CLIMATE IMPACT REDUCTION PLAN

JANUARY 2025

Tallinna Vesi

AS TALLINNA VESI

AS Tallinna Vesi provides water and wastewater services to more than a third of Estonia’s population, which means that we inevitably have to use resources that affect the environment in order to continue our core business. We recognize that, in order for natural resources and a valuable living environment to exist also for generations to come, we too must contribute to protecting and preserving it. To reduce the company’s impact on the climate, we have developed a transition plan, called the Climate Impact Reduction Plan, which sets out ambitious targets to reduce our carbon footprint.

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International Agreements

The European Union and Estonia have set ambitious targets to reduce the impacts on the environment and climate, and as a responsible and resource-intensive company, we recognize our responsibility to contribute to achieving these ambitions.

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International Agreements

We contribute to the implementation of several agreements, including:

European Green Deal

The goal is to make the EU climate neutral by 2050 and reduce greenhouse gas (GHG) emissions by 55% by 2030 (compared to 1990)

Estonian Low Carbon Strategy until 2050

A 70% reduction in GHG emissions (compared to 1990) is expected by 2030

National Energy and Climate Plan

Target of at least 42% renewable energy in gross final energy consumption in 2030

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Carbon Footprint Calculations

The first comprehensive carbon footprint measurement was carried out based on figures from 2020, and we have adopted these results as our baseline year. The carbon footprint has been calculated following the internationally recognized and most widely used greenhouse gas reporting standard GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol).

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Carbon Footprint Calculations

The standard covers the assessment of emissions of seven greenhouse gases (GHGs) — carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

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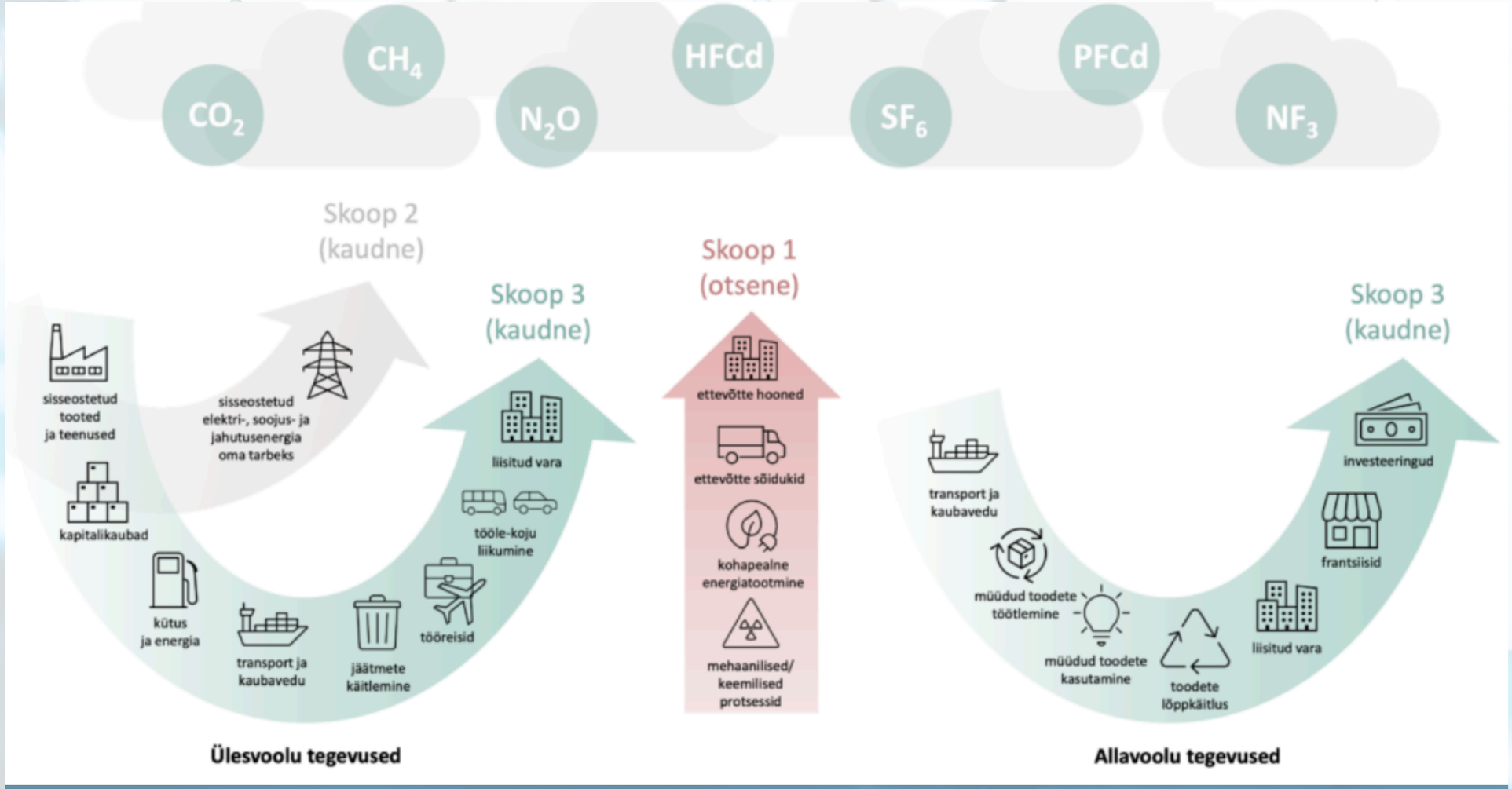

1. Direct emissions from sources owned or controlled by company
2. Indirect emissions from purchased energy
3. All other indirect emissions from company's value chain

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Scope 3 Assessment

The company's scope 3 emissions have been assessed against the criteria described in the Corporate Value Chain (Scope 3) Accounting and Reporting Standard, which complements the GHG Protocol. Scope 3 is divided into 15 categories (8 categories upstream and 7 categories downstream). Calculating scope 3 GHG emissions does not require a full life cycle assessment of all of an organization's activities, products and services, so we have identified the relevant categories for the organization and considered their GHG impacts. For many products and services, it is not always possible to fully cover the entire supply chain as data availability can be a barrier. We have therefore defined the upstream and downstream levels accounted for in the GHG emission calculations.

For Tallinna Vesi, only parts of the upstream and downstream categories are material to the assessment of the GHG footprint.

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Scope 3 Assessment

We have defined materiality and therefore the need for reporting under scope 3 by considering the following aspects:

1. **The GHG emissions related to the category are significant from a business perspective of the organization**

2. **The GHG emissions related to the category are a priority from the perspective of key stakeholders**

3. **The organization has the potential influence and ability to reduce the GHG emissions related to the category.**

   This means that the organization has the ability to influence its supply chain partners to reduce their GHG emissions.

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Upstream Indirect GHG Emissions – Scope 3

Scope 3 Categories

1

Purchased goods and services

Accounted for

GHG emissions from purchased chemicals, road construction and landscaping materials

2

Capital goods

Accounted for

GHG emissions from pipeline construction materials

3

Fuel- and energy-related activities

(not included in scope 1 or scope 2)

Accounted for

Indirect impacts from energy (transmission and distribution losses) and fuel (indirect GHG emissions resulting from the production of fuels consumed)

3

Upstream transportation and distribution

Transportation and distribution of materials, goods and products purchased by the reporting company in the reporting year, in vehicles not controlled by the company reporting its GHG footprint

NOT ACCOUNTED FOR

Data on the scopes 1 and 2 emissions from the use of vehicles of companies providing trans-portation services is not available

Upstream Indirect GHG Emissions – Scope 3

Scope 3 Categories

⑤

Waste generated in operations

Indirect GHG emissions from the disposal and treatment of waste generated in the reporting company's opera-tions in the reporting year (in organizations other than the reporting company)

Accounted for

Waste generated in the company is recorded (using the specific emission factors included in the GHG footprint calculation model prepared by the Ministry of Climate)

⑥

Business travel

Indirect GHG emissions from the transportation of the reporting company's employees for business-related activities during the reporting year

Accounted for

Business travel during the reporting year

⑦

Employee commuting

Indirect GHG emissions from the transportation of the reporting company's employees between their homes and their worksites (using various types of vehicles, incl. public transport)

Accounted for

Data is taken from the 2020 survey

⑧

Upstream leased assets

Indirect GHG emissions from the operation of assets that are leased by the reporting company in the reporting year (not included in scope 1 or scope 2)

Emissions from the operation of leased assets are reported in scopes 1 and 2 (e.g. fuel)

Downstream Indirect GHG Emissions – Scope 3

Scope 3 Categories

① Downstream transportation and distribution

Transportation and distribution of materials, goods and products sold by the reporting company in the reporting year, in vehicles not controlled by the company reporting its GHG footprint

NOT ACCOUNTED FOR

Data (e.g. on the transport of sludge given away) is not collected or accounted for

② Processing of sold products

Indirect GHG emissions from further processing of materials or components transferred/sold by the reporting company to other organizations in the reporting year

NOT ACCOUNTED FOR

Data on whether and how the drinking water sold is subsequently treated is not available

③ Use of sold products

Indirect GHG emissions from the use of goods and products sold by the reporting company to other organizations in the reporting year. Typically, this includes the higher GHG emissions (e.g. from energy consumption) generated by the other organizations during the expected lifetime of the goods and products transferred/sold to them.

NOT ACCOUNTED FOR

The largest environmental impact probably comes from heating the drinking water sold to customers, which we have no control over. There is no data on how much of the drinking water sold to customers is heated and how this is done (using gas, electricity, central heating).

④ End-of-life treatment of sold products

Indirect GHG emissions from the waste disposal and treatment of goods and products sold by the reporting company in the reporting year at the end of their life

Used drinking water returns to the company as wastewater, which is treated in a wastewater treatment plant (WWTP). Emissions from networks are included in scope 3 (upstream) and energy consumed by the pumping stations is included in scope 2. GHG emissions from the WWTP have been included in the scope 1, 2 and 3 (upstream) calculations.

Downstream Indirect GHG Emissions – Scope 3

Scope 3 categories

⑤ Downstream leased assets

Indirect GHG emissions from the assets owned by the reporting company and leased to other entities in the reporting year (not included in scope 1 or scope 2)

GHG emissions from leased assets are reported in scopes 1 and 2 (e.g. electricity)

⑥ Franchises

None

⑦ Investments

Connected to water and sewer networks and included in scope 3 (upstream) calculations (pipe material)

Carbon Footprint in 2020

In reporting its GHG emissions, Tallinna Vesi has defined the boundaries of its organization according to the activity-control principle — this means that we take into account all GHG emissions from sources or activities over which the company has control. The scope of the carbon footprint assessment includes GHG emissions from wastewater and drinking water treatment and from the head office. For the subsidiary Watercom OÜ, activities directly related to the provision of the main service in the service area of Tallinna Vesi were included. Emissions from services that Watercom provided to third parties were not included.

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Carbon Footprint in 2020

The main sources of emissions in the company are electricity use and wastewater treatment processes. Together, they accounted for

72% of the company's total carbon footprint in 2020.

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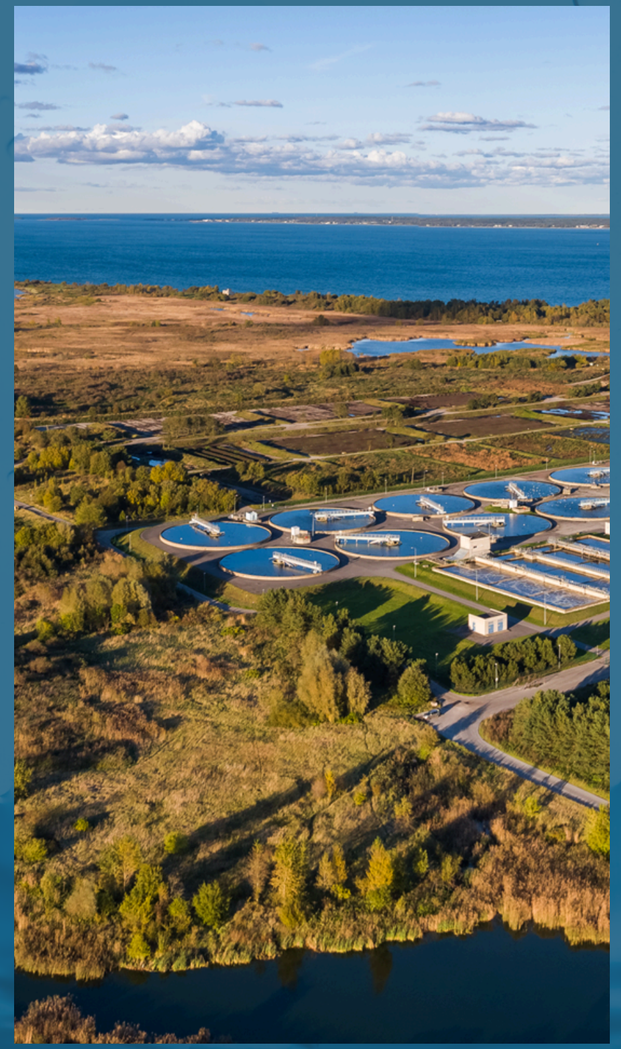
Carbon Footprint in 2020

The biggest impact in the wastewater treatment process comes from N_2O and CH_4.

Nitrous oxide (N_2O) is mostly produced during the biological nitrogen removal process and occurs in all wastewater treatment plants applying biological treatment. Methane (CH_4) is the largest component of biogas that we use to produce heat. Methane is released into the environment mainly in the treatment process, from leaks in the system, and also during composting process. Since CH_4 and N_2O have a global warming potential of 25 and 298 times that of CO_2, respectively, they produce a significant proportion of the company's footprint.



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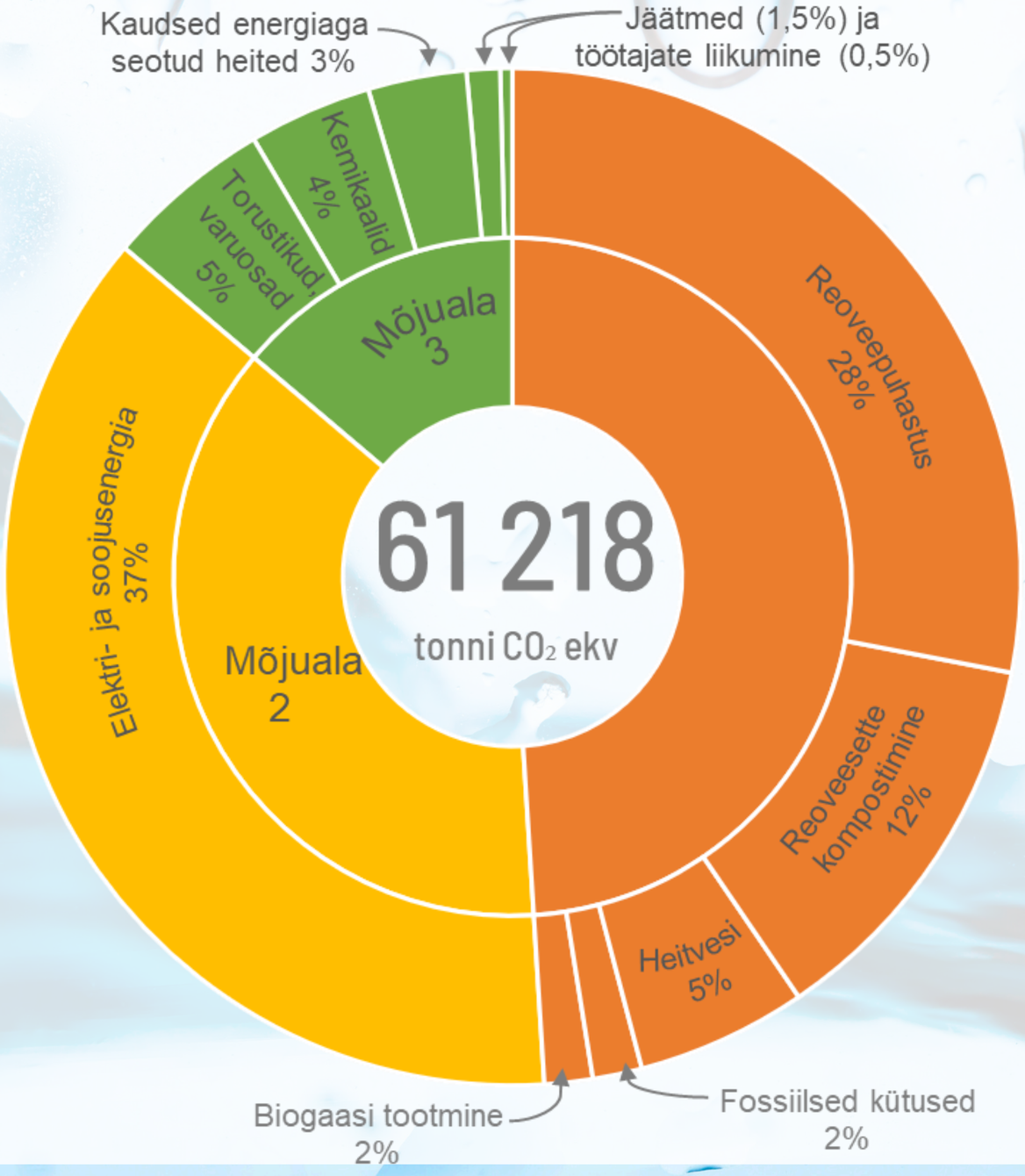
Kaudsed energiaga seotud heited 3%
Jäätmed (1,5%) ja töötajate liikumine (0,5%)
Kemikaalid 4%
Torustikud, varuosad 5%
Mõjuala 3
Reoveepuhastus 28%
Elektri- ja soojusenergia 37%
Mõjuala 2
61 218
tonni CO_2 ekv
Reoveesette kompostimine 12%
Heitvesi 5%
Biogaasi tootmine 2%
Fossiilsed kütused 2%

Greenhouse Gas Reporting Principles

- The scope of the carbon footprint assessment of Tallinna Vesi included GHG emissions from drinking water and wastewater treatment and from the head office in 2020 and 2022. Under the GHG Protocol, emissions are categorized into three areas (scopes 1, 2, and 3).

- Wherever possible and appropriate, we use the specific emission factors included in the carbon footprint calculation model prepared by the Ministry of Climate. We have also used information provided directly by manufacturers and suppliers (e.g. chemicals, materials) where this has been available to us.

- For the calculation of N2O and CH4 emissions from wastewater treatment, we have referred to data from the Viikinmäki Wastewater Treatment Plant in Helsinki. For the calculation of GHG emissions from wastewater discharges, we have used the specific emission factors developed by the Intergovernmental Panel on Climate Change (IPCC). The company's largest GHG emissions come from the mechanical and chemical-biological treatment of wastewater and the composting of sewage sludge. Tallinna Vesi has not developed or participated in the development of any projects related to carbon removal from the atmosphere, nor has it purchased carbon credits from third parties to offset the company's GHG emissions.

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Greenhouse Gas Reporting Principles

- We have started calculating the company’s carbon footprint, which we do annually from 2022, using 2020 as a base year.

- Based on the results of the company's carbon footprint calculations, we have set ourselves targets to achieve climate neutrality in all scopes by 2040. The climate action in the company focuses in particular on the processes that have the greatest impact, where GHG emissions are high, and where the company can most directly and significantly reduce these emissions. The Climate Impact Reduction Plan has been approved by the Management Board, thereby committing to allocate the necessary resources to implement the plan. The plan is reviewed as appropriate, but at least every five years, both in terms of the ambition set and the scope of the GHG assessment, refining and updating the necessary actions, if necessary.

- Due to our processes, GHG emissions from wastewater treatment cannot be permanently reduced to zero, so GHG offsetting solutions need to be found.

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Greenhouse Gas Reporting Principles

- For scopes 1 and 2, the company’s target is in line with the goal of keeping global warming below 1.5 degrees.

- The list of actions needed to achieve the targets is not exhaustive and will evolve over time as new technologies develop and we find ways to improve and enhance our processes to reduce climate impacts. Therefore, the total cost of the plan has not been estimated. The financial means to implement the Climate Impact Reduction Plan by action will be allocated as operating costs for the development of plants and networks.

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Goals and Targets

The company is carbon neutral by 2040 at the latest. Achieving carbon neutrality will require carbon capture mechanisms, such as clear and transparent CO2 offset or GHG capture technologies. We are closely monitoring the market and technological developments in this area and will meet this ambitious goal at the earliest opportunity.

By 2030, we have reduced our GHG emissions from Scopes 1 and 2 by at least 50% compared to 2020. In Scope 3, we apply principles of green procurement and other mitigation measures to emissions that the company can influence through its choices.

We only use electricity from renewable sources and have replaced natural gas with heat from renewable sources by 2030.

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Goals and Targets

As an energy-intensive company, we produce at least 50% of all electricity and heat we need within the company by 2030 at the latest. For this, we use the energy from wastewater (biogas and heat) and build solar parks.

We have reduced our heat and electricity consumption by at least 10% by 2030 compared to 2020.

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Actions To Reduce Emissions

Scope 1

Category	Emission source	t CO_2 eq 2020	%	Actions to reduce emissions
Burning of fossil fuels	• On-site stationary combustion equipment • Fuel consumption of vehicles	959	2	• We prefer vehicles with lower carbon emissions • We prefer fuels from renewable sources • We have joined the district heating network to replace the use of natural gas at the water treatment plant • We find use for the thermal energy contained in wastewater (heat pump plant to be built by Utilitas)
Mechanical and chemical-biological treatment of wastewater	• N2O and CH4 emissions from the treatment process	17156	28	• We work together with other companies and re-search institutions to optimize the wastewater treatment process and to reduce N_2O and CH_4 emissions (we have installed N_2O sensors for accurate measurement of emissions from the wastewater treatment plant) • We conduct a study of the processes at the waste-water treatment plant • We develop separate sewer systems

Actions To Reduce Emissions

Scope 1

Category	Emission source	t CO_2 eq 2020	%	Actions to reduce emissions
Production and combustion of biogas	• Combustion of biogas (energy production) • Burning of surplus biogas (also known as flaring)	939	2	• We have installed a combined heat and power plant (CHP), resulting in a reduction in the amount of biogas being burned directly into the environment
Composting of sewage sludge	• N2O and CH4 emissions from composting	7624	12	• We co-operate with other companies and research institutions to find the optimal solution for the treatment of sewage sludge, which emits less N_2O and CH_4
Treated effluent and stormwater discharges to receiving waters	• Nutrients from stormwater outlets and emergency overflows	3319	5	• We monitor the quality of wastewater discharged by customers to identify major sources of pollution, which allows us to reduce the pollution load to the plant • We increase the monitoring of stormwater to identify pollution sources in order to reduce the pollution load to receiving waters • We install sensors for real-time monitoring of stormwater quality on larger stormwater outlets, allowing for quicker detection of pollution

Actions To Reduce Emissions

Scope 2

Category	Emission source	t CO_2 eqv 2020	%	Actions to reduce emissions
Use of electricity and heat energy	• Use of electricity and heat energy	22763	37	• We only use electricity and heat energy produced from renewable sources • We produce electricity and heat from biogas (CHP) and set up solar parks at water and wastewater treatment plants • We reduce the use of electricity by optimizing the treatment stages and rehabilitating the pipelines, as well as replacing energy-intensive equipment with more efficient one • We switch ozone production to pure oxygen by the end of 2026, which will reduce electricity consumption by up to 30% • We renovate the buildings by the end of 2026 to reduce heat losses • We build a new office building, which will replace the current head office on Ädala Street • We rehabilitate the district heating pipeline

Actions To Reduce Emissions

Scope 3

Category	Emission source	t CO_2 eq 2020	%	Actions to reduce emissions
Use of chemicals in treatment plants	• Purchased chemicals required for carrying out treatment processes	2399	4	• We prefer manufacturers of chemicals with a smaller CO_2 footprint and strive to find effective solutions for reducing chemical consumption • We prefer technologies that allow to reduce/avoid the use of chemicals
Emissions from the manufacture of pipes and fittings and the use of peat		3252	5	• We prefer to purchase services from service providers with lower carbon emissions • We use no-dig methods in pipeline construction
Emissions from waste	• Various types of waste generated in operations	650	1	• Raising employee awareness of waste sorting and reduction • Raising consumer awareness of what can and cannot be flushed down the toilet to reduce the amount of municipal waste ending up in the plant

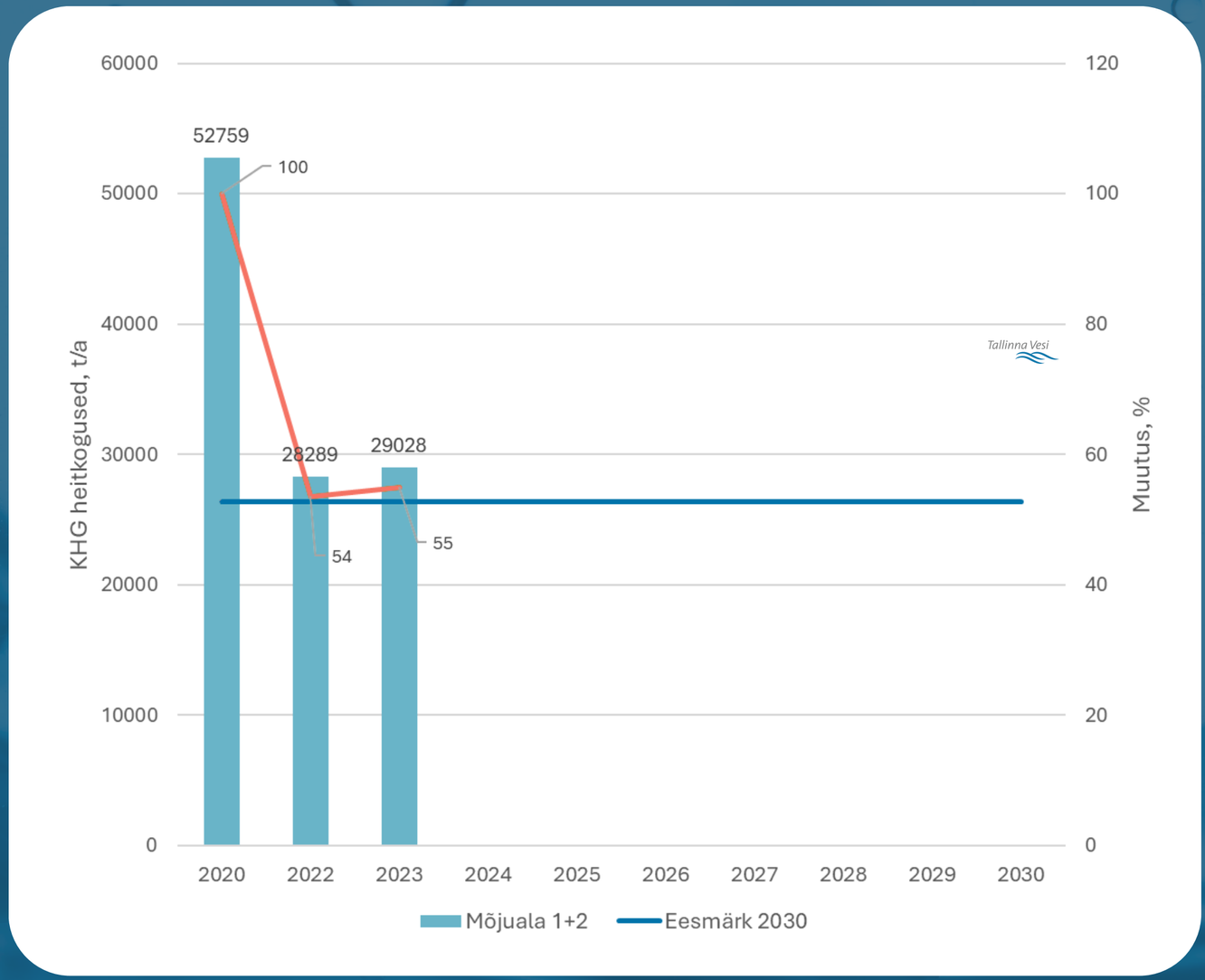
Actions To Reduce Emissions

Scope 3 and Total

Category	Emission source	t CO_2 eq 2020	%	Actions to reduce emissions
Indirect emissions from energy and fuel	• Transmission and distribution losses in electricity and heat energy consumption	1920	3	• Decreasing in proportion to the activities included in scope 1 and scope 2
Business travel and employee commuting	• Accounts for the distance travelled and the mode of transport	237	1	• We prefer digital channels for communication with external partners • We allow employees to work from home
TOTAL:		61218	100	

TARGET:

Reducing GHG emissions from Scopes 1 and 2 by 50% by 2030, compared to the base year



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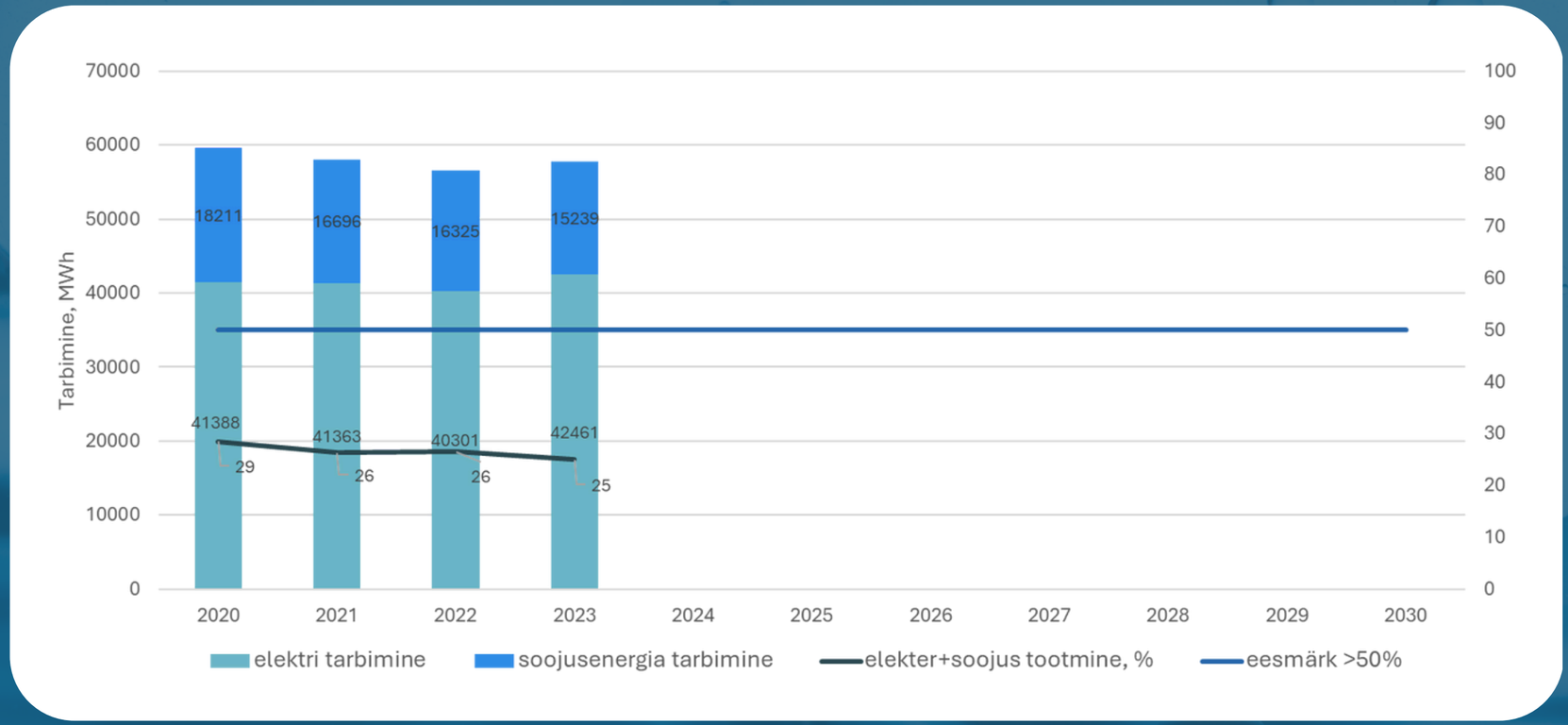
TARGET:

Producing at least 50% of all electricity and heat we use within the company by 2030



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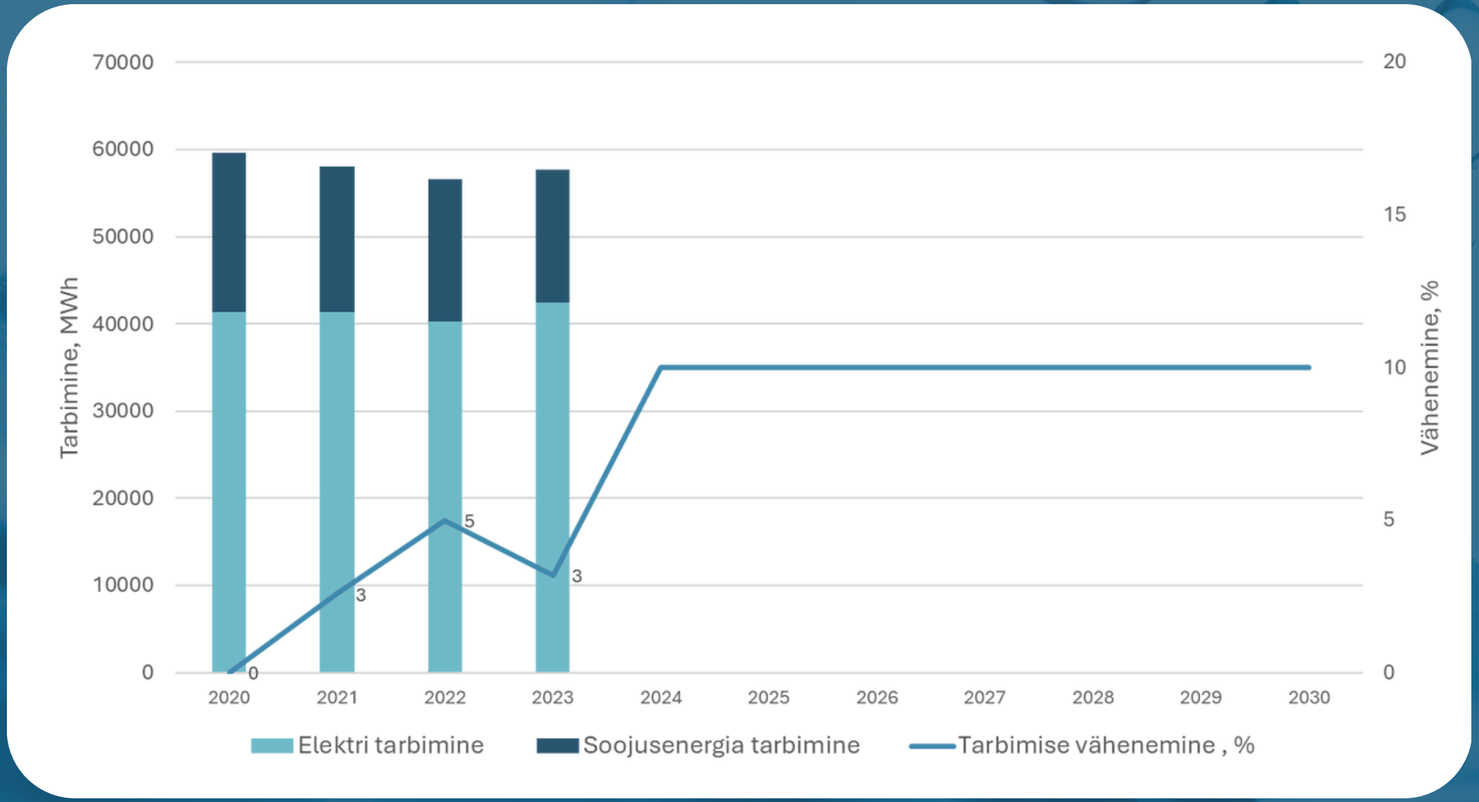
TARGET:

Reducing heat and electricity consumption by at least 10% by 2030, compared to the base year



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Climate Change Adaption

Climate change will also have an impact on the services provided by the company. It is most important that the vital service that we provide is always available and of high quality, meeting all requirements. To this end, we periodically assess the impact of risks and plan preventive measures. In 2024, we conducted a climate risk assessment which showed that of all the climate changes, we will be most affected by prolonged droughts caused by heat waves, as well as more frequent and intense rainfall and storm events.

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Droughts

Rising and extreme temperatures present a number of challenges. The company produces 90% of its drinking water from surface water, which means we are highly dependent on the availability and quality of surface water resources. In order to ensure availability of drinking water at any time, a larger surface water catchment system has been created, formed by canals and water reservoirs. With water reservoirs, we ensure necessary water reserves during drought periods. Additionally, we are contributing to awareness raising among customers on the importance of sustainable use of water. To this end, we offer free classes on environment, join various campaigns and attend events.

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Physical Climate Risks

Risk	Rating	Impact	Possible measures for risk mitigation
Droughts	High impact risk	Impact on raw water and drinking water quality and availability	Use of rainwater for irrigation, street washing, etc.; communication to change people's habits; reducing water pressures; modelling the catchment area; expanding surface water intake; expanding and maintaining the network of public water extraction points; regular flushing of networks
Changing temperatures (air, freshwater, seawater)	Monitored	Impact on surface water quality and treatment process	Alternative water intake, alternative water treatment plant by Lake Raku; additional groundwater intakes
Changes in precipitation patterns and types (rain, hail, snow/ice)	Monitored	Impact on the community, load to the public sewer system	Developing of separate sewer systems; constructing of an overflow to the headworks before the wastewater treatment plant

Physical Climate Risks

Risk	Rating	Impact	Possible measures for risk mitigation
Heavy precipitation and flooding	High impact risk	Impact on the community, on the public sewer system, including the use of overflows	Developing of separate sewer systems; continuous rehabilitation of depreciated infrastructure; nature-based stormwater solutions in urban space; communication and awareness raising; stormwater collection on the property; wastewater and stormwater network modelling; developing of flow and precipitation monitoring network
Storms	High impact risk	Impact on sustainability	Increasing the capacity of alternative electricity generation; generators; regular inspection of outlets after storm events
Sea level rise	Monitored	Impact on the operation of pumping stations and sewer system	Inspecting of sewer network sections in areas affected by sea level rise
Temperature fluctuation	Monitored	Impact on network leakage resistance	Continuous rehabilitation of infrastructure

Heavy Precipitation and Flooding

Climate change brings along more intense rainfall, causing flooding where stormwater cannot run off the streets quickly enough (for example, a record 176.6 mm of precipitation was recorded at the Harku weather station in July 2023, while the average July precipitation in 2019–2022 was just over 60 mm).

Most of the stormwater is discharged to the wastewater treatment plant, which has limited capacity. In order to reduce flooding in the city and need to open emergency overflows at the wastewater treatment plant, a plan for the development of a separate stormwater system has been prepared in co-operation with the City of Tallinn, under which we are gradually extending the stormwater system.

In the short term, we have the skills and information to predict, prepare for and respond effectively to heavy rainfall. In the longer term, we work with local authorities to build and develop separate sewer systems to prevent flooding during heavy rainfall, allowing stormwater to be discharged directly into the receiving waters and only wastewater to be treated.

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Storms

The increasing frequency of storms in the Baltic Sea region will bring additional challenges in ensuring raw water quality, storm water drainage and wastewater treatment. We are providers of a vital service and must ensure the continuity of our service in the event of extreme weather conditions. We need to be prepared for power cuts, but also to make sure that the infrastructure we need to deliver our services can withstand storms.

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We create better life with pure water!
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