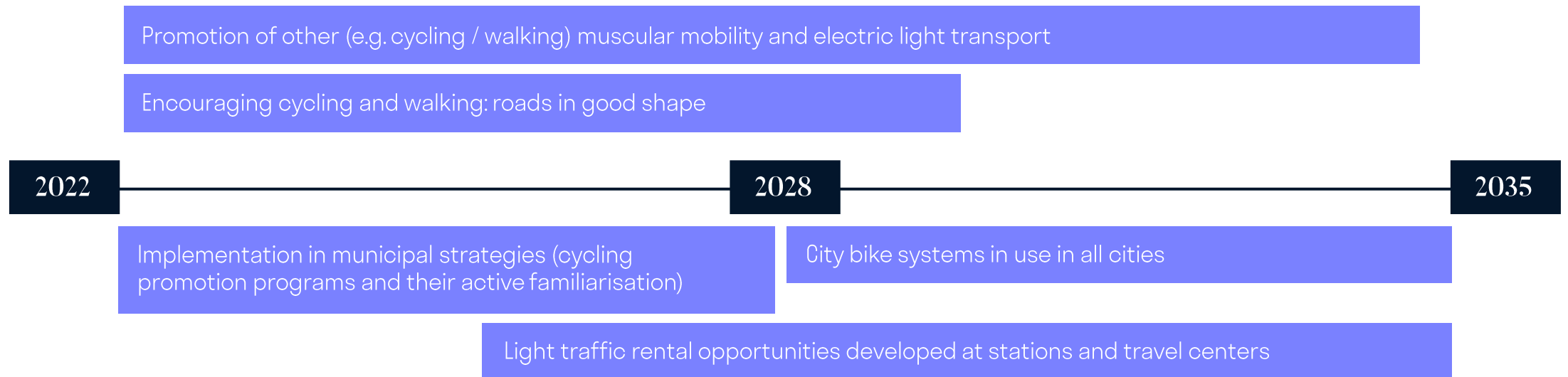


ACTIONS



# Transportation and infrastructure

Long term goal: The volume of pedestrian and bicycle traffic has increased



**Implementers:**  
Cities, municipalities, Regional Council of Häme

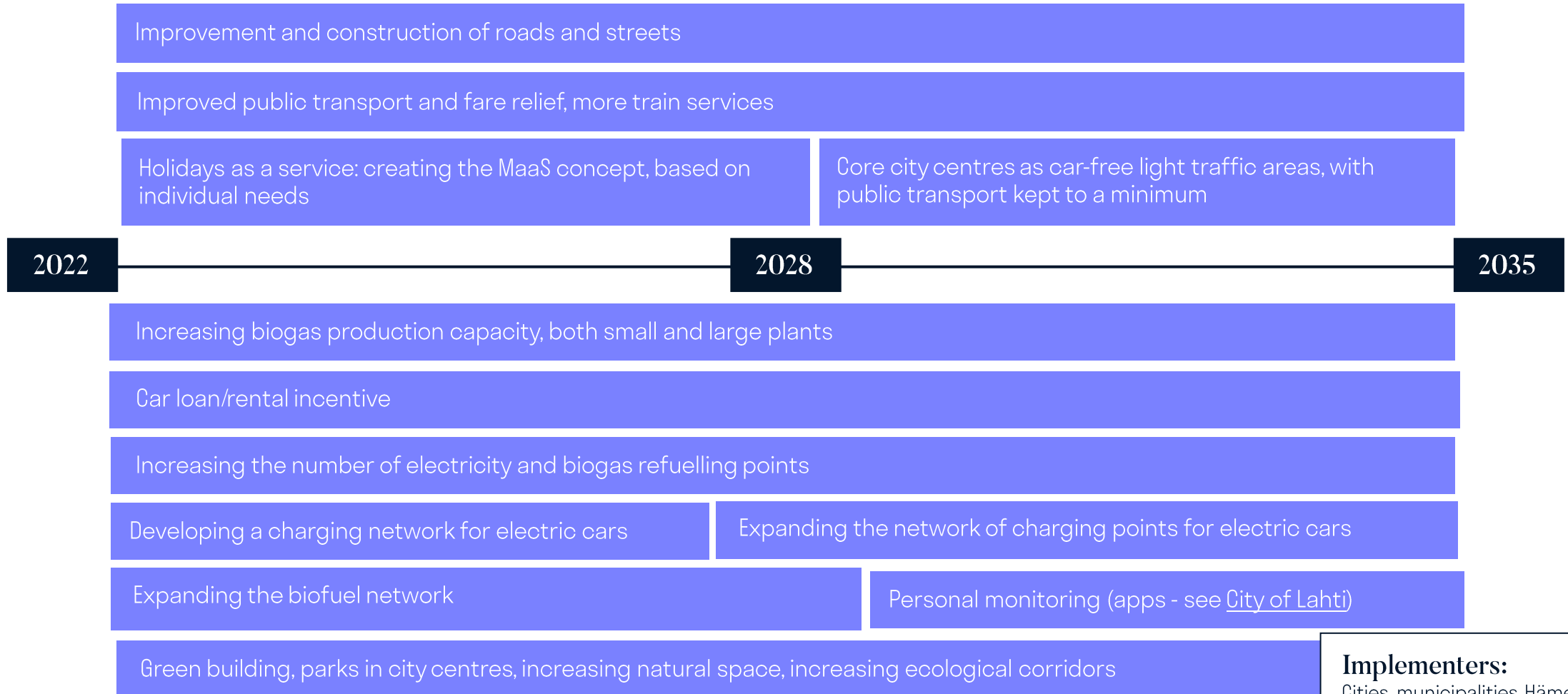


ACTIONS



# Transportation and infrastructure

Long term goal: A carbon-neutral transport system and a community structure that supports biodiversity



**Implementers:**  
 Cities, municipalities, Häme Regional Council, ELY, road management authorities, research institutes, companies, S-Group



# Consumption and material cycles



## Long term goals 2035

- Waste generation is minimised and operations are material efficient
- An international and competent local, more environmental education
- The region takes into account the life-cycle approach to materials and more sustainable consumption

## Indicators (links in Finnish)

1. [Degree of recovery of municipal waste as a material](#)
2. Number of active sharing economy business models/platforms
3. Turnover and number of enterprises in material recycling industries
4. Volume and recovery rate of packaging and construction waste

### Possible future indicators:

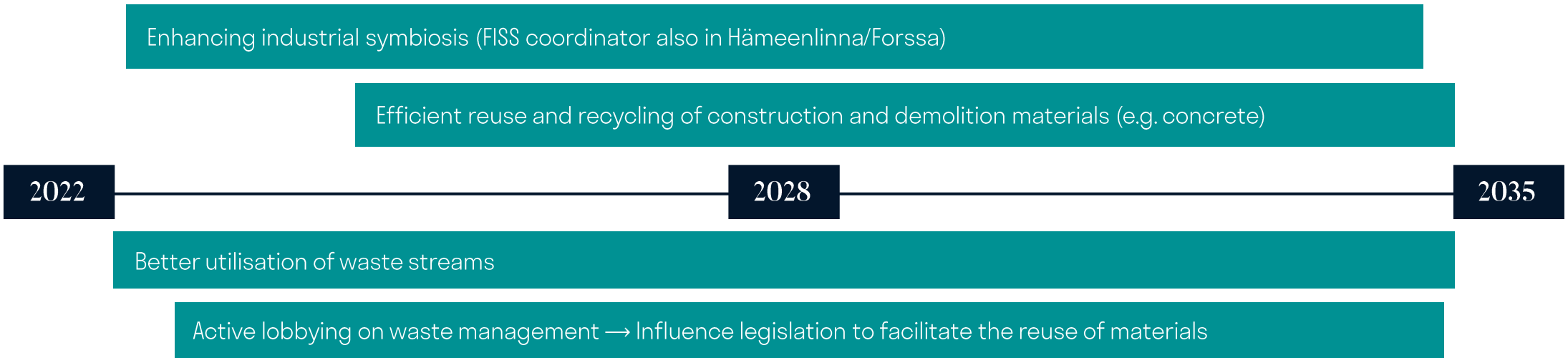
- Degrees obtained (in the field of the environment)
- Environmental/circular economy experts in companies
- Number of industrial and productive symbioses



ACTIONS

# Consumption and material cycles

Long term goal: Waste generation is minimised and operations are material efficient



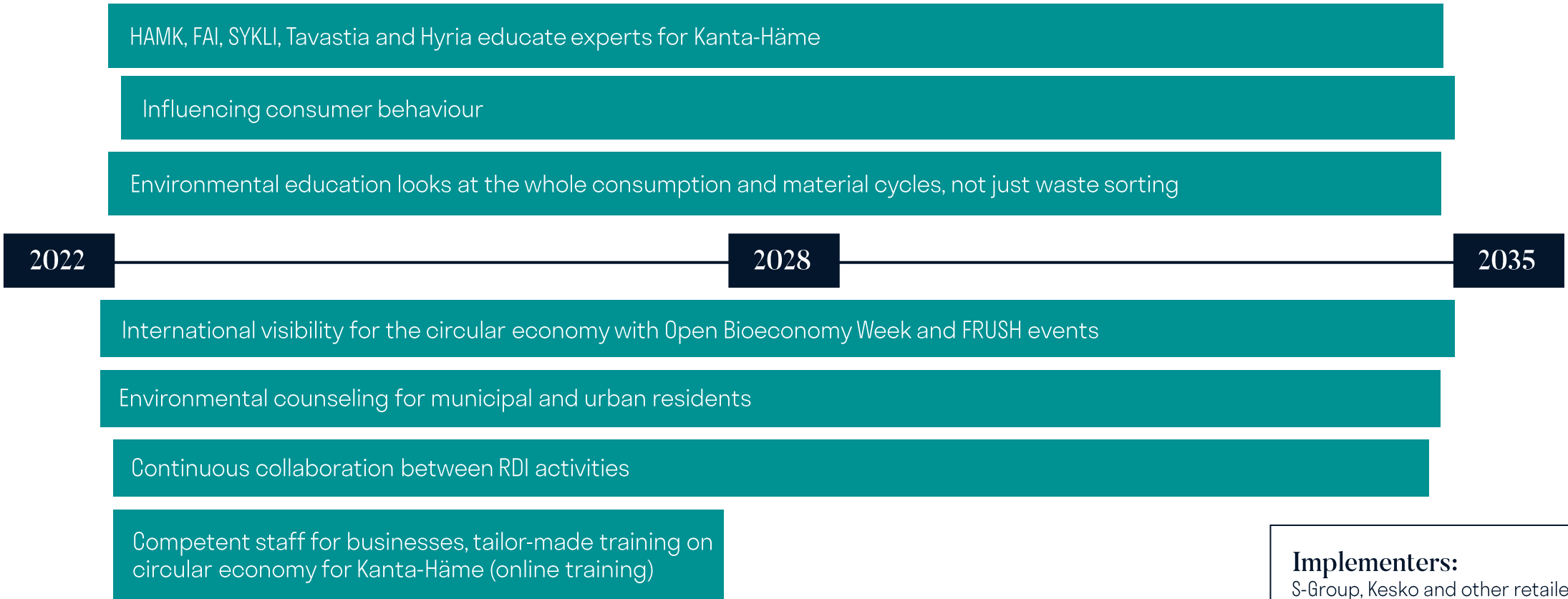
**Implementers:**  
Cities, Municipalities, Motiva, Waste Operators, Trifami 3D



ACTIONS

# Consumption and material cycles

Long term goal: An international and competent local, more environmental education



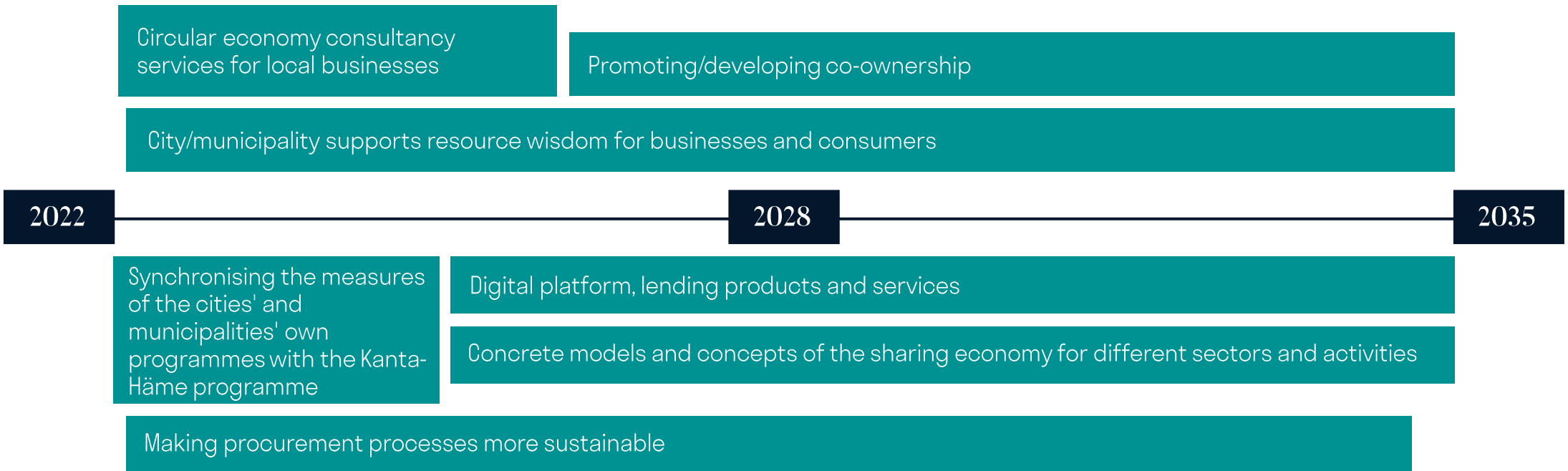
**Implementers:**  
S-Group, Kesko and other retailers, cities, municipalities, HAMK, LUKE, SYKLI, companies, HY



ACTIONS

# Consumption and material cycles

Long term goal: The region takes into account the life-cycle approach to materials and more sustainable consumption



**Implementers:**  
Cities, municipalities, companies,  
Häme Regional Council



# Food production and consumption

## Long term goals 2035

- Kanta-Häme is a climate-neutral region for local and organic food
- Kanta-Häme has a sustainable food system that is also an internationally recognised pioneer
- Identified and minimised waste in each part of the food chain is recycled
- A sustainable food system is driven by quality knowledge, generated through research and education

## Indicators (links in Finnish)

1. [Carbon balance of agriculture](#)
2. [Food waste](#)
3. Monitoring organic and local food procurement in the public sector
4. [Statistics on different types of farming](#)

### Possible future indicators:

- Measures to promote carbon sequestration in primary production
- The overall financing of research

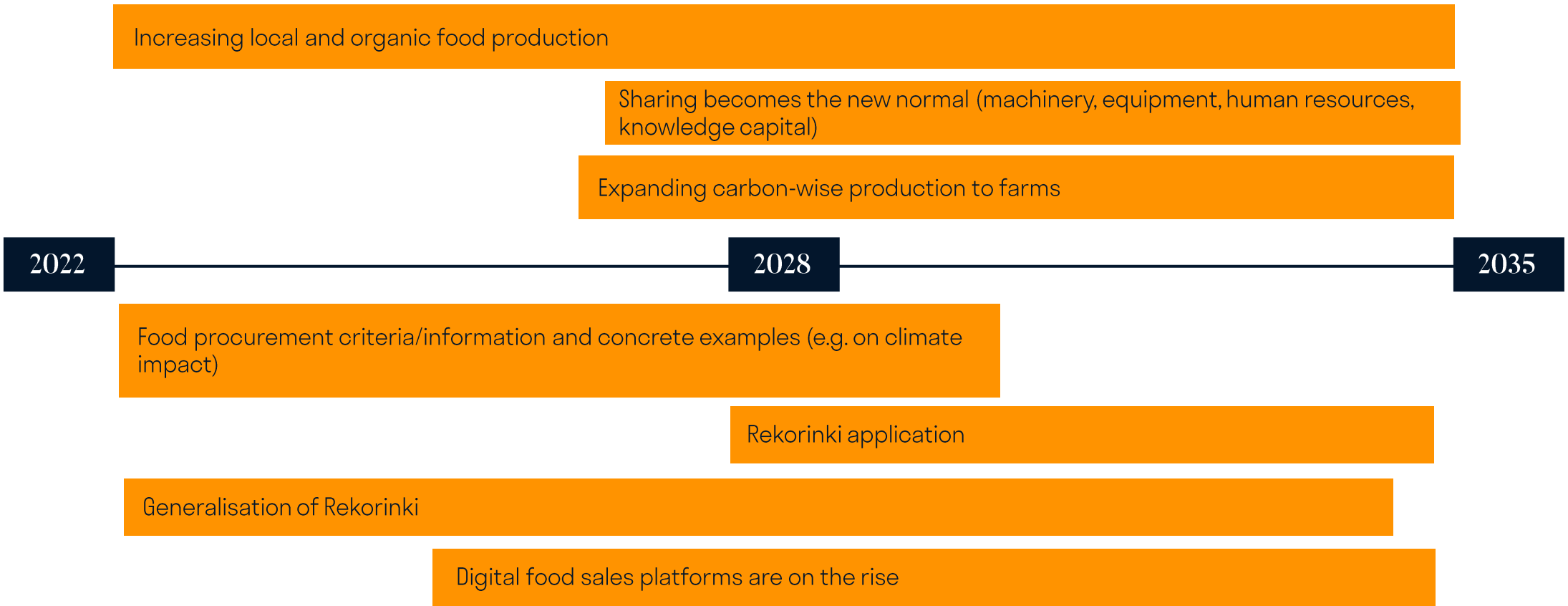




ACTIONS

# Food production and consumption

Long term goal: Kanta-Häme is a climate-neutral region for local and organic food



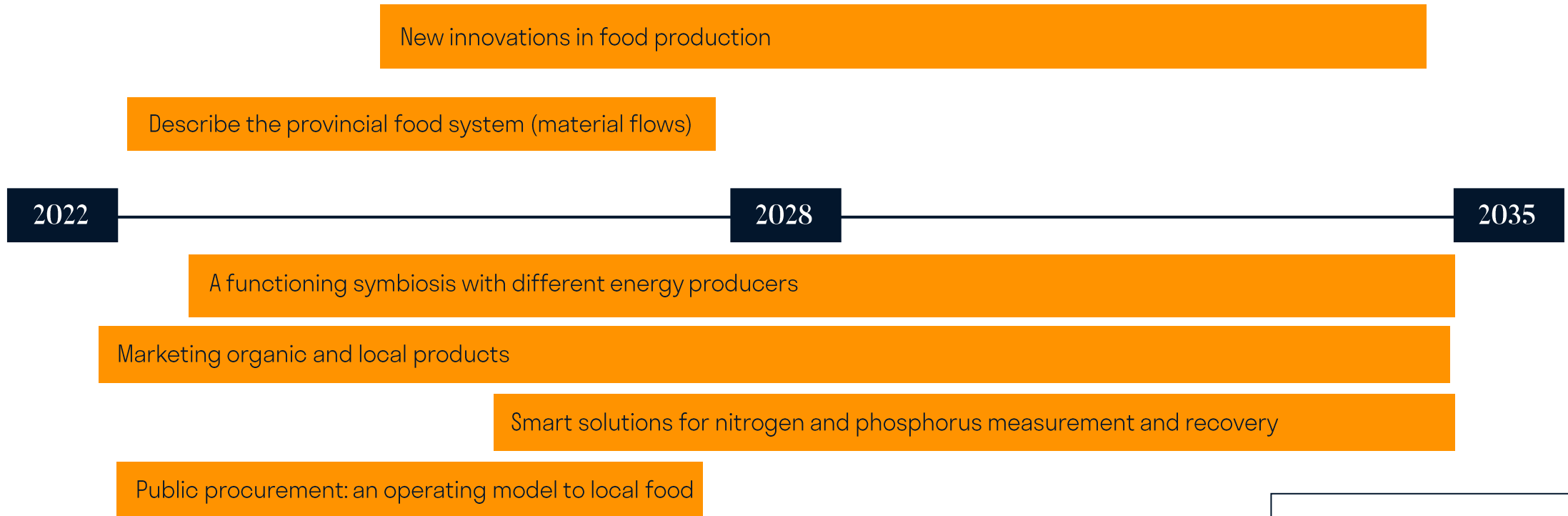
**Implementers:**  
Producers, cities, municipalities,  
HAMK, LUKE, MTK



ACTIONS

# Food production and consumption

Long term goal: Kanta-Häme has a sustainable food system that is also an internationally recognised pioneer



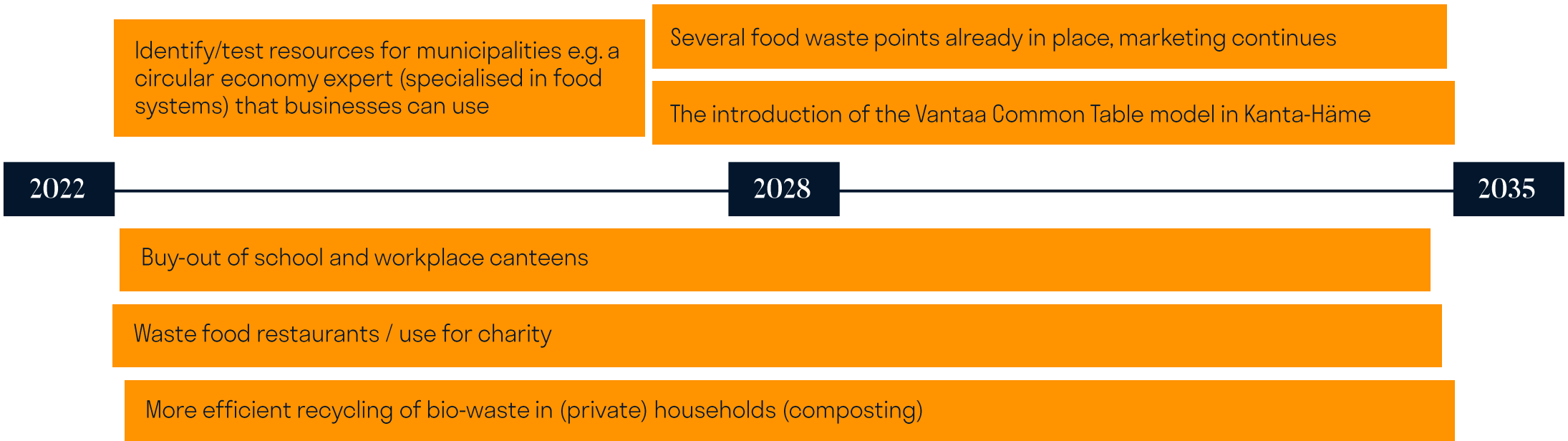
**Implementers:**  
HAMK, companies, LUKE, MTK, farms,  
biogas producers & distributors,  
cities, municipalities, state, Sitra



ACTIONS

# Food production and consumption

Long term goal: Identified and minimised waste in each part of the food chain is recycled



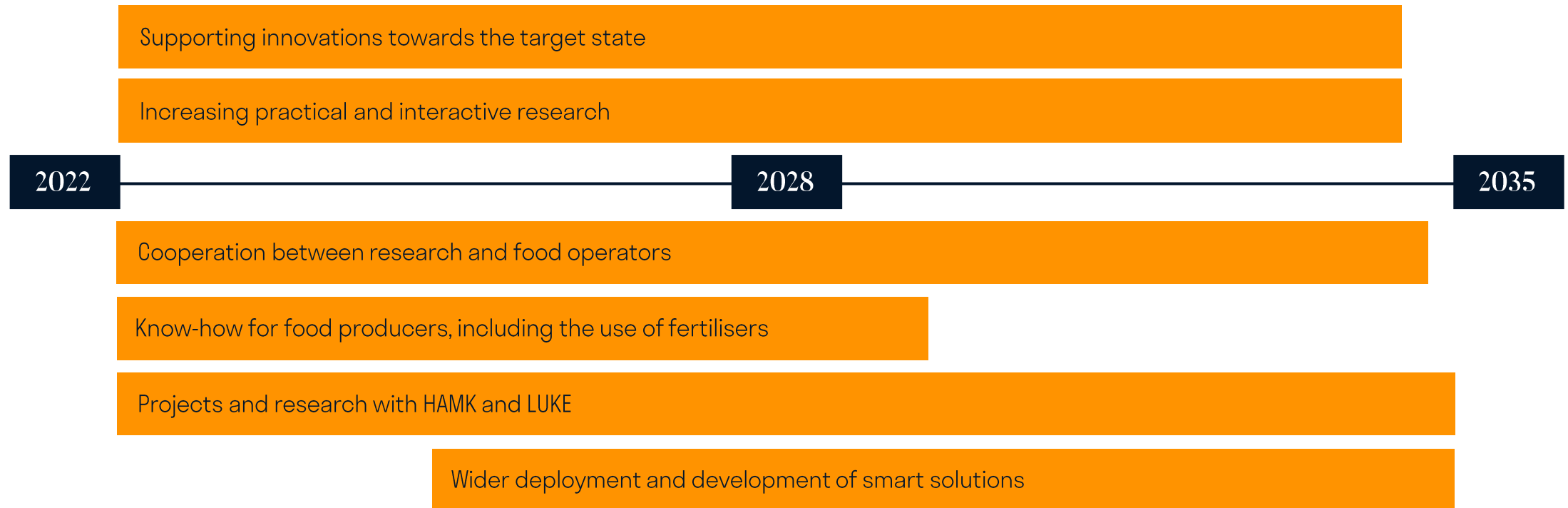
**Implementers:**  
HAMK, LUKE, Häme Regional Council, cities, municipalities, traders, organisations, Sitra, companies, producers, shops, restaurants, consumers



ACTIONS

# Food production and consumption

Long term goal: A sustainable food system is driven by quality knowledge, generated through research and education



**Implementers:**

HAMK, LUKE, Häme Regional Council, cities, municipalities, traders, organisations, Sitra, companies, producers, shops, restaurants, consumers



# Water use and water bodies



## Long term goals 2035

- A diffuse pollution-free region (organic stormwater management, WSSP)
- Nutrient and water is recycled (pollutants and nutrients captured and recovered / disposed of)
- The resilience of water management is in order, and the changes ahead (climate change, migration, etc.) have been prepared
- Sustainable use and maintenance of recreational areas

## Indicators (links in Finnish)

1. [Ecological quality class of waters](#)
2. Number of recreational areas + number of users
3. Amount of water supply repair debt
4. Groundwater quality, degree of implementation of protection measures

### Possible future indicators:

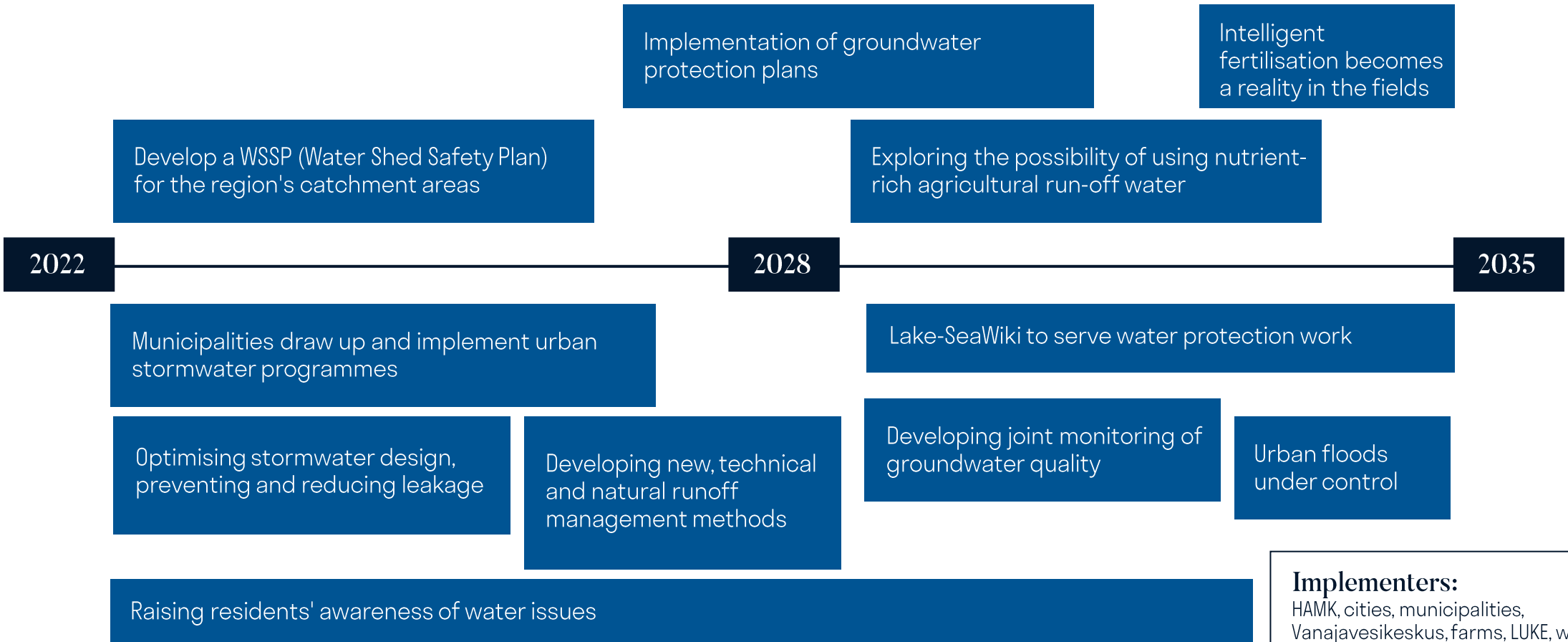
- Volume of water sector (exports); new jobs in the blue bioeconomy; new technologies



ACTIONS

# Water use and water bodies

Long term goal: A diffuse pollution-free region (organic stormwater management, WSSP)



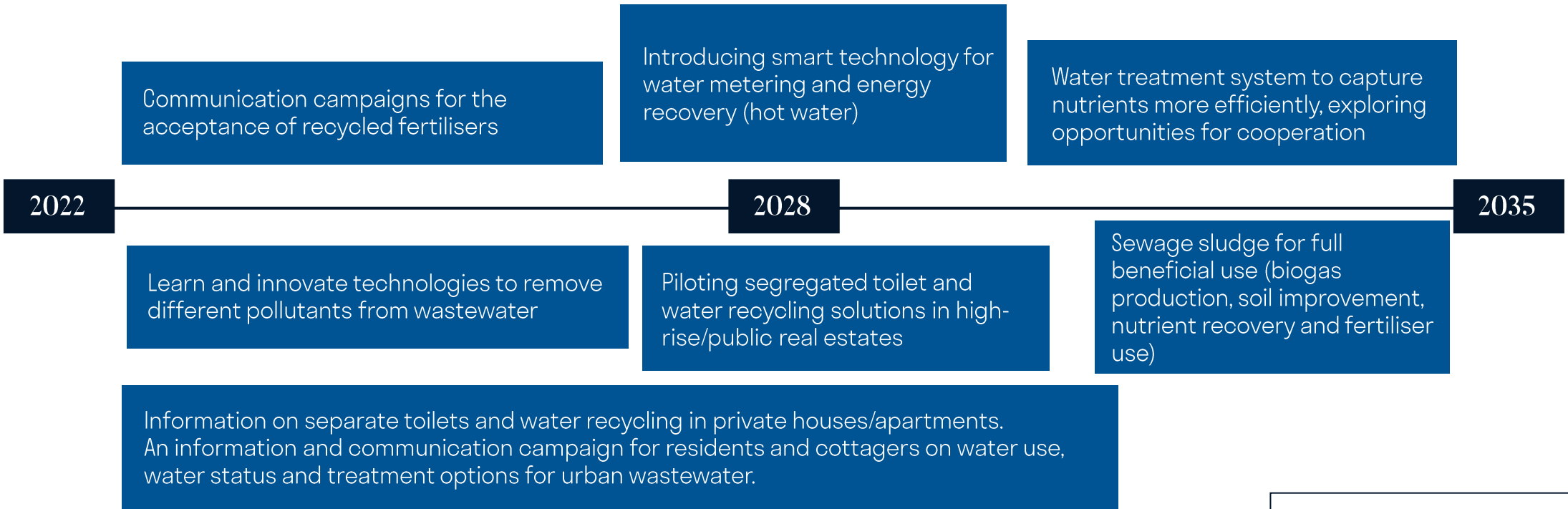
**Implementers:**  
HAMK, cities, municipalities,  
Vanajavesikeskus, farms, LUKE, water  
protection associations, ELY



ACTIONS

# Water use and water bodies

Long term goal: Nutrient and water is recycled (pollutants and nutrients captured and recovered / disposed of)



**Implementers:**  
Cities, municipalities,  
Vanajavesikeskus, LUKE, water utilities,  
water protection associations

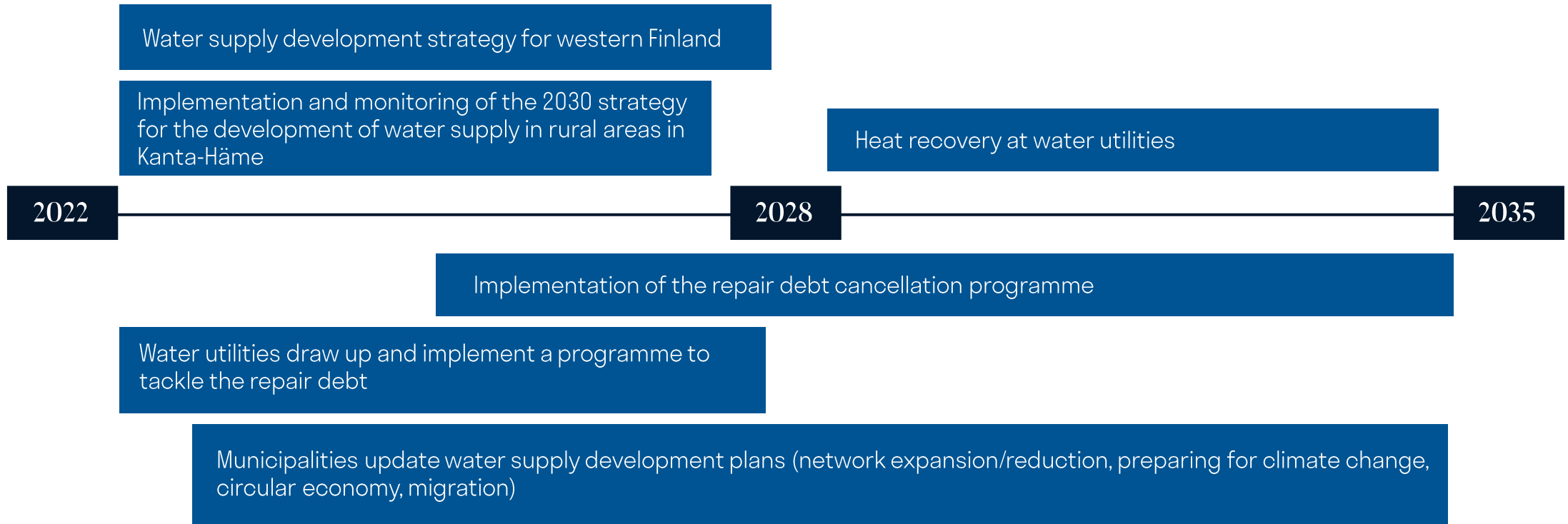


ACTIONS



# Water use and water bodies

Long term goal: The resilience of water management is in order, and the changes ahead (climate change, migration, etc.) have been prepared



**Implementers:**

Cities, municipalities, Vanajavesikeskus, LUKE, water utilities, water protection associations

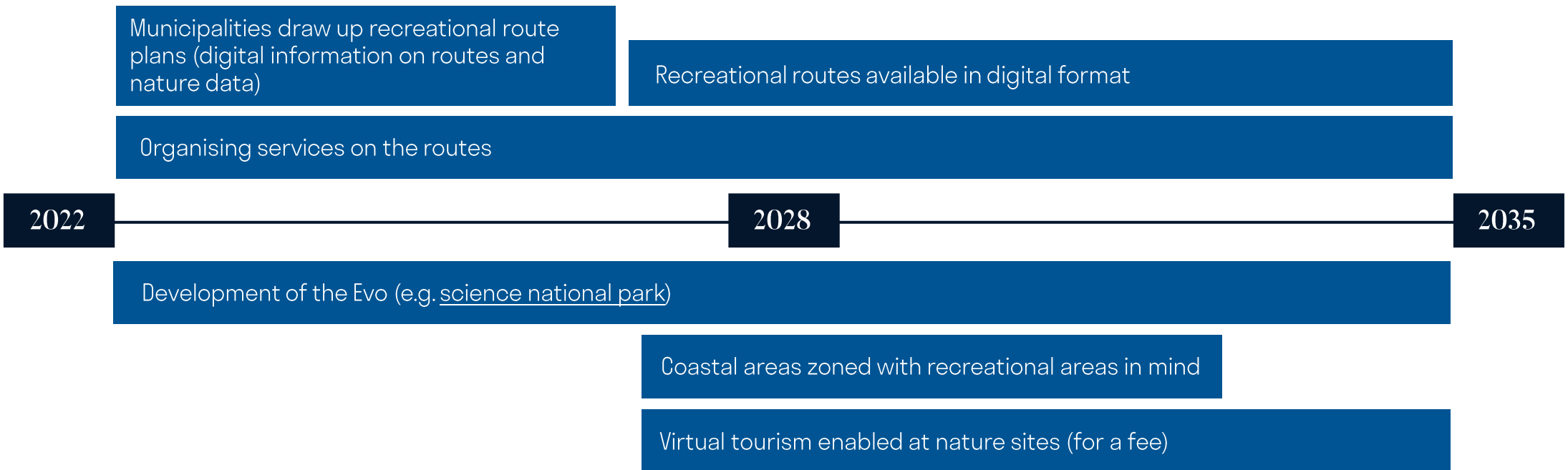




ACTIONS

# Water use and water bodies

Long term goal: Sustainable use and maintenance of recreational areas



**Implementers:**

Cities, municipalities, nature tourism companies, HY, Metsähallitus, HAMK, nature organisations, Vanajavesikeskus



# Examples of circular economy organisations in Kanta-Häme.



The circular economy can be implemented in any company or organisation. For example, it can mean designing your own product's life cycle to be more sustainable, using renewable energy in your own operations or making efficient use of side streams and recycled materials. And this is just a scratch on the surface.

Here are some examples of how the circular economy is implemented in practice in Kanta-Häme.

For more examples of circular economy companies, see [Sitra's circular economy highlights](#).





# Jospak Oy

Jospak has developed a packaging solution to replace plastic for the food and beverage industry. The patented Jospak® liner combines the best properties of carton and plastic for liquid and gas-tight food packaging and is suitable for modified atmosphere packaging on glass sealing lines.

The solution significantly reduces the environmental impact of food packaging by reducing plastic use, overpackaging and greenhouse gas emissions. The company is certified according to the BRC and FSC Code of Conduct standards.



**Main business:** Development, manufacturing and marketing of packaging and packaging technology for domestic and international markets

**Location:** Forssa

**Web Page:** [jospak.com](http://jospak.com)



# Kiertokapula Oy

Kiertokapula Oy is responsible for municipal waste management in 6 municipalities in Kanta-Häme: Hattula, Hausjärvi, Hämeenlinna, Janakkala, Loppi and Riihimäki. The collected municipal waste is recovered as energy and the biowaste is used as raw material in processes that produce bio-ethanol as a raw material for biofuel. Kiertokapula also concludes contracts for organised waste management in municipal areas and for recycling cooperation with producer communities.

Kiertokapula Oy also takes care of the collection, transport and recovery of commercial and hazardous waste, as well as of the operational and closed disposal sites located in connection with the waste treatment areas, as required by law. Kiertokapula also provides advice and environmental training in all our activities. The aim of waste advice is to promote sustainable consumption and a sustainable lifestyle.



**Main business:** Waste management

**Location:** Hämeenlinna

**Web Page:** [kiertokapula.fi](http://kiertokapula.fi)



# Loimua Oy

Loimua uses by-products from forestry and the wood processing industry as well as waste and surplus heat from its partners in energy production. The ash from the incineration process is used for land reclamation or as forest fertiliser. Energy efficiency has been improved through several boiler investments and the thermal energy contained in the flue gases is also recovered and used for district heating.

Thanks to these measures, Loimua's CO2 emissions have fallen by 57% over the last five years. In addition to heat products, Loimua offers services that can contribute to, among other things, longer equipment lifetime and overall energy efficiency.



**Main business:** Energy production

**Paikkakunta:** Hämeenlinna

**Web Page:** [loimua.fi](https://loimua.fi)



# VG Recycling

VG Recycling is part of the international Vanden Recycling Group, which focuses on the recycling of plastic waste. A new plastic raw material is produced from different grades of plastic waste, for example in the form of granules.

VG Recycling supplies recyclable plastic raw materials to companies specialising in polymer recycling and works with recyclers and manufacturers globally. In addition to Finland, Vanden Recycling has offices in the United Kingdom, Hong Kong, Australia, Dubai, Spain and Turkey.



**Main business:** Recycling

**Location:** Hausjärvi

**Web Page:** [vandenrecycling.com](https://vandenrecycling.com)



# Fortum Waste Solutions

Fortum Group's Recycling and Waste business area treats and reuses customer waste, which is utilised as materials and in energy production.

The Riihimäki office has a plastic refinery, a high-temperature incinerator and two grate incinerators.

The Riihimäki plant handles hazardous waste, municipal waste and other waste fractions. The plastics refinery processes separately collected consumer plastic packaging as well as industrial plastic streams and produces them as a raw material for the recycled plastic granulate industry. The production plant also produces district heat and electricity for residents and properties in the Riihimäki and Hyvinkää areas.



**Main business:** Hazardous waste management

**Paikkakunta:** Riihimäki

**Web Page:** [fortum.fi](https://www.fortum.fi)





# Sport Talli

Sport Talli's gym and exercise center is located in Hämeenlinna, where the circular economy has been considered in many everyday activities.

The building technology of the property has been implemented in an energy-efficient manner. The heating system is district heating. Energy efficiency (LED lighting, motion detectors, twilight and clock switches) has been taken into account in HVAC systems and in lighting.

The gym is equipped with rubber mats made of recycled material, and the materials for the equipment and sports equipment are also recycled material (disc bars, weights and exercise equipment).



**Main business:** Gym

**Paikkakunta:** Hämeenlinna

**Web Page:** [sporttalli.fi](http://sporttalli.fi)



# S-Group

At the heart of the S-Group's circular economy are waste recycling, waste management and solutions for consumers. The S-Group is constantly exploring new operating models related to the circular economy, which will keep valuable raw materials and resources in circulation for longer and more efficiently. The S-Group is also involved in a commitment to material efficiency in the food industry to reduce the environmental impact of food production, distribution and consumption.

The goal is to recycle 80% of waste either as materials or as raw materials for new products by the end of 2025. For example, the cut flowerpots used were utilised as a raw material for cleaning supplies. The plastic was recycled for the third time in the project, as the raw material for the buckets was already recycled plastic.

The biowaste from the stores is utilised in the production of Eko E85 fuel sold at service stations. The S-Group is part of The New Plastics Economy's Global Commitment, which aims to reduce the use of unnecessary plastics, develop reusable packaging and increase recycling efficiency.



**Main business:** General wholesale

**Location:** All municipalities in Kanta-Häme

**Web Page:** [sryhma.fi](https://sryhma.fi)



# Trifami 3D Oy

Trifami 3D Oy is a Hämeenlinna-based expert in materials recycling and ecological construction, a start-up company that was founded in 2018 to implement a completely new kind of construction concept. A service entity whose cornerstones are new technologies, the right partners and a circular economy.

Trifami 3D develops the construction industry ecologically and innovatively by creating an ecosystem that makes the most efficient use of existing demolition material and manufactures buildings with new technologies together with a network of partners.

Among other things, Trifami 3D's processes and technologies enable the efficient recycling of demolishable concrete material and its processing into new building concrete - for both traditional and 3D printing construction.



**Main business:** Builder service

**Location:** Hämeenlinna

**Web Page:** [trifami3d.fi](https://trifami3d.fi)



# Sykli Environmental School of Finland Oy

SYKLI is a nationwide specialised vocational school that offers education and training leading to a degree and employment. There are five fields of education:

- Quality, Environmental and Safety Management
- Resource Efficiency
- Water management
- Environmental maintenance
- Environmental education

In cooperation with other actors, Sykli has developed the [Ammattilaisen Kädenjälki](#) -online training platform.

In addition, Sykli is involved in several circular economy projects and offers various expert services, such as carbon footprint calculations. Sykli has also developed, in cooperation with other partners, the [Circula](#)<sup>®</sup> circular economy board game for educational use.



**Main business:** Education and training services

**Location:** Riihimäki

**Web Page:** [sykli.fi](https://sykli.fi)

# Häme University of Applied Sciences (HAMK)

Häme University of Applied Sciences (HAMK) is a multidisciplinary and working life-oriented university with 30 bachelor's degrees, 12 master's degrees and a vocational teacher college.

Promoting the circular economy is a significant part of HAMK's sustainable development goals. The circular economy is part of more and more education. For example, training in sustainable development, bioeconomy engineering and smart and sustainable design strongly involves innovation in the challenges and technical solutions of the circular economy. Business and construction training, for example, also includes circular economy modules. The circular economy also plays a very central role in HAMK's RDI activities, both nationally and internationally. The circular economy has been promoted, among other things, by developing the circular economy expertise of universities, industrial symbiosis on the sustainable use of natural resources, and the business challenges in the circular economy sector in Africa. HAMK is also strongly involved in the construction of the Kanta-Häme circular economy roadmap.



**Main business:** University of Applied Sciences  
**Campuses:** Hämeenlinna, Riihimäki, Forssa, Evo (Hämeenlinna), Lepaa (Hattula), Mustiala (Tammela)  
**Web Page:** [hamk.fi](https://www.hamk.fi)

# Natural Resources Institute Finland LUKE

The Natural Resources Institute Finland (Luke) is a research and expert organisation that builds prosperity and a sustainable future from renewable natural resources. Luke has offices and research stations all over Finland, including one in Jokioinen, Kanta-Häme, where the circular bioeconomy is at the heart of its research. At Luke, research is structured in [four research programmes](#).

The Circular Bioeconomy research programme promotes the wise and sustainable use of renewable resources and raw materials. The programme provides solutions for the efficient and sustainable use of biomass, its compounds and nutrients, generating new business opportunities. In addition, the Adaptive and Resilient Bioeconomy research programme will explore the complex interactions between natural ecosystems, production systems and society in a holistic way, and contribute to their ability to maintain their capacity to function under changing conditions.

Examples of Luke's circular bioeconomy activities include Finland's [national food waste roadmap](#), a [biogas plant and nutrient recycling](#).



**Main business:** Ministry of Agriculture and Forestry  
(environmental research)

**Location:** Jokioinen

**Web Page:** [luke.fi](http://luke.fi)



# Lammi Biological Station - University of Helsinki

The University of Helsinki's Lammi Biological Station is a year-round research and teaching centre. It has served as a base for the University of Helsinki's life sciences field courses and environmental science research projects for over half a century.

The Lammi Biological Station studies, among other things, the effects of climate change and land use on the quality, structure and function of food webs in lakes, including the nutritional quality of fish. Between 2018 and 2020, the station was involved in the [Algae Seedling](#) project, which studied the recovery and recycling of nutrients from wastewater using algae. The aim of the project was to reduce water pollution and recycle the nutrients absorbed by algae.



**Main business:** University / Research

**Paikkakunta:** Lammi (Hämeenlinna)

**Web Page:** [Lammin biologinen asema](#)



# Funding opportunities in the circular economy and the Material Market.





# Funding opportunities for the circular economy

Funding for circular economy ideas and development is available from a number of sources.

The links below summarise the different sources of funding for circular economy activities. It is advisable to visit the funders' websites from time to time to keep up to date with the latest funding opportunities.

- Materials for recycling - Circwaste: [funding opportunities for the circular economy](#)
- Biotalous.fi - Sources of [funding for the bioeconomy](#)





# Material Market

The Material Market is a digital sharing platform for the professional exchange of waste and production side streams from companies and organisations.

It also allows users to search for and offer related services, such as waste management and expert services.

Access to the portal is free of charge and open to the industry.

Visit the website: [materiaalitori.fi](https://materiaalitori.fi)





# Resident survey on important circular economy measures in Kanta-Häme.



An important part of the circular economy is the citizens who can contribute to the circular economy through their everyday choices and actions.

As part of the roadmap, we asked the residents of Kanta-Häme about the circular economy measures that are important to them and that should be implemented in their municipality.

All the answer options were measures that had been raised in the roadmap workshops, and the respondents were given the opportunity to choose the two most important ones by theme.

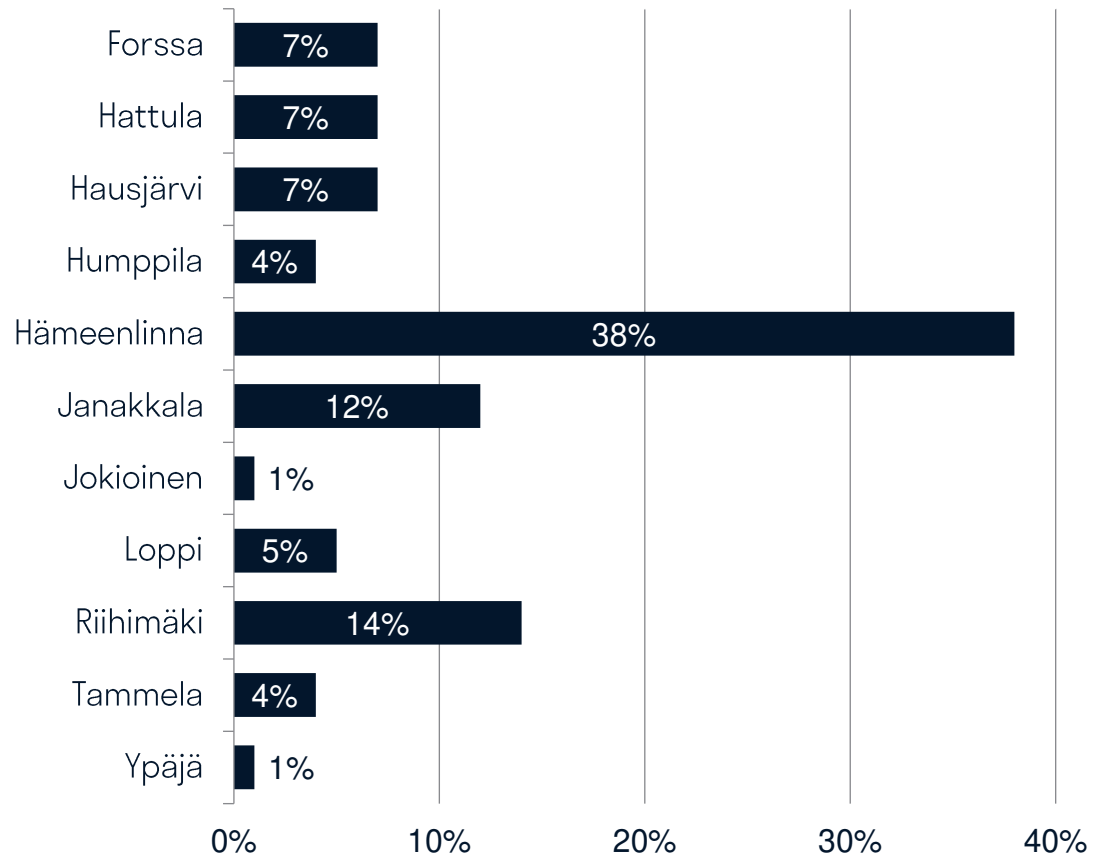
The survey was carried out in spring 2021 and 398 respondents answered.



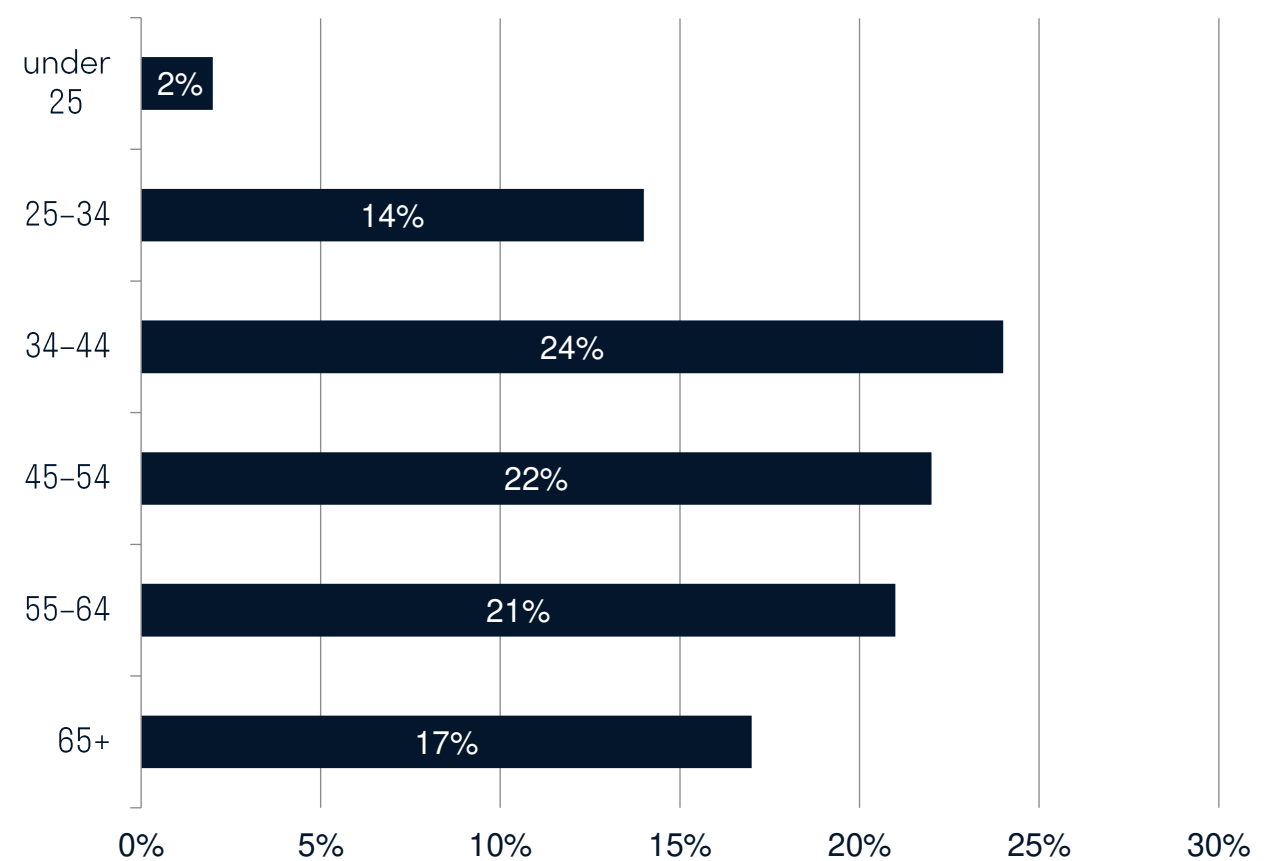


# Background information on survey respondents

## Location



## Age

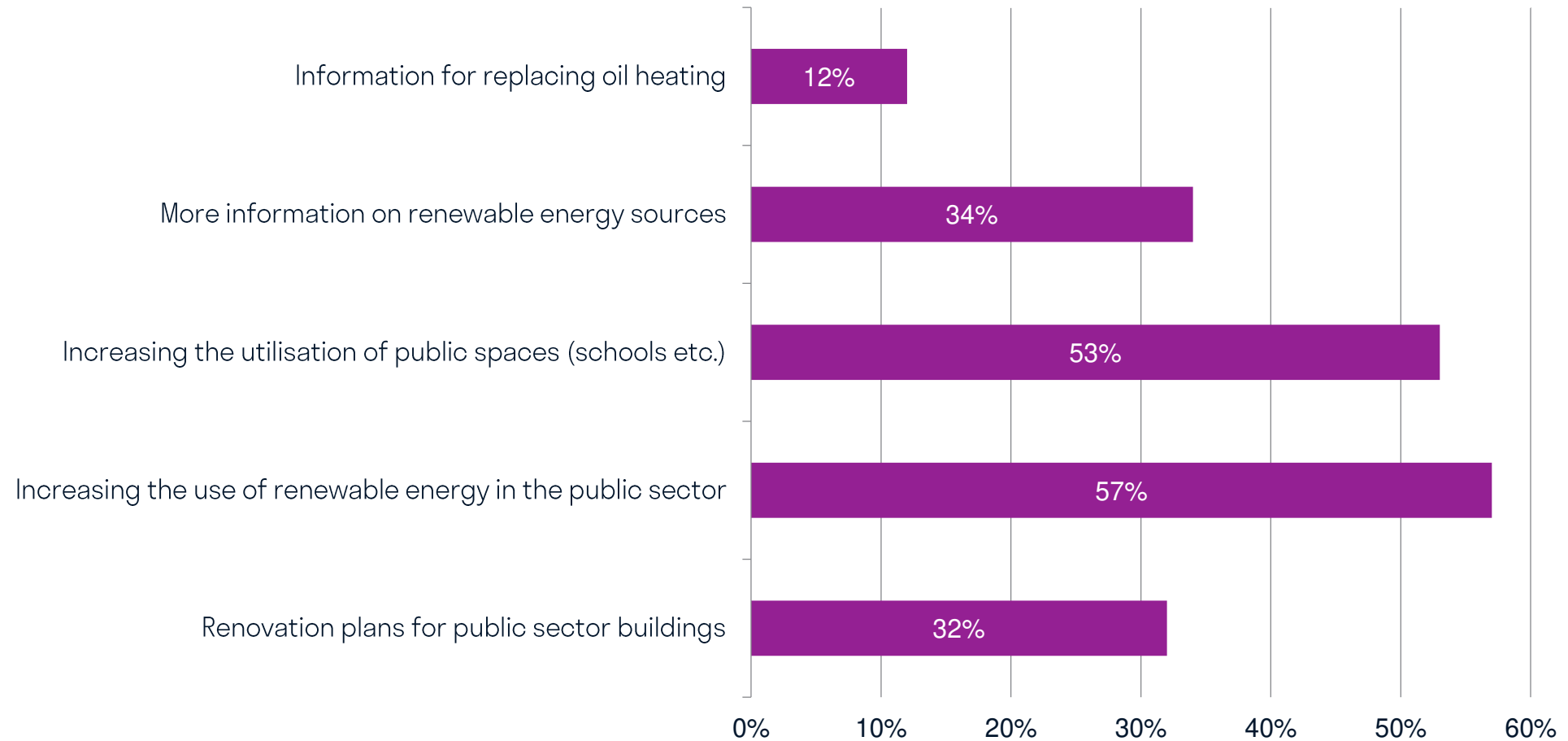




# Energy production and consumption



What circular economy measures should be implemented in your municipality? Choose the 2 most important.

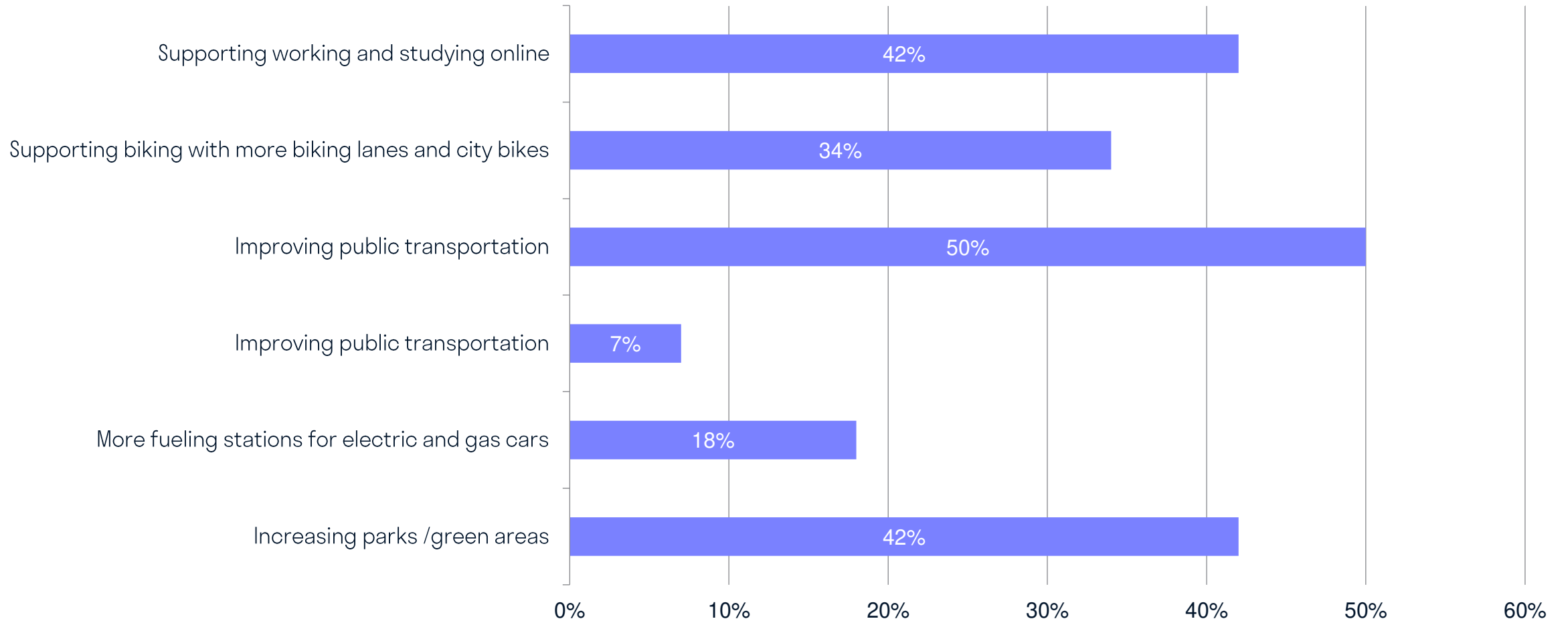




# Transportation and infrastructure



What circular economy measures should be implemented in your municipality? Choose the 2 most important.

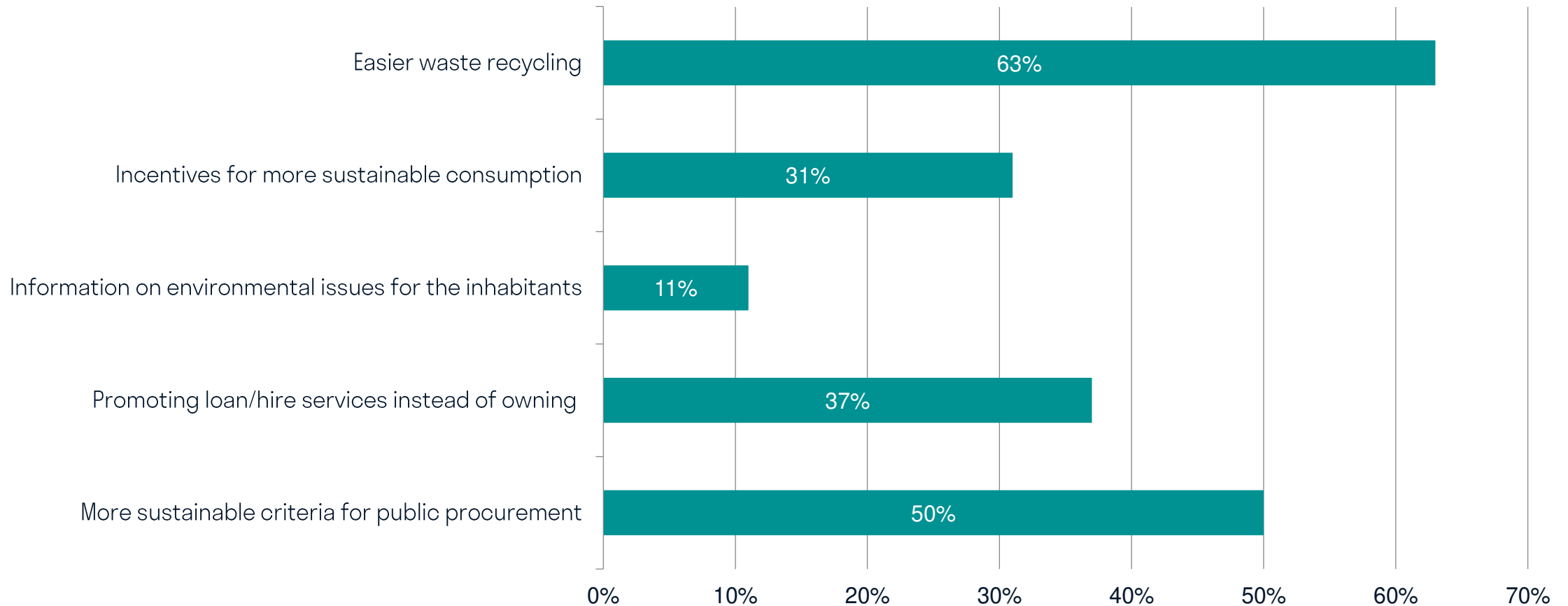




# Consumption and material cycles



What circular economy measures should be implemented in your municipality? Choose the 2 most important.



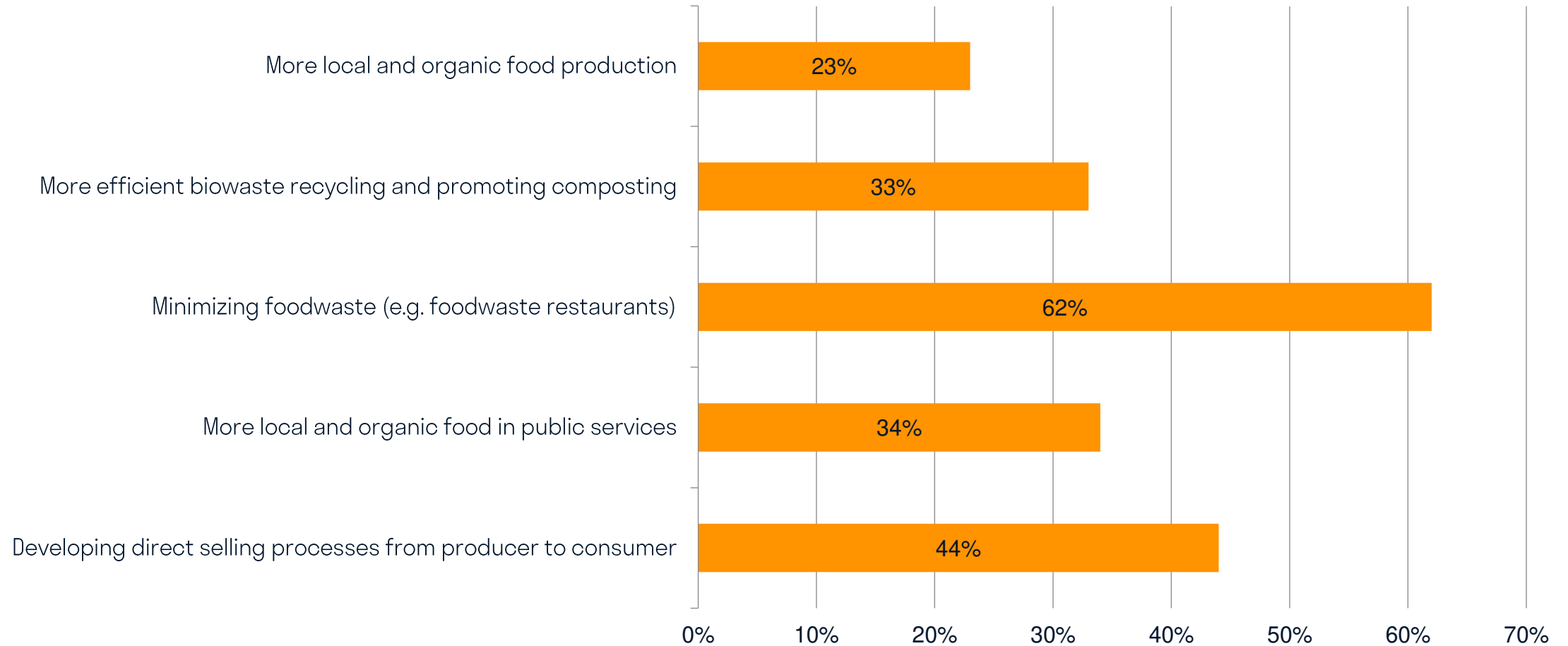




# Food production and consumption



What circular economy measures should be implemented in your municipality? Choose the 2 most important.

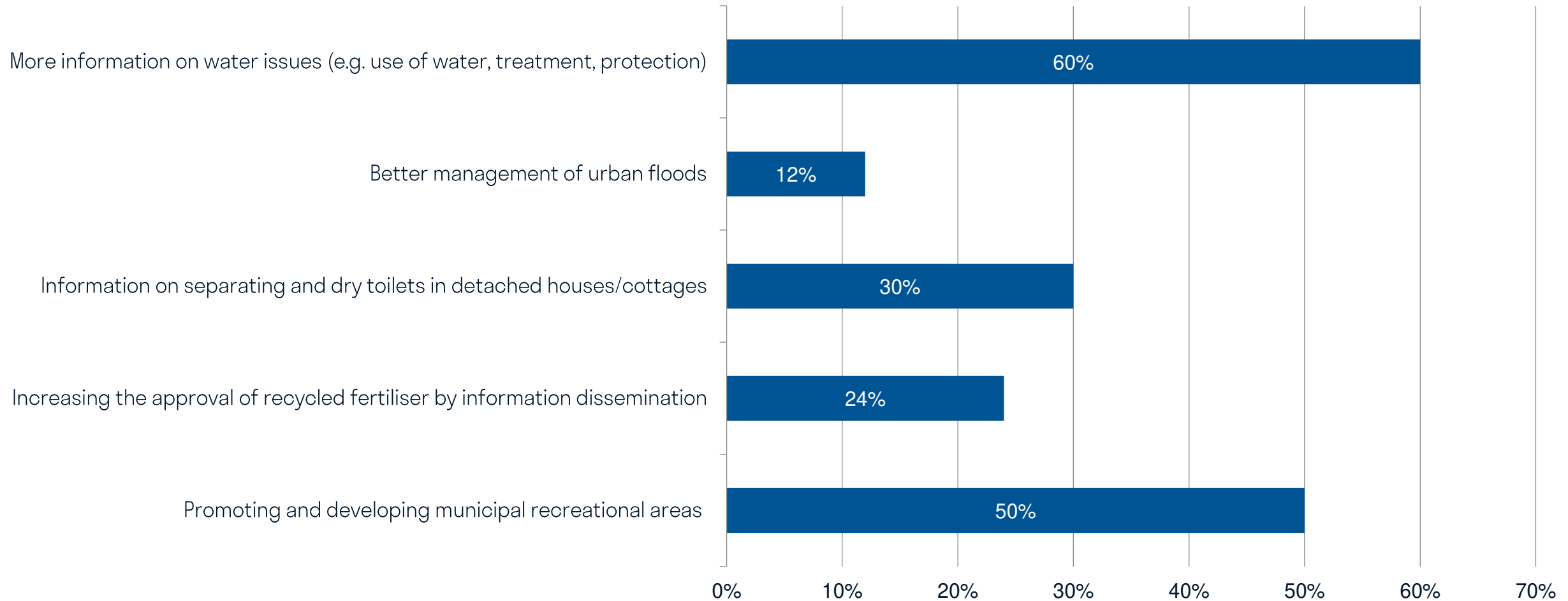




# Water use and water bodies



What circular economy measures should be implemented in your municipality? Choose the 2 most important.





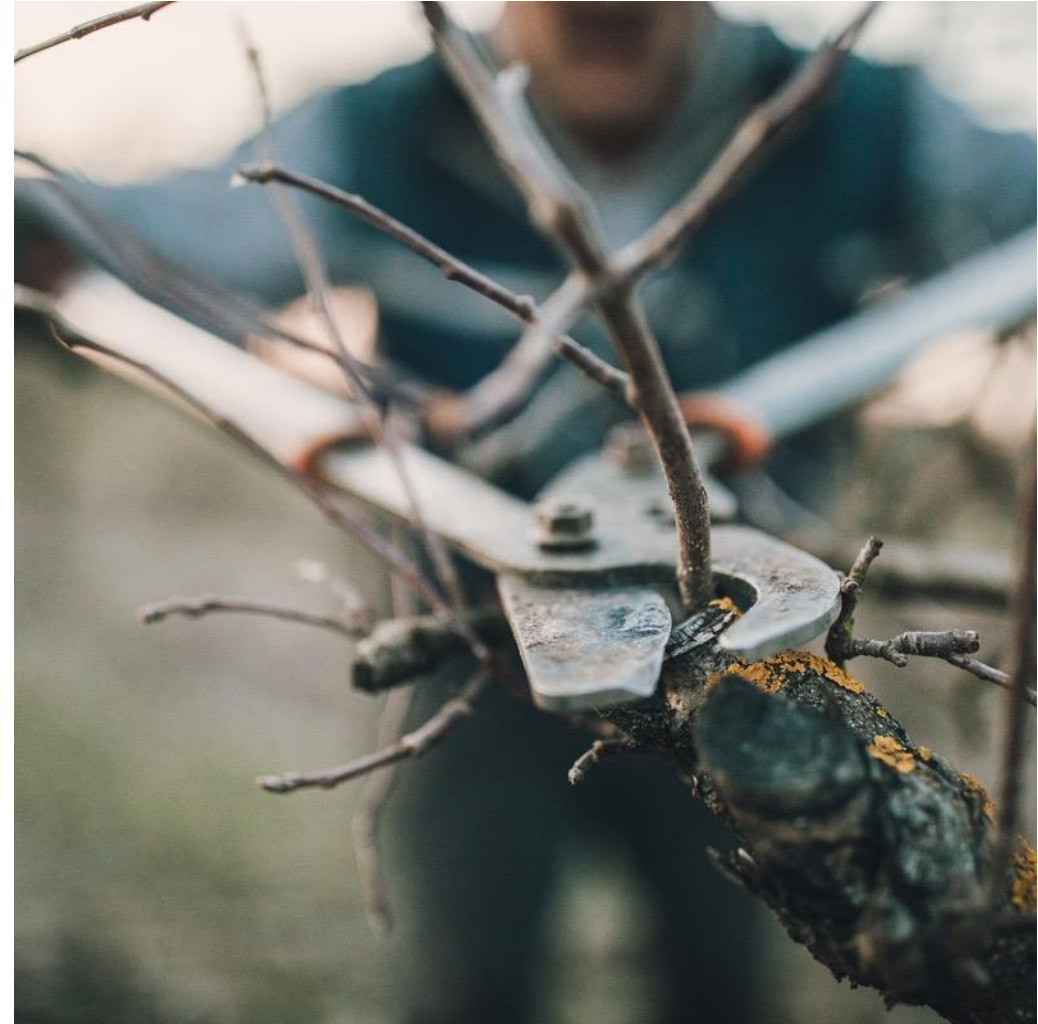
# Residents' suggestions for actions

"A communication and information campaign for local residents on sustainable lifestyles."

"A link on the municipal website with answers to the most common questions about the circular economy - aiming to share the right information and refute the wrong ones."

"Recycling and better use of textile waste"

"Instead of owning things, municipalities can rent them out: pressure washers, loppers, clearing saws, etc."





# Residents' suggestions for actions

"Increasing the number of plastic collection points and informing people why it is worth sorting plastic separately"

"Efficient recycling and reuse of construction waste."

"Block collection of bio-waste in single-family residential areas."

"Wood construction in public buildings"

"Use of ecological materials in municipal construction projects, including post-demolition reuse."





# Implementation of the roadmap.



# Implementation of the roadmap

The preparation of the roadmap started with a study of the current state of the circular economy in Kanta-Häme, which made use of the survey of circular economy operators in Kanta-Häme conducted by WINTO. The completed description of the current situation can be found on the project website. The description of the current situation included, among other things, the roadmaps and plans of the municipalities in Kanta-Häme related to the circular economy. This provided a good basis for the implementation of the roadmap at a regional level.

The concrete roadmap work started with workshops where, together with the various stakeholders in the region, objectives, indicators and measures were designed to set the direction towards a circular economy. Four workshops were held in Autumn 2020. A total of 121 participants attended the workshops, including experts from Kanta-Häme's cities, municipalities, businesses, students and local authorities. To support the roadmap work, an evaluation group was set up to monitor progress and make suggestions for improvements to the roadmap. The evaluation group was composed of local circular economy experts.

The roadmap work was part of the Luo Net GOES International project (2019-2022)



# Glossary of the road map.



**Biocircular economy:** an economy that uses renewable resources to produce nutrients, energy, products and services and is implemented according to a circular economy model.

**Biogas:** a methane (CH<sub>4</sub>) gas produced by microbes decomposing organic matter (e.g. manure or sewage sludge) under anaerobic conditions. Biogas is one of the renewable fuels.

**Carbon balance:** the change per unit time (year) in the amount of carbon in a carbon pool, such as a forest. A positive carbon balance indicates an increase in carbon stocks.

**Carbon neutral:** A product, company, municipality or country that emits only as much carbon dioxide as it can sequester. A carbon neutral product has a zero life cycle carbon footprint.

**Carbon sequestration:** Carbon-containing substances are mainly sequestered in soil and marine carbon stocks. Changes in their ability to sequester carbon affect the global greenhouse gas cycle.

**Carbon sink:** the carbon sink describes the growth of the carbon stock. The carbon sink is the sum of all the processes in nature that sequester more carbon than is released into the atmosphere. Changes in carbon sinks have a significant impact on atmospheric greenhouse gas emissions. Natural carbon sinks include: the oceans (which absorb about half of emissions), forests and plant growth (photosynthesis), glaciers and soils.

**Circular economy:** an economic model that does not constantly produce more goods, but instead relies on the use of services: sharing, renting and recycling instead of owning. In the end, materials are not destroyed, but are used to create new products again and again.

**Diffuse pollution:** Diffuse pollution refers to pollution of water bodies from several small sources that cannot be precisely identified. Diffuse pollution includes run-off of solids and nutrients from fields, livestock and forestry, as well as wastewater from urban settlements.

**Ecological corridor:** Ecological corridors are vegetation zones that, as a result of human activity (roads, agriculture, clearings from logging, etc.), link large areas of isolated forest or nature reserves and allow fauna to move freely from one protected area to another, thus enabling genetic exchange, which is a very important factor in combating the decline of animal species.





**Energy class:** the energy consumption scale, or energy class, indicates the number of kilowatt-hours a building needs per square meter in normal use. The energy rating of a building is based on a calculated energy performance benchmark, the E figure (kWh/m<sup>2</sup> year). In this classification, energy class A is the best and G the worst. New buildings should nowadays be at least class C. Most often, for example, old detached houses are class D or E.

**Energy efficiency:** improving the efficiency of energy use so that energy consumption is reduced in the production of services, outputs and products.

**Energy Efficiency Conventions (KETS):** Energy Efficiency Conventions are a means chosen jointly by the government and industry to meet Finland's international energy efficiency obligations without new legislation or other new coercive measures. The aim of the agreements is to improve energy efficiency in industry, energy and services, real estate, municipalities and oil heating.

**FISU network:** FisU (Finnish Sustainable Communities) is a network of pioneering municipalities aiming for carbon neutrality, zero waste and globally sustainable consumption by 2050. The network currently includes eleven municipalities: Forssa, Hyvinkää, Ii, Joensuu, Jyväskylä, Kuopio, Lahti, Lappeenranta, Riihimäki, Turku and Vaasa.

**Food system:** the food system is the totality of food production, distribution, consumption and processing.

**Hinku network:** the Hinku network is a network of pioneers in climate change mitigation established in 2008, bringing together municipalities committed to ambitious emission reductions, companies providing climate-friendly products and services, and energy and climate experts. The Hinku network also includes regions.

**Industrial symbiosis:** a collaborative approach where companies make efficient use of each other's side streams, technology, know-how and services. The process of integrating one side stream or waste into a productive resource for the other, saving costs and reducing environmental impacts. In Finland, the FISS industrial symbiosis model operates.

**Lake-SeaWiki:** The Lake-SeaWiki is an online service built and published through the cooperation of public authorities and citizens. The site provides basic information on all lakes and coastal marine areas in Finland, covering at least one hectare.

**Life cycle thinking:** refers to the life cycle of a product or service, considering all the stages that a product/service goes through during its life cycle: raw material sourcing, processing, production, use, end of life and transport.



**MaaS concept:** MaaS - Mobility as a Service - is the concept of mobility. The idea is to bring together different mobility services such as taxis, public transport, car-related services such as rental and car-sharing services and urban bikes.

**Material efficiency:** The aim is to use as few materials, raw materials and energy as possible.

**RDI activities:** research, development and innovation

**Renewable energy:** solar, wind, hydro, bio-energy, geothermal, wave and tidal energy.

**REKO-rinki:** a model for the sale and distribution of local food REKO is a system whereby consumers order directly from local food producers without any intermediaries.

**Resource wisdom:** the ability to use different resources (natural resources, raw materials, energy, products and services, space and time) in a prudent and sustainable way.

**Re-use:** The product or part of a product is re-used as such. Re-use can be either for the same or for a different purpose than originally intended. A product that ends up as waste is therefore used either as such, by repairing it or by changing its intended use.

**Reuse:** is the reuse of a discarded substance, object or other useful waste.

**Sewage sludge:** Sewage sludge is the sludge produced in municipal sewage treatment plants. Sludge is produced when solids are removed from wastewater and pollutants are precipitated. Sewage sludge can be used for energy production or, for example, for landscaping.



**Smart building services:** smart buildings provide automated, up-to-date information on the status of systems and the building, monitor and anticipate faults, connect building services to management-level systems for reporting, and enable energy management and sustainable development in building services.

**SSP Urban Wastewater Risk Management System (Sanitation Safety Plan):** wastewater treatment plants can adopt the Urban Wastewater Risk Management System, SSP tool. Wastewater treatment plants can use it to identify and manage the health and environmental risks of wastewater treatment and sanitation.

**Stormwater:** stormwater is rainwater and meltwater runoff from streets and property surfaces. Stormwater runoff is primarily intended to be infiltrated into the ground or recycled at source. Where this is not possible, storm water is discharged to a storm drain, separate from the sewerage system.

**The Common Table model:** the Common Table develops community-based and multi-faceted food assistance activities that increase the agency and well-being of the recipient and distributor of food assistance and recycle large amounts of food waste.

**Waste heat:** Waste heat is surplus heat that is not used for any purpose. Examples of waste heat are process and flue gas fires, waste and cooling water, and condensation heat from mechanical cooling.

**Water Safety Plan (WSP):** utilities supplying domestic water can adopt the WSP tool to improve risk management. The Water Risk Management Plan (WSP) allows utilities to ensure that water users have access to safe domestic water from their taps. They will be able to identify all the risks associated with their water production and the environment in which they operate, from the raw water source, through the water intake, treatment and distribution to the consumer's tap.



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