

Aalto University: Carbon Footprint Calculation for 2025

Aalto University
Aalto University Campus & Real Estate
Granlund Oy

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Aalto-yliopisto
Aalto-universitetet
Aalto University

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Introduction to Carbon Footprint Calculation and Results for 2025

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Emissions reduction and nature goals

A flourishing community striving towards

- Net-zero GHG emissions for scope 1 and 2 by 2030
- Halving scope 3 GHG emissions by 2035 (excluding investments, subcategory 3.15)
- Increased space for biodiversity and resilience through nature-oriented design

Connecting our strengths to create solutions for grand challenges by

- Data-centric sustainability impact tracking
- Accelerating green transition through rich collaborations with societal changemakers
- Local and global networks for nature-positive solutions

Pioneering and experimenting sustainable solutions in our operations

- Enabling development of a strong sustainability culture
- Aalto as a community driven living lab

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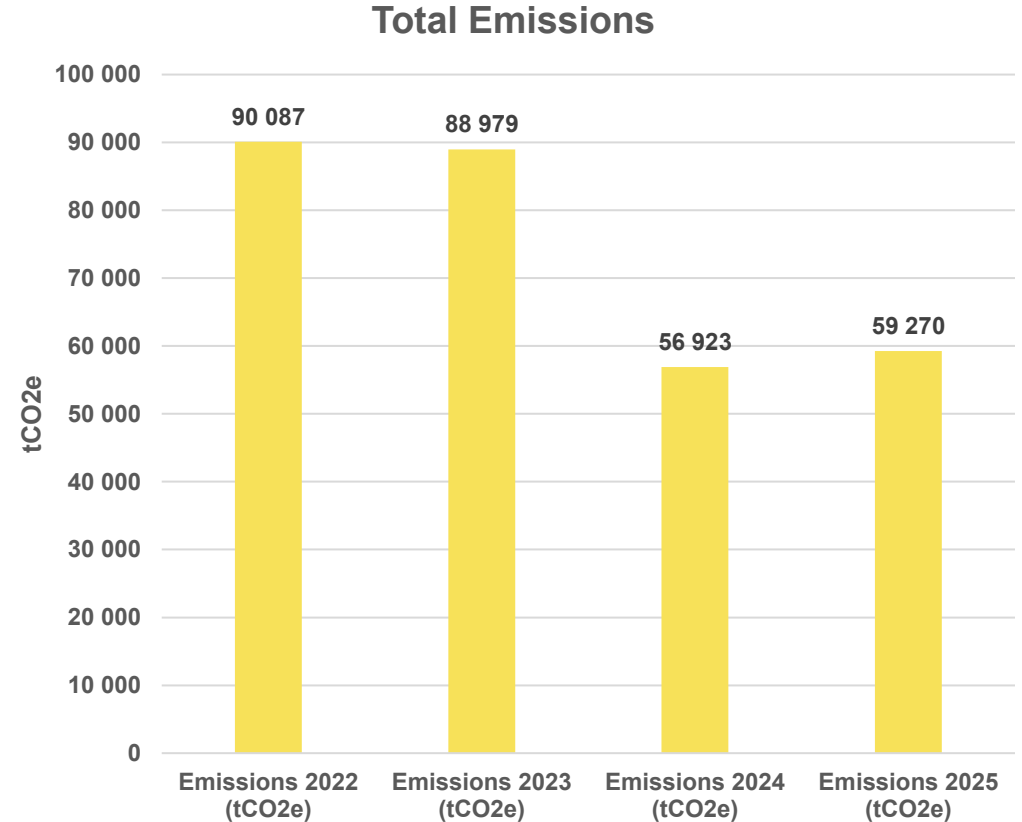


Emissions calculation

- Aalto University publishes a comprehensive greenhouse gas footprint according to the GHG protocol.
- Aalto university calculates its carbon emissions annually and has a program in place to set and follow actions to increase sustainability of operations and reduce GHG emissions.
- The calculation has been conducted according to the internationally widely used GHG Protocol method, covering scopes 1 - 3 of the standard.
- This calculation is for 2025 and presents the total amount of emissions and a comparison to previous years.
- The calculation has been supplemented to cover scope 3 categories 3.15 Investments and 3.2. Capital Goods.
- The calculation has been retrospectively supplemented and harmonised for 2022–2024 to ensure comparability.

Main results

- **Emissions increased by 4 % in 2025** compared to 2024, mainly due to new emission sources included in the emissions calculation (investment portfolio, investments in research, teaching and other activities, and service and publication procurement).
- Main sources of emissions are **financial portfolio investments, investments in research, teaching and other activities, service procurements, business travel and commuting.**
- Emissions/FTE increased from 2,79 tCO₂e to **2,82 tCO₂e**, while the number of students and staff increased by approximately 600.
- The total GHG emissions were **59 270 tCO₂e in 2025**



Main changes 2025 vs. 2024



Energy procurement: -20 % through increasing the share of certified emission-free energy products



Business travel: -17 % due to more accurate calculation and reduced business travel



Refrigerants: -6 % due to less leakages in cooling systems



Commuting (staff and student): -8 % due to the decrease in the use of private cars to Aalto campuses



Construction projects: -92 % due to the low level of new construction.



Investments in research, teaching and other activities: +23 % due to higher tangible costs



Financial investments: +19 % from the previous year. The category has not previously been included in the calculation.

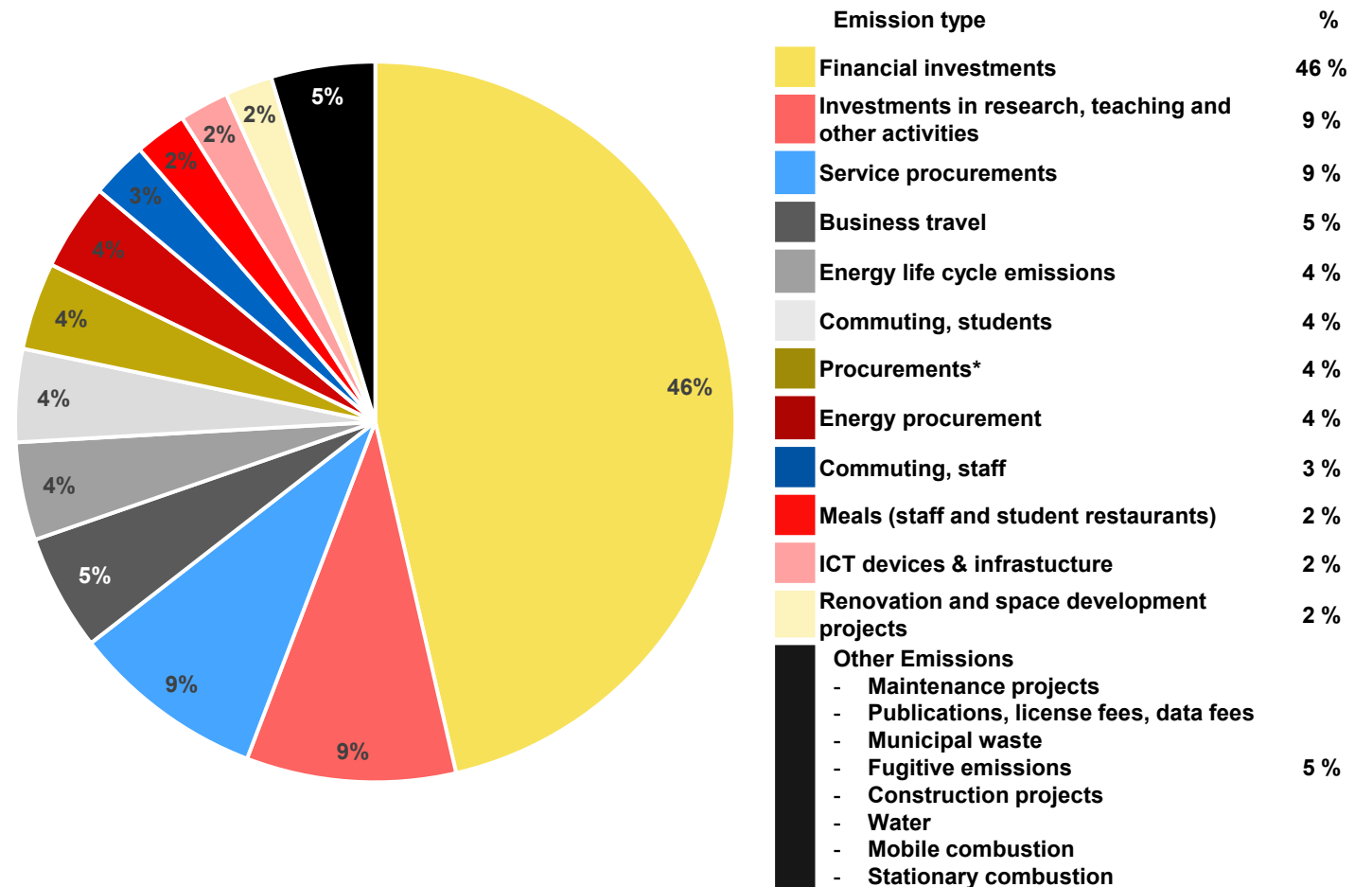


The emissions of all procurements have changed slightly due to changes in the Aalto University's accounting system.

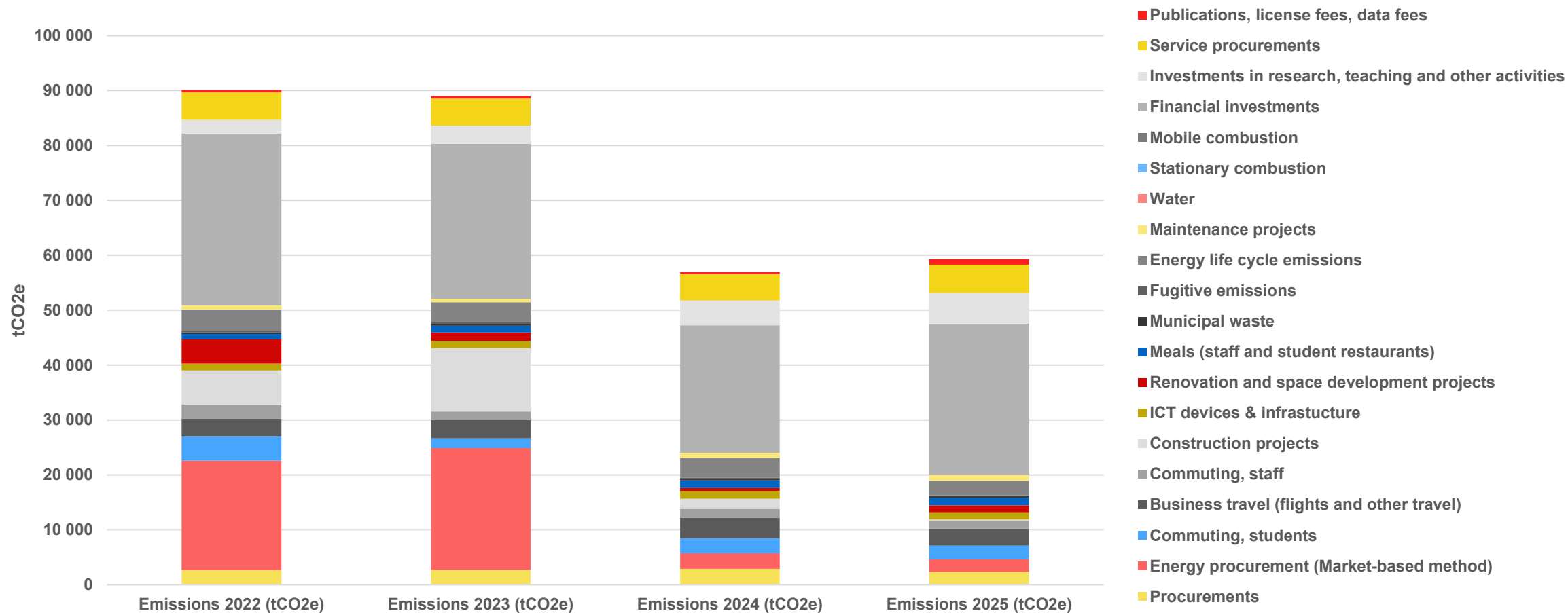
- The costs included in the emissions calculation include the costs of services (+8 %) and publications, license fees and data fees (+167 %) in a broader category.
- On the other hand, material purchases are (-19 %) smaller than in the previous year.

Total market-based emissions distribution 2025

- **Biggest emission sources** are financial portfolio investments, investments in research, teaching and other activities, service procurements, business travel and commuting.
- **Emissions of purchased energy are low** due to the majority of purchased electricity being emission-free and emission-free district heating in most of the properties.
- Scope 3 category 15 financial investments have been included in the calculation in accordance with the GHG protocol.
- Procurements include both purchased products and services in the calculation. The emission factors for purchased products and services are mainly based on costs, which is the average, not the most accurate way to estimate emissions. However, supplier-specific emission factors were used to the extent possible. The aim is to further refine the calculation of procurement emissions when service providers start calculating accurate emissions from their operations.



Annual emissions comparison

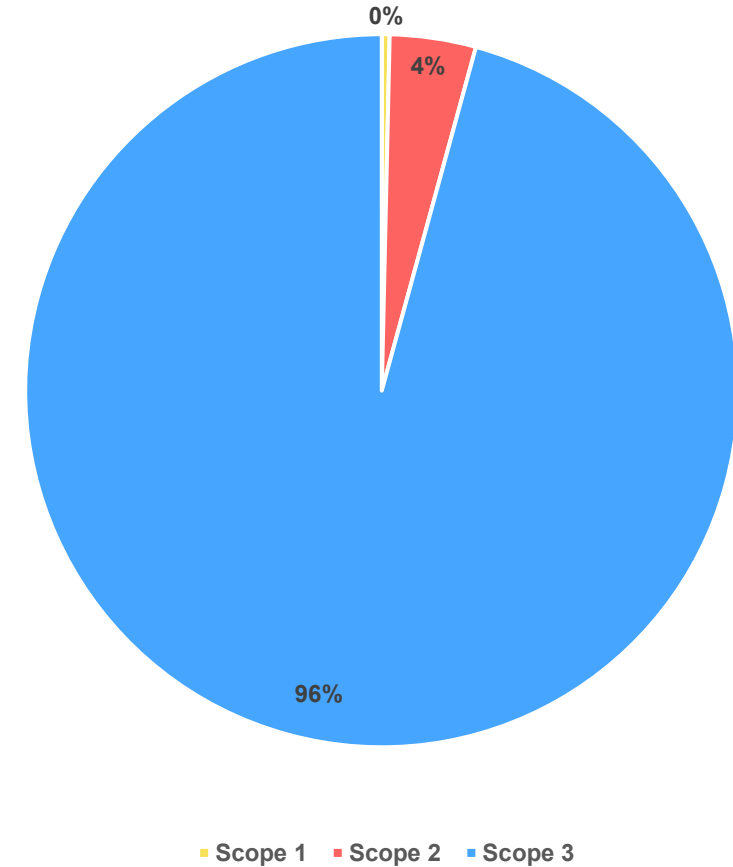


Market-based emissions by scope

96 % of Aalto University's emissions are scope 3 emissions

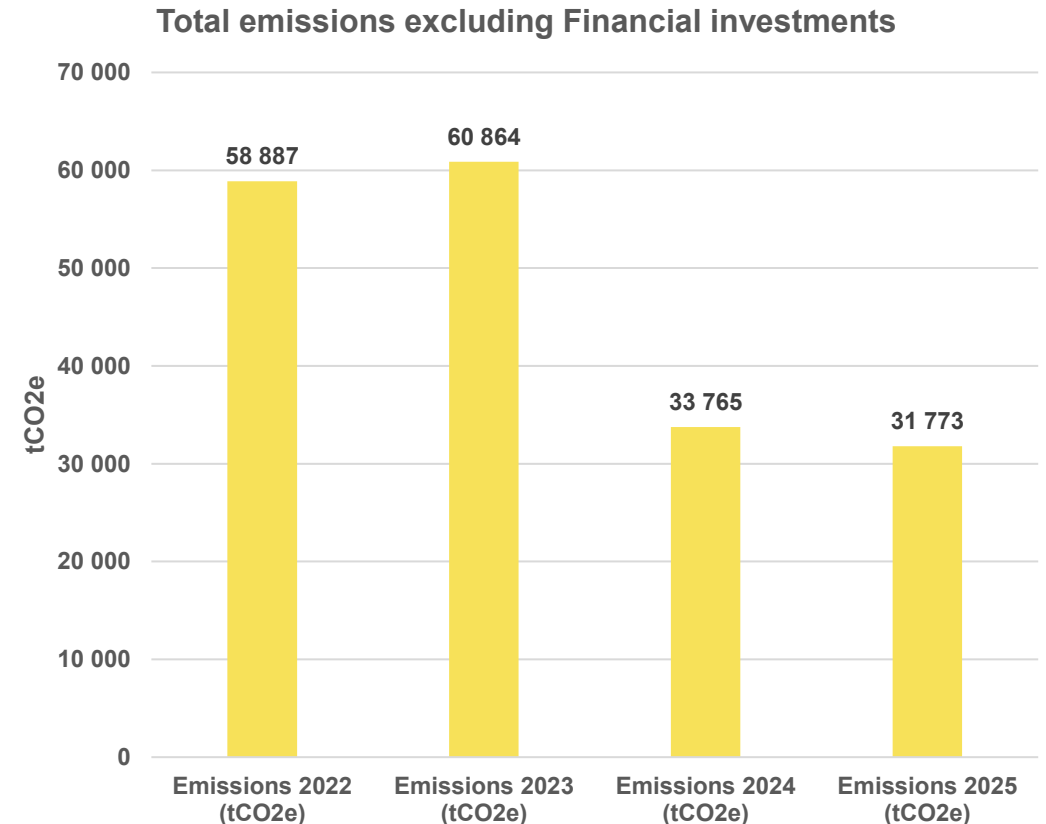
The distribution is typical for university operations: the number of students and staff using the properties is momentous. Commuting, business travel and necessary products and services in Aalto campuses form a significant amount of all the emissions. Scope 2 emissions are also low due to certified emission-free electricity and district heating products.

- **Scope 1:** Stationary combustion, mobile combustion and fugitive emissions.
- **Scope 2:** Energy procurement (Market-based method)
- **Scope 3:** Financial investments, Investments in research, teaching and other activities, Construction and renovation projects, Travel, Procurements, Commuting of staff and students, ICT, Meals, Indirect energy life cycle emissions, Water consumption, Waste



Main results excluding Financial investments

- Reviewing emissions without financial investments complements the overall picture of Aalto University's climate impacts. Financial investments constitute a significant source of emissions that can vary considerably from year to year and do not directly reflect the impacts of campus operations, teaching, research, or day-to-day operational decisions. Examining emissions without this category enables better comparability between years and helps identify emission sources that Aalto can influence more directly through its own operations and governance. It also supports the practical planning, monitoring, and communication of emission reduction measures and makes development trends clearer for stakeholders.
- **Emissions excluding investments decreased by 6% in 2025 compared to 2024.**
- Main sources of emissions are **Investments in research, teaching and other activities, service procurements, business travel and commuting.**



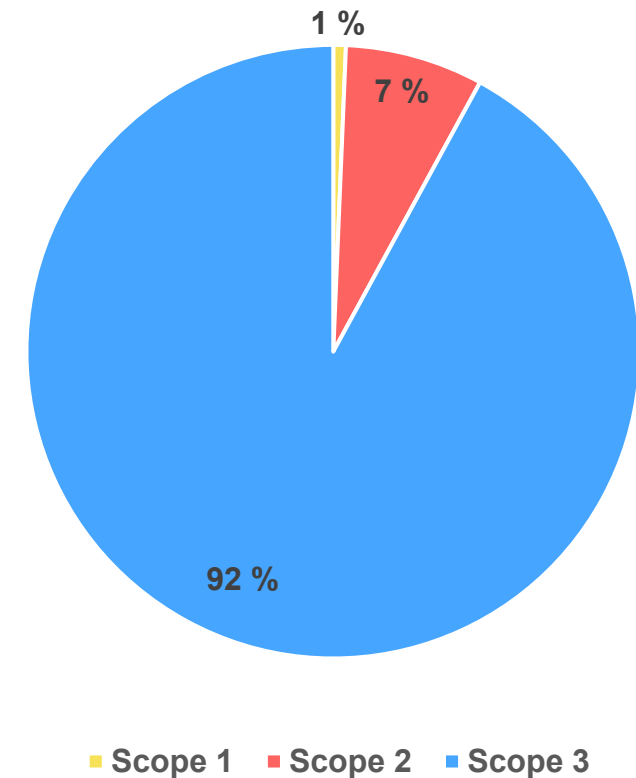
Market-based emissions excluding Financial investments by scope

Excluding Financial investments, 92% of Aalto University's emissions are scope 3 emissions.

The distribution is typical for university operations: the number of students and staff using the properties is momentous. Commuting, business travel and necessary products and services in Aalto campuses form significant amount of emissions. Scope 2 emissions are also low due to certified emission-free electricity and district heating products.

- **Scope 1:** Stationary combustion, mobile combustion and fugitive emissions.
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Emissions without Financial investments



Annual emission comparison

Comparing emissions between years is challenging due to many changes.

The main impact of the Covid pandemic was on property usage and travel.

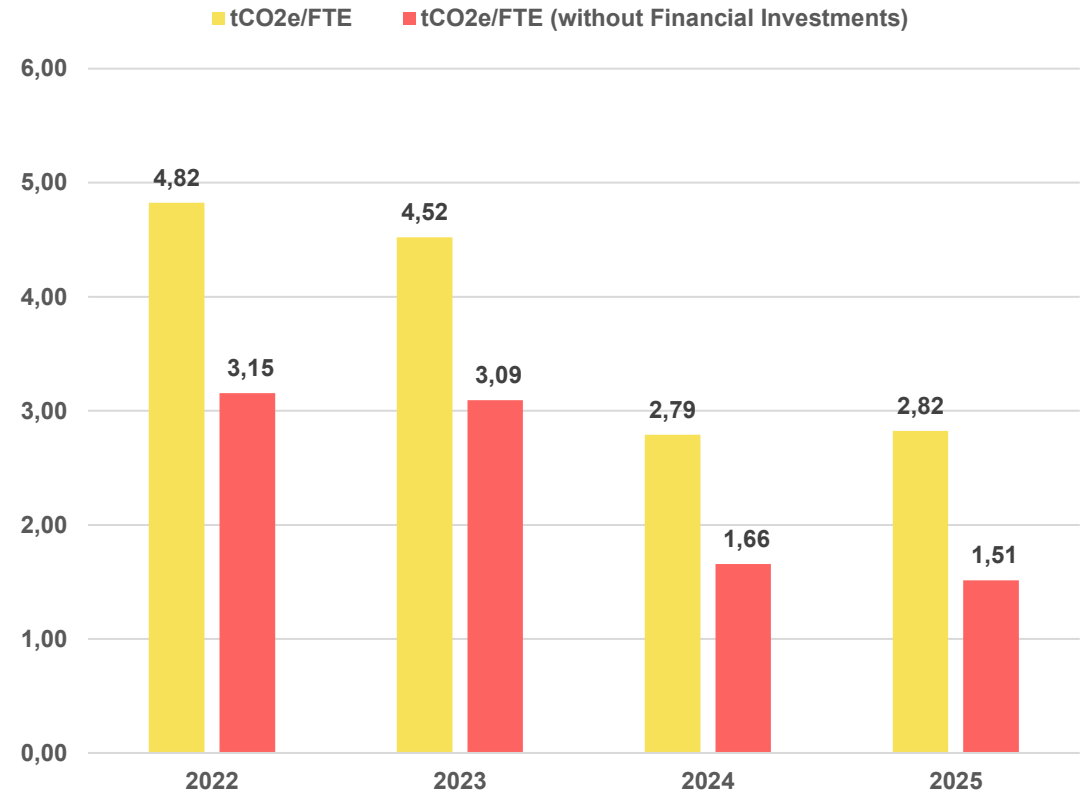
Emissions from construction also vary from year to year.

Indirect lifecycle emissions from energy and more comprehensive calculation of procurement emissions and financial investments have been added to the carbon footprint.

In addition, emission factors have been refined to comply with the GHG protocol. Emission calculations have been harmonized for 2022-2024 and 2025 to make the years comparable.

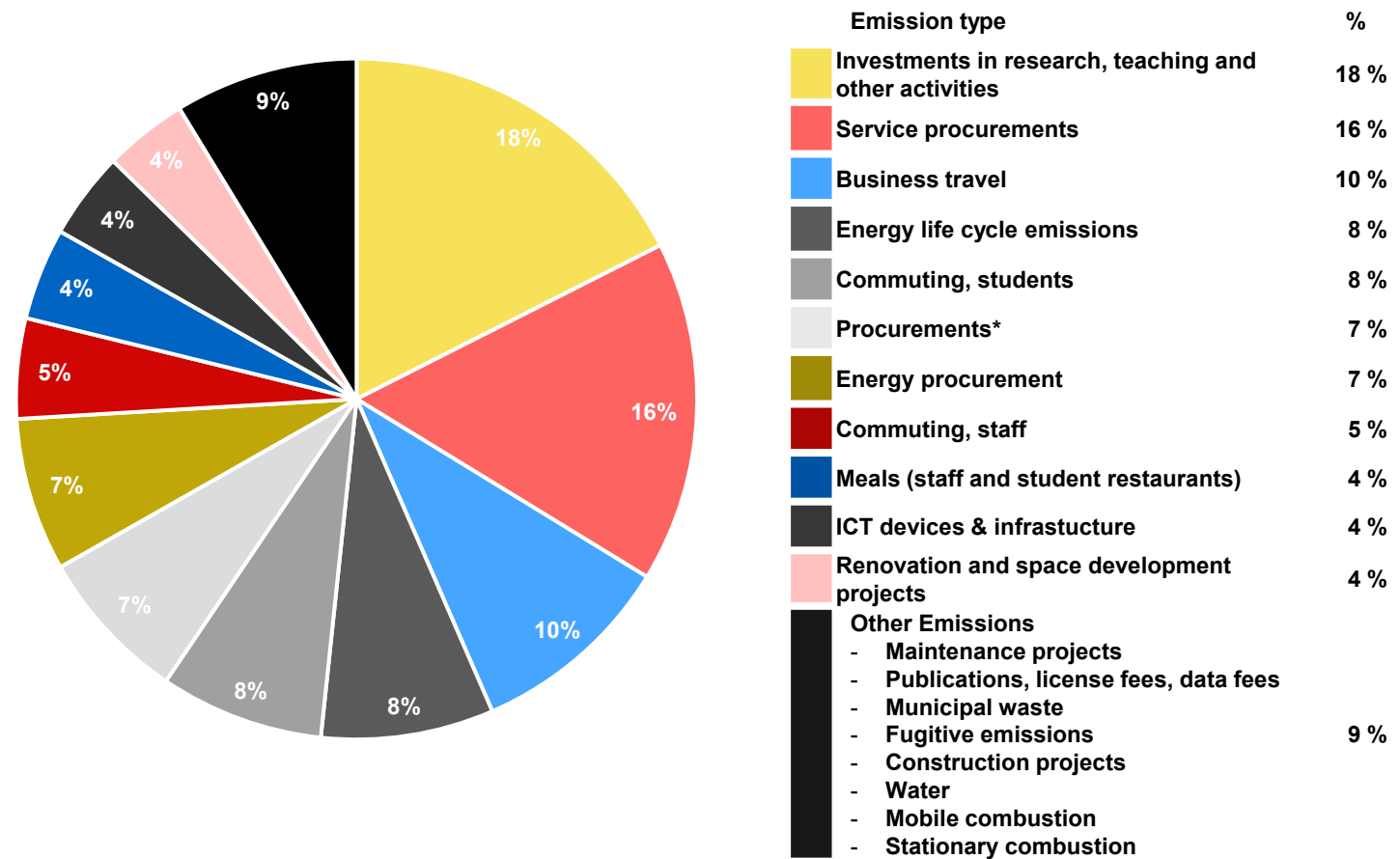
	2022	2023	2024	2025
FTE (staff and student)	18 672	19 681	20 400	20 993
Specific emissions per FTE (tCO₂e/FTE)	4,82	4,52	2,79	2,82
Specific emissions per FTE without Financial investments (tCO₂e/FTE)	3,15	3,09	1,66	1,51

Specific emissions

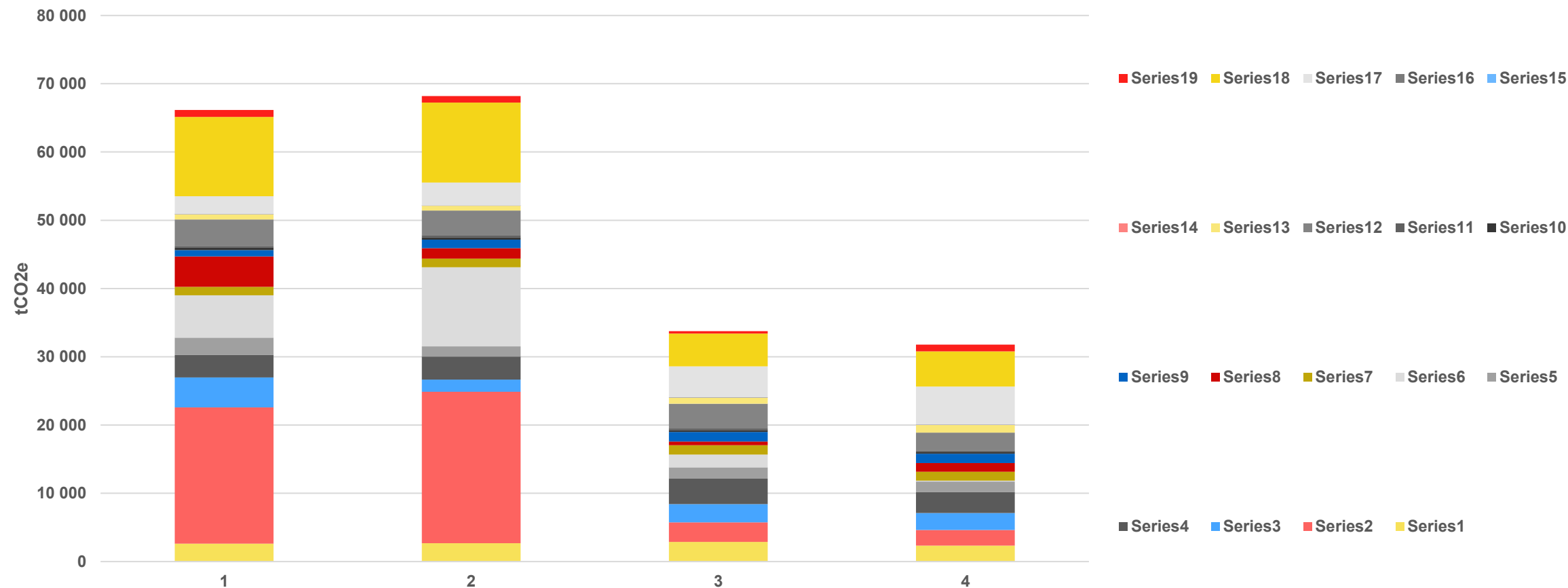


Market-based emissions distribution 2025 without Financial investments

- **Biggest emission sources** are investments in research, teaching and other activities, service procurements, business travel and commuting.
- **Emissions of purchased energy are low** due to the majority of purchased electricity being emission-free and emission-free district heating in most of the properties.
- Procurements include both purchased products and services in the calculation. The emission factors for purchased products and services are mainly based on costs, which is the average, not the most accurate way to estimate emissions. However, supplier-specific emission factors were used to the extent possible. The aim is to further refine the calculation of procurement emissions when service providers start calculating accurate emissions from their operations.



Annual emissions comparison without Financial investments



The emission factors for purchased products and services are spend-based, which is an average, not the most accurate way to evaluate emissions. Procurement emissions will get more accurate in following years, as especially service producers begin to calculate accurate emissions of their operations.

Aalto university climate and nature Actions

Aalto Climate and nature actions

Energy
savings & low
carbon
sources

Optimizing use
of resources &
increasing
sharing and
recycling

Embracing
responsibility
of individual
travel choices

Improvement
of space
utilization

Meal
planning and
waste
minimization

Easily
accessible by
foot, bicycle
and public
transportation

Increasing
biodiversity
and
resilience

Increasing
sustainability
awareness in
procurement

Sustainability
in operations

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High-level Actions

Goals

Energy	Construction, renovation and outdoor space	Travel	Commuting	Procurement
• Energy consumption - 20% • 0 scope 1 and 2 emissions from energy	• Reductions in carbon emissions from new construction (-25%) and renovation (-15%) compared to BAU. • Reduced impact on nature	• Reduction of flight travel emissions	• Facilitate sustainable commuting	• Reduced consumption • Sustainable procurement • Life cycle thinking
Low carbon energy procurement and production on campus Reduction of energy consumption Upgrades in building technology Increasing solar power production on campus A triple bottom-line approach for space use	Efficient use of space and Improvement of campus utilization rate Low carbon construction policies Increasing biodiversity on campus Increased space for resilience and biodiversity through nature-oriented design	Reduction of emissions through travel policies Increasing awareness and follow-up through detailed data Employees embrace responsibility of individual travel choices Co-operation with academic funders and society to reach sustainable goals	Sustainable mobility action plan Easily accessible walking campus Sustainable mobility benefits for staff Bicycle friendly infrastructure and facilities Sustainability aspects included in relocation services	Scrutiny of necessity, scope and magnitude of procurements General and sector specific sustainable procurement competences Supplier and supply chain dialogue on sustainability practices, reporting and data Sustainable procurement guidelines and networks Sustainability criteria in procurement Longer product lifecycles

BAU= Business As Usual

ICT	Food	Waste
• Resource optimization • Lifecycle management • Green ICT practices	• Sustainable practices in operations and meal planning • Encouraging sustainable dietary choices	• 68% recycling rate (2025) • Lower incineration waste rates • Lower waste/m2 rates
Detailed ICT emissions calculation Energy efficiency Resource optimization Recycling, repurposing and extension of device lifetime Management of data lifecycle Green coding practices Sharing of infrastructure Recycling and repurposing	Sustainable policy principles for student restaurants Sustainable event guidelines Sustainability in operations and meal planning Information on carbon footprint and climate friendly options Customer engagement, sustainability awareness and dialogues Minimize food waste	Streamlining and optimizing logistics Carbon neutral waste transport Plastics recycling Extending recycling to partner organisations Training and awareness campaigns

Summary

Aalto University has made commitment to sustainability and has ongoing efforts to reduce its carbon footprint through various initiatives and strategies.

- Aalto University calculates its carbon footprint annually and continuously develops its measurement and reporting processes.

Carbon footprint 2025

- Footprint was calculated using GHG Protocol covering scope 1 - 3 and scope 3 subcategories 1-15
- Total emissions increased by 4 % in 2025 compared to 2024, mainly due to the expansion of emission calculations to all scope 3 categories.
- The total GHG emissions for 2025 were 59 270 tCO₂e.
- 96 % of Aalto University's emissions are Scope 3 emissions, which include Financial investments, Investments in research, teaching and other activities, Energy life cycle emissions, construction projects, travel, material and service procurement, commuting, ICT, meals, water and waste.
- The biggest sources of emissions are Financial investments, Investments in research, teaching and other activities, Energy life cycle emissions, Business travel, Service procurements, Energy life-cycle emissions and commuting (students and staff).
- Emissions decreased 6% excluding financial investments compared to 2024 and the university is on track with regards to its emissions reduction goals

Aalto University aims to achieve net-zero in GHG protocol scope 1 and 2 emissions by 2030 and halve scope 3 emissions by 2035. while at the same time increasing resilience and biodiversity

- Strategies to reduce emissions vary based on the source. Actions to reduce emissions include improvement of energy efficiency and use of emissions free energy sources, promotion of sustainable travel and mobility, scrutiny of procurement, optimizing use of resources, sustainable meal planning, minimizing waste, recycling and nature-oriented design



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2025 Total Emissions and Comparisons with Previous Years

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Significant emission changes 2024-2025

Energy procurement: -20 % through increasing the share of certified emission-free energy products. Most of the purchased energy was purchased as low-emission already in 2024. In 2022 - 2023 emission-free electricity was not purchased. The market-based emission factor was very high. Finnish Energy Authority publishes emission factors from which emissions were calculated.

- The end user of electricity has the option to purchase either origin-guaranteed or non-origin-guaranteed electricity. The origin of origin-guaranteed electricity is indicated by origin guarantees, and its production distribution is based on renewable energy sources, nuclear power, or a combination of these.
- The production distribution of non-origin-guaranteed and unknown-origin electricity is indicated by residual distribution. The residual distribution varies annually depending on what production sources are left over from the production and consumption of origin-guaranteed electricity.

Construction projects: -92 % due to the low level of new construction. It is typical for real estate operators that the emissions vary from year to year depending on number of active construction sites.

Lifecycle emissions of energy: -28 % due to the origin of electricity being taken into account in more detail in the calculation of indirect emissions.

Refrigerants: -6 % due to less leakages in cooling systems. The number of leaks is affected by factors such as the age and condition of the equipment. The amount of emissions is also affected by the type of refrigerant. Scope 1 emissions are known to vary between years.

Commuting (staff and students): -8 % due to the decrease in the use of one's own car to Aalto campuses. Distribution of Aalto students changes every year and so do the number of students, travel distances, and modes of transport.

Business travel: -17 % due to more accurate calculation and reduced business travel.

Investments in research, teaching and other activities: +23 % due to higher tangible costs.

Financial investments: +19 % from the previous year. The category has not previously been included in the calculation.

The emissions of all procurements have changed slightly due to changes in Aalto University's accounting. The costs included in the calculation include the costs of services in a broader category. On the other hand, material purchases were smaller than in the previous year.

Total market-based emissions distribution 2025

Emission type	Emissions (tCO ₂ e)	Percentage	Scope	Scope 3 category
Financial investments	27 497	46,4 %	3	3.15
Investments in research, teaching and other activities	5 573	9,4 %	3	3.2
Service procurements	5 150	8,7 %	3	3.1
Business travel (flights and other travel)	3 090	5,2 %	3	3.6
Energy life cycle emissions	2 606	4,4 %	3	3.3
Commuting, students	2 472	4,2 %	3	3.7
Procurements	2 328	3,9 %	3	3.1
Energy procurement (Market-based method)	2 313	3,9 %	2	
Commuting, staff	1 513	2,6 %	3	3.7
Meals	1 387	2,3 %	3	3.1
ICT devices & infrastucture	1 313	2,2 %	3	3.1
Renovation and space development projects	1 259	2,1 %	3	3.1
Maintenance projects	1 119	1,9 %	3	3.1
Publications, license fees, data fees	987	1,7 %	3	3.1
Municipal waste	288	0,5 %	3	3.5
Fugitive emissions	190	0,3 %	1	
Construction projects	141	0,2 %	3	3.2
Water	22	0,0 %	3	3.1
Mobile combustion	20	0,0 %	1	
Stationary combustion	0,1	0,0 %	1	
Total	59 270	100,0 %		

Annual emission comparison

Emission source	Emissions 2022 (tCO ₂ e)	Emissions 2023 (tCO ₂ e)	Emissions 2024 (tCO ₂ e)	Emissions 2025 (tCO ₂ e)	Change abs. 2023 cf. 2022 (tCO ₂ e)	Change 2023 cf. 2022 %	Change abs. 2024 cf. 2023 (tCO ₂ e)	Change 2024 cf. 2023 %	Change abs. 2025 cf. 2024 (tCO ₂ e)	Change 2025 cf. 2024 %
Financial investments	31 200	28 115	23 158	27 497	-3085	-10 %	-4957	-18 %	4339	19 %
Investments in research, teaching and other activities	2 554	3 313	4 544	5 573	759	30 %	1231	37 %	1029	23 %
Service procurements	4 966	4 954	4 786	5 150	-12	0 %	-168	-3 %	364	8 %
Business travel	3 294	3 386	3 710	3 090	92	3 %	324	10 %	-620	-17 %
Energy life cycle emissions	3 873	3 598	3 625	2 606	-274	-7 %	27	1 %	-1019	-28 %
Commuting, students	4 383	1 784	2 676	2 472	-2600	-59 %	892	50 %	-204	-8 %
Procurements	2 641	2 701	2 877	2 328	60	2 %	176	7 %	-549	-19 %
Energy procurement (Market-based method)	19 945	22 174	2 877	2 313	2230	11 %	-19297	-87 %	-564	-20 %
Commuting, staff	2 536	1 488	1 670	1 513	-1048	-41 %	182	12 %	-157	-9 %
Meals	945	1 245	1 390	1 387	300	32 %	146	12 %	-3	0 %
ICT devices & infrastucture	1 241	1 274	1 396	1 313	33	3 %	122	10 %	-83	-6 %
Renovation and space development projects	4 430	1 539	536	1 259	-2891	-65 %	-1003	-65 %	723	135 %
Maintenance projects	746	699	909	1 119	-47	-6 %	210	30 %	210	23 %
Publications, license fees, data fees	449	433	370	987	-16	-4 %	-64	-15 %	617	167 %
Municipal waste	335	307	296	288	-28	-8 %	-11	-4 %	-7	-2 %
Fugitive emissions	275	353	202	190	79	29 %	-151	-43 %	-12	-6 %
Construction projects	6 225	11 570	1 855	141	5345	86 %	-9715	-84 %	-1713	-92 %
Water	25	16	23	22	-9	-36 %	7	42 %	-1	-4 %
Mobile combustion	19	18	18	20	-1	-8 %	0	0 %	3	14 %
Stationary combustion	6	11	4	0,1	5	95 %	-7	-63 %	-4	-96 %
Sum	90 087	88 979	56 923	59 270	-1 180	-1 %	-32 056	-36 %	2 347	4 %

Annual specific emission comparison (kgCO₂e/m²)

Emission source	2022 kgCO ₂ e/m ²	2023 kgCO ₂ e/m ²	2024 kgCO ₂ e/m ²	2025 kgCO ₂ e/m ²
Procurements	6,56	7,37	7,17	5,95
Energy procurement (Market-based method)	49,51	60,53	7,17	5,91
Commuting, students	10,88	4,87	6,66	6,31
Business travel	8,18	9,24	9,24	7,89
Commuting, staff	6,29	4,06	4,16	3,86
Construction projects	15,45	31,58	4,62	0,36
ICT devices & infrastructure	3,08	3,48	3,48	3,35
Renovation and space development projects	11,00	4,20	1,34	3,22
Meals	2,34	3,40	3,46	3,54
Municipal waste	0,83	0,84	0,74	0,74
Fugitive emissions	0,68	0,96	0,50	0,48
Energy life cycle emissions	9,61	9,82	9,03	6,66
Maintenance projects	1,85	1,91	2,26	2,86
Water	0,06	0,04	0,06	0,06
Stationary combustion	0,01	0,03	0,01	0,00
Mobile combustion	0,05	0,05	0,04	0,05
Financial investments	77,45	76,75	57,67	70,23
Investments in research, teaching and other activities	6,34	9,04	11,32	14,23
Service procurements	12,33	13,52	11,92	13,15
Publications, license fees, data fees	1,12	1,18	0,92	2,52
Sum	223,63	242,90	141,77	151,38

Total location-based emissions distribution 2025

Emission type	Emissions (tCO ₂ e)	Percentage	Scope	Scope 3 category
Financial investments	27497	46 %	3	3.15
Investments in research, teaching and other activities	5573	9 %	3	3.2
Service procurements	5150	9 %	3	3.1
Energy procurement (Location-based method)	3458	6 %	2	
Business travel (flights and other travel)	3090	5 %	3	3.6
Energy life cycle emissions	2606	4 %	3	3.3
Commuting, students	2472	4 %	3	3.7
Procurements	2328	4 %	3	3.1
Commuting, staff	1513	3 %	3	3.7
Meals	1387	2 %	3	3.1
ICT devices & infrastucture	1313	2 %	3	3.1
Renovation and space development projects	1259	2 %	3	3.1
Maintenance projects	1119	2 %	3	3.1
Publications, license fees, data fees	987	2 %	3	3.1
Municipal waste	288	0 %	3	3.5
Fugitive emissions	190	0 %	1	
Construction projects	141	0 %	3	3.2
Water	22	0 %	3	3.1
Mobile combustion	20	0 %	1	
Stationary combustion	0	0 %	1	
Total	60415	100 %		

Scope 1 Emissions

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Scope 1

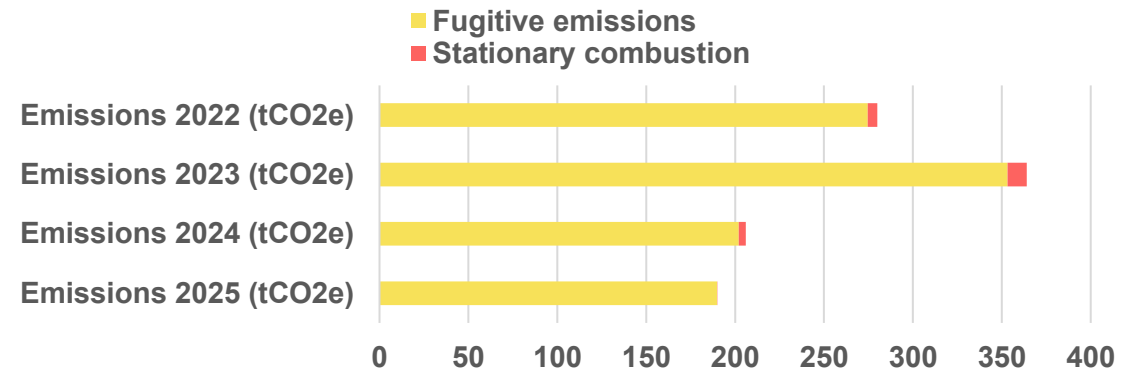
Direct emissions

Stationary combustion

- Metsähovintie 114 (Kirkkonummi) produces a part of its own heating energy using fossil energy (light fuel oil). In 2025, the amount of oil was 4135 l and amount of produced energy was 37,5 MWh (2024: 17,9 MWh, 2023: 48,2 MWh, 2022: 24,8 MWh).
- Emissions of produced energy in 2025 were 0,15 tCO₂e . (2024: 4,7 tCO₂e, 2023: 12,7 tCO₂e, 2022: 6,5 tCO₂e).
- Fuel oil emissions have decreased significantly in 2025, as fuel oil has been purchased as a product made from renewable raw materials. The carbon footprint calculation for 2025 uses Defra's emission factor, which is 0,03558 kgCO₂e/l.
- Other produced energy (geothermal energy and solar power) is taken into account in scope 3 in indirect life cycle emissions of electricity.

Fugitive emissions

- In 2025 the use of refrigerants were in total 87 kg:
 - R 404A 25 kg
 - R 407C 31 kg
 - R 410A 5,5 kg
 - R 452a 4,5 kg
 - R 32 19 kg
 - R449A 2 kg
- Emissions of refrigerants in 2025 were 189,9 tCO₂e (2024: 202 tCO₂e, 2023: 353 tCO₂e, 2022: 274 tCO₂e).



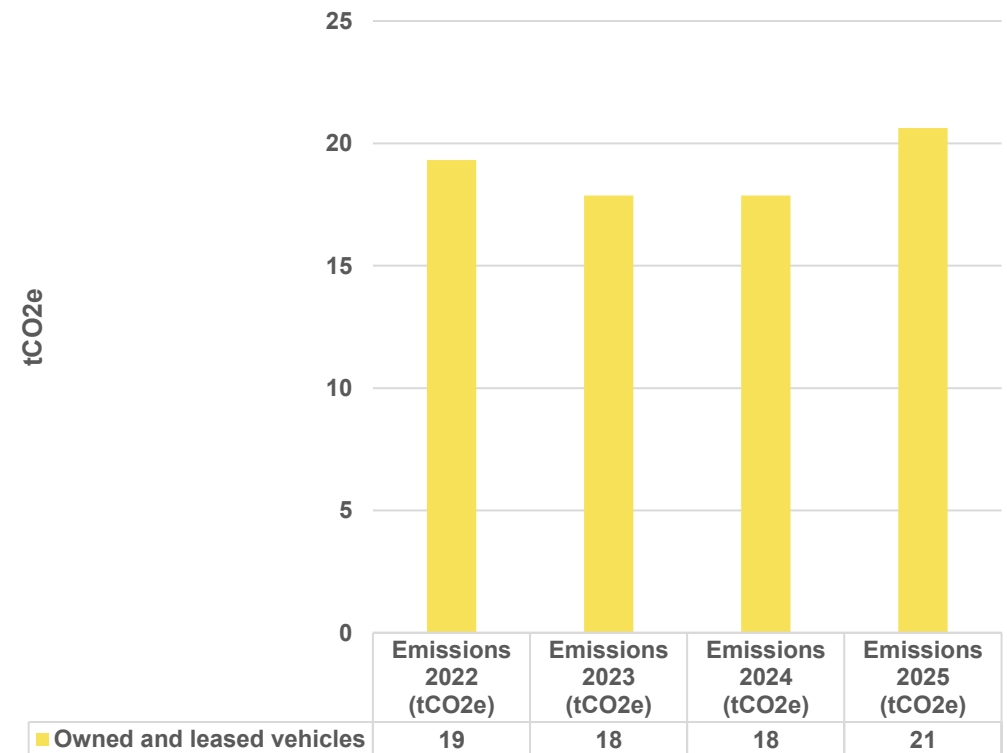
Scope 1

Direct emissions

Mobile combustion

- In year 2025 there were in total 22 vehicles. 5 were gasoline vehicles, 10 diesel powered vehicles and 3 electric vehicles. The average mileage of one car was estimated to be around 4,000 km per year. In addition to this, there were one truck (gas).
- The category also takes into account the combustion engine laboratory's consumption of diesel, hydrogen and methane.
- Total emissions from in 2025 were 20,6 tCO₂e (2024: 17,9 tCO₂e, 2023: 17,9 tCO₂e and 2022: 19,3 tCO₂e).
- The slight increase in emissions for 2025 can be explained by more accurate initial data. Fuel consumption has not increased.
- The emission factors used in the 2025 carbon footprint calculation are:
 - Diesel 0,1672 kgCO₂e/km (Defra)
 - Gasoline 0,17819 kgCO₂e/km (Defra)
 - Electricity 0 kgCO₂e/km (Defra)
 - Gas 1,563 kgCO₂e/l (Statistics Finland)
 - Methane 29,8 kgCO₂e/l (OpenCO2)

Fuels



Scope 2 Emissions

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Scope 2

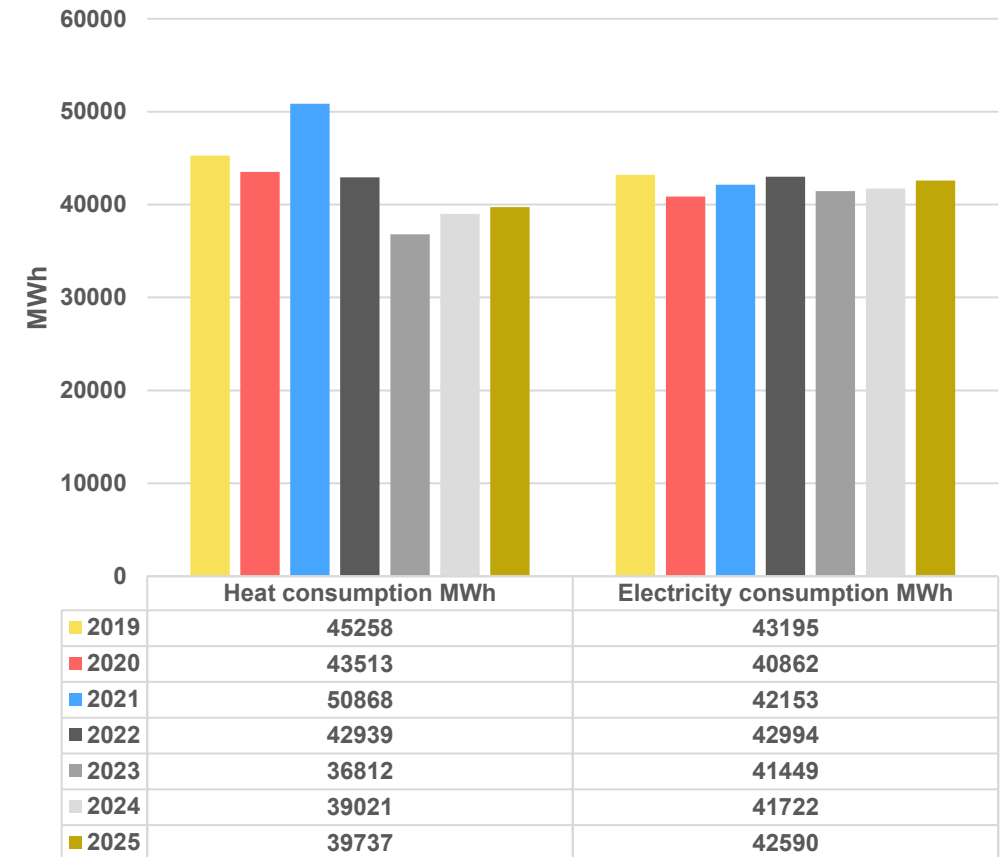
Energy consumption

- Switching to a renewable district heating product in the Helsinki property has enabled emissions savings in 2025 compared to the previous year.
- Annual carbon dioxide emissions from energy consumption have been reduced by 88 % since 2022.
- Energy consumption increased slightly in 2025 compared to 2024 due to an increase in demand.
- Energy savings are done in three broad categories: upgrades on the building technology, building automation optimization and through energy-conserving habits of the building users.
- Most of the purchased electricity is emission-free. All district heating is emission-free in properties owned by the Aalto University.
- Energy efficiency improvements will be achieved in Konemiehentie 2 with the 2025 HVAC renovation (-38% heating, -20% electricity).

- Continuous improvements on the control logics of the buildings gradually increase our energy efficiency
- Increasing solar power generation reduces energy bought from the grid

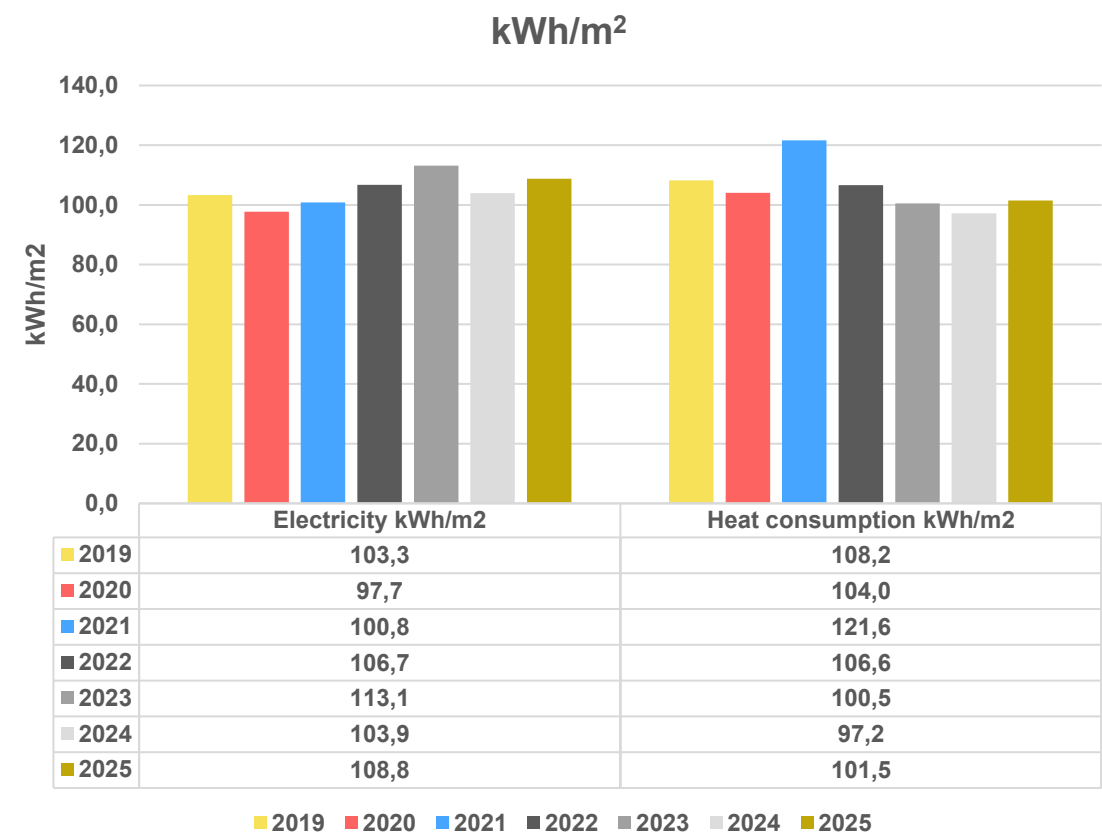
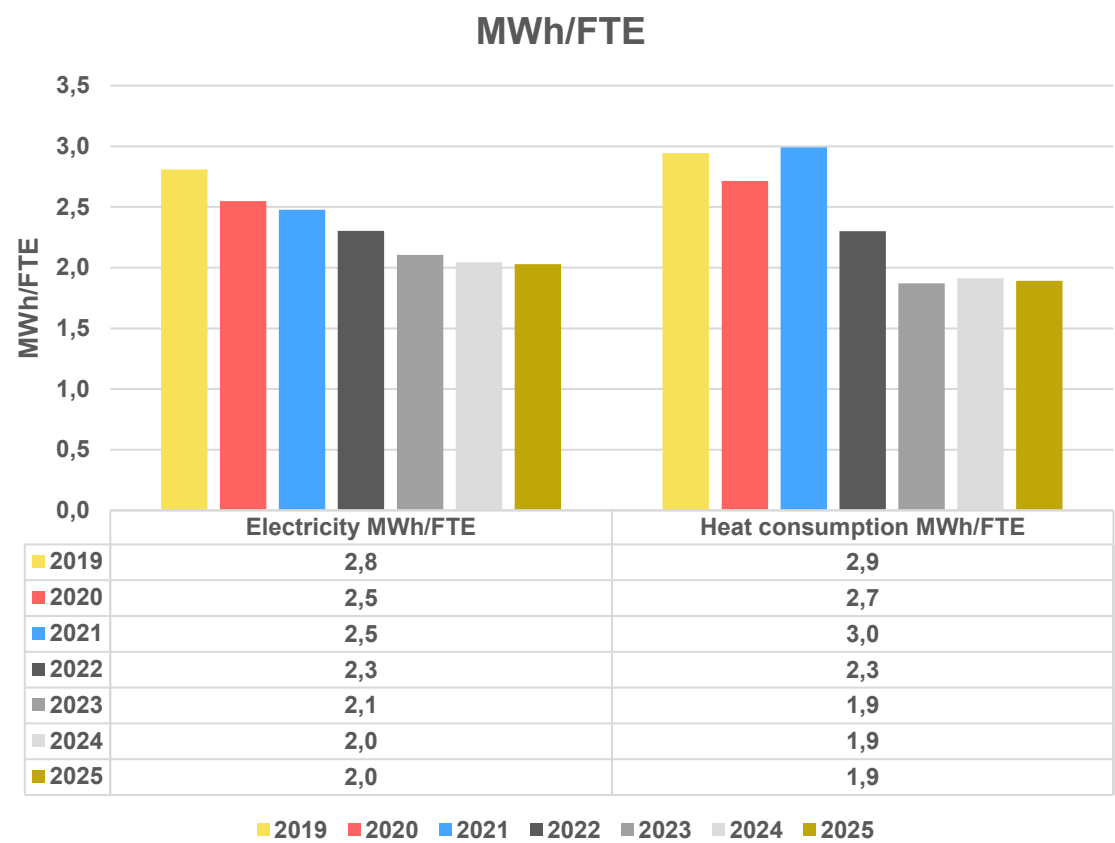


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Scope 2

Specific energy consumption

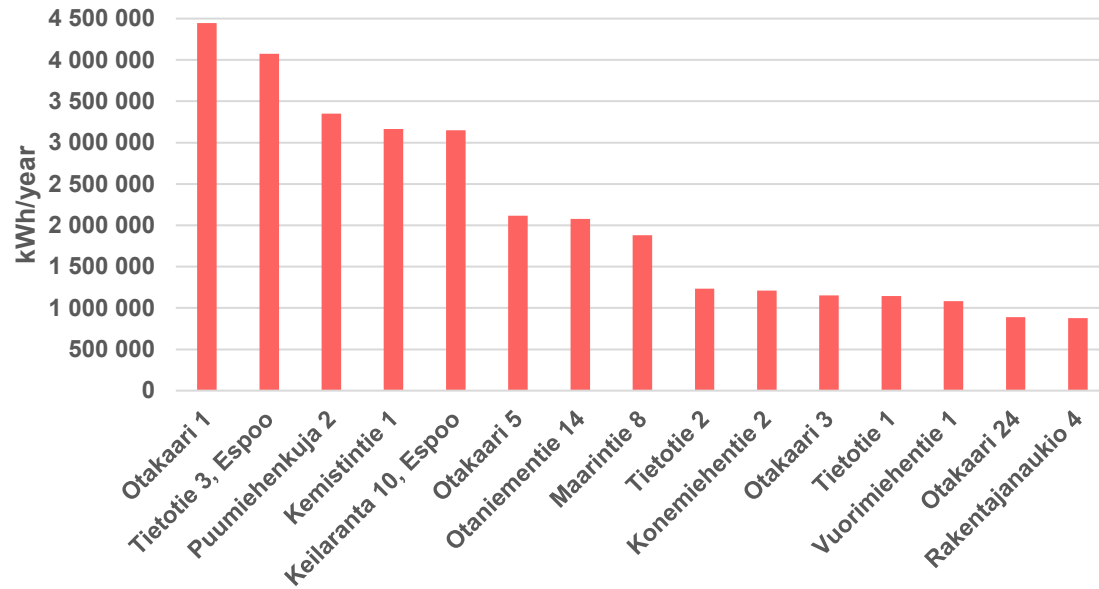


NOTE It is assumed that the area in 2019 and 2020 was the same as in 2021.

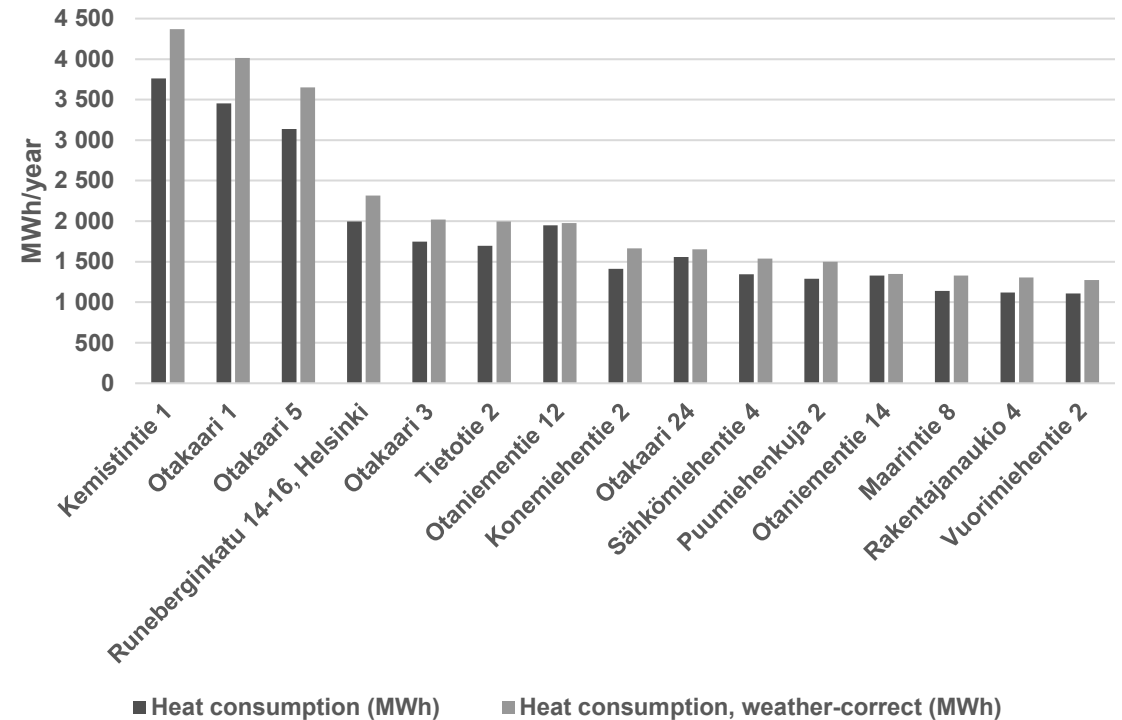
Scope 2

The largest energy-consuming buildings in 2025

Electricity



Heat



Scope 2

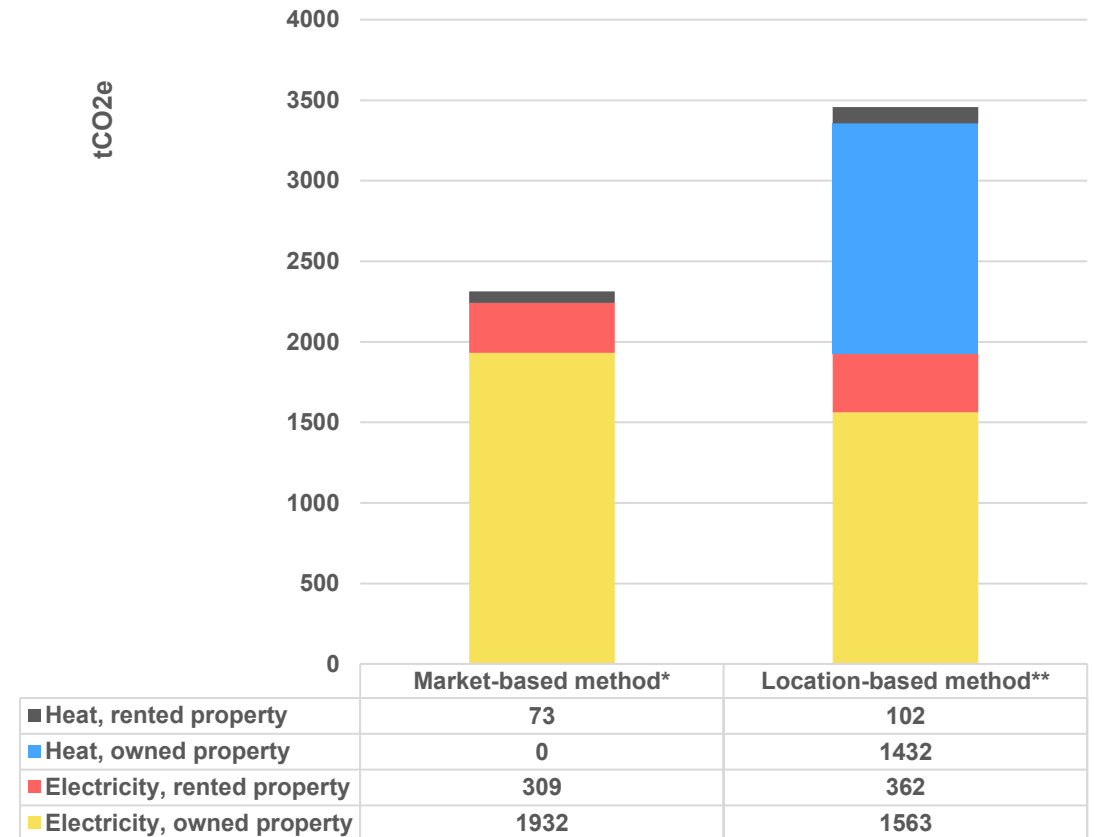
Emissions from energy consumption

GHGP Scope 2 includes two different calculation methods; market-based and location-based. Scope 2 emissions have been calculated in both ways.

The emission factors are expressed in equivalent tons, which allows for the calculation of energy emissions in accordance with the GHG protocol.

* The market-based calculation takes into account the quality of the purchased energy product. In this calculation, this mainly means Fortum's Ecoheat product in owned properties and renewable energy in some rental properties, and for electricity, emission-free electricity certified with a guarantee of origin. The aim of the calculation is to take into account sustainable development choices in addition to consumption volumes.

** In the location-based method, the emission factors are the average factors of the Finnish energy network. The aim is to describe location-based emissions without market influence. The heat emission factor is specific to the district heating company and the emission factor for electricity is 45,2 kgCO₂e/MWh.



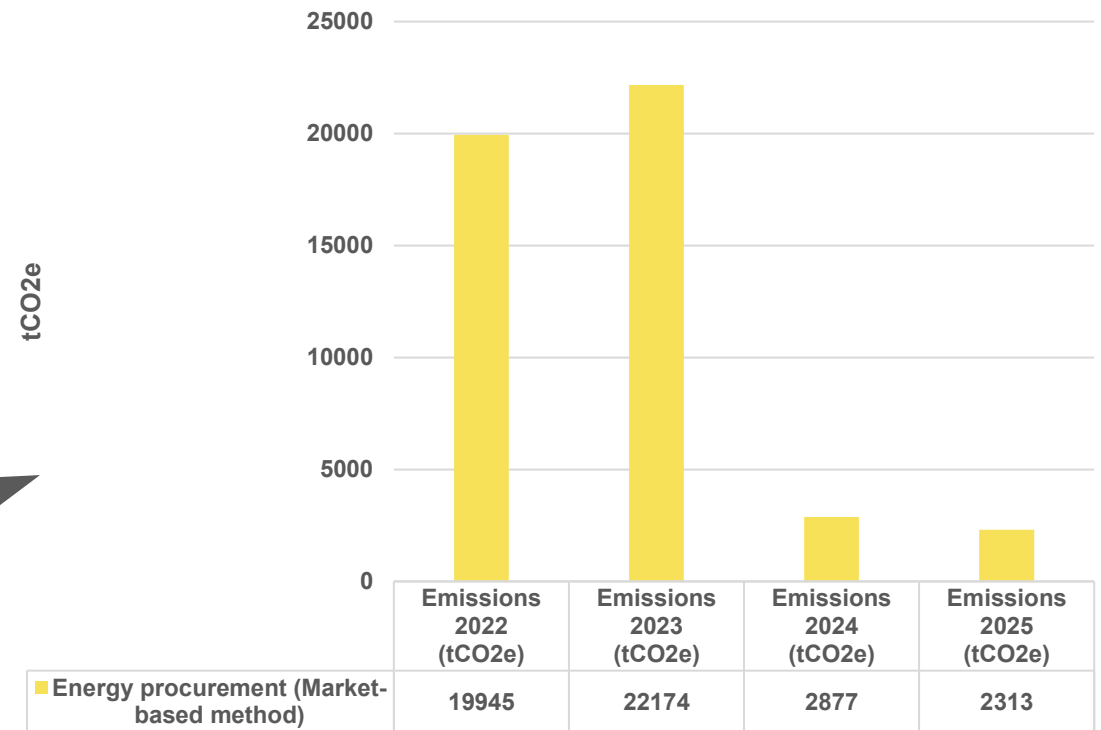
Scope 2

Emissions from energy consumption 2022-2025

- Aalto University started purchasing Fortum's Ecoheat product from Espoo properties in 2022, which significantly reduced emissions from heating.
- In 2025, emission-free district heating was also purchased for the first time to a property in Helsinki.
- Aalto University stopped purchasing emission-free electricity in 2022, which in turn increased electricity emissions. Aalto purchased again most of its electricity with a guarantee of origin in 2024 and 2025.

The reduction in emissions in 2024 is mainly due to the transition to purchasing electricity certified with a guarantee of origin.

Energy procurement (Market-based method)



Scope 3 Emissions

A!

Scope 3

Category 3.1. Purchased goods and services

Category 3.1 includes goods and services purchased or acquired during the reporting year that are not included in categories 2 to 8.

Aalto University purchases a vast variety of different goods and services each year.

All emissions in the category are based on costs, which creates uncertainty because the emission factors are based on average goods and services in Finland.

The emission factors for tangible procurements are mainly from the Exiobase database for 2019. A weighted emission factor for 2024 was calculated for service procurements based on the available emissions of Aalto's largest service providers.

Inflation between 2025 and the year of emission factors have been taken into account. The inflation has been strong in recent years, and the emissions would seem to increase a lot only based on it. Therefore, all costs have been corrected to the right inflation level. In Finland, Tilastokeskus reports inflation levels based on 12 main categories for goods and services and on numerous subcategories. All the purchased goods and services have been divided into different inflation categories before emission calculations.

This category includes procurements, water and maintenance and renovation projects. In addition to this, meals and ICT devices & infrastructure are included.

Scope 3

Procurements

The procurements cover the following areas: procurement of materials, furniture, service procurements and publications, license fees and data fees.

There have been changes in the emissions of procurements. Some of the changes between 2024 and 2025 are due to changes in Aalto's accounting. The content of the accounts may have changed slightly.

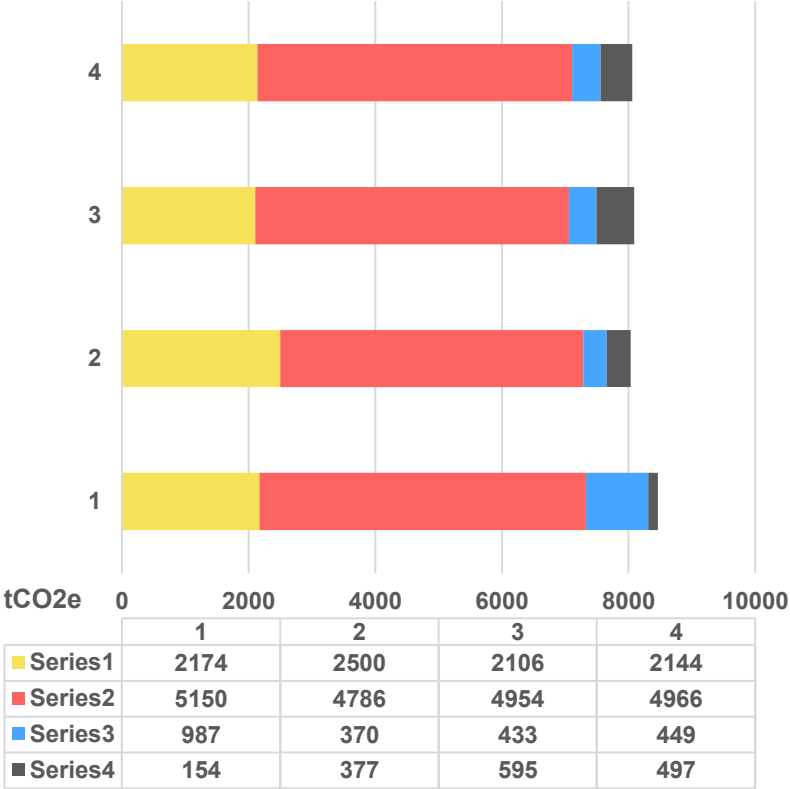
The total emissions from procurements have increased slightly from the previous year.

However, emissions from material purchases have decreased from the previous year.

Emissions of different goods and services can be calculated using spend-based method.

Emissions are based on average cost-based emissions factors, which creates uncertainty to results.

- Emission factors used in the calculation of tangible procurements are Exiobase's 2019 factors (regional emission factors of Finland) with annual inflation adjustment.
- An emission factor for 2024 was calculated for service procurements based on the emissions of Aalto's largest service providers, which was used for all intangible procurements. An inflation adjustment was also applied to intangible acquisitions.



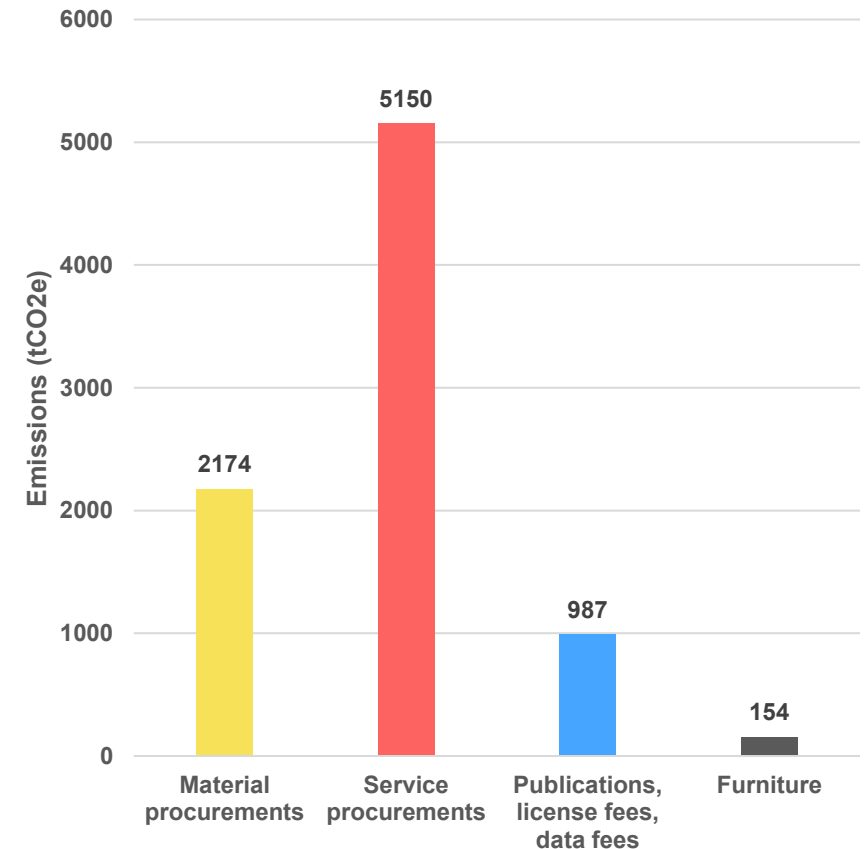
Scope 3

Procurements

- Emissions from procurement have increased slightly from the previous year.
- Sustainability in procurements is driven by legal frameworks, Aalto code of conduct, procurement guidelines, sustainability requirements and sustainability dialogues with suppliers. Scrutiny of necessity, scope and magnitude of procurements support the achievement of sustainability goals
- Effort is put on the development of Aalto procurement and supplier processes, guidelines and sector specific competences. Aalto is also developing sustainability practices in co-operation with Finn-ARMA and other networks.
- Emissions of different goods and services are mainly calculated using spend-based method based on accounting data. Emissions are based on average emissions factors, which create a high degree of uncertainty.
- Current emissions calculation includes furnishings, publications, license fees and data fees and materials and service and material procurement. Material procurement includes, among other things, office supplies and equipment, as well as teaching and research equipment. Service procurements include various purchased services related to, for example, property maintenance, cleaning and guarding, as well as occupational health services and various expert services.
- The emission factors of non-material procurements are uncertain. However, the emission factor is based on the average emission factor of the largest available service providers.
- The calculation of emissions from procurements must be further developed.

➤ Emissions can be further reduced through increasing awareness and training, continued scrutiny of procurements, life cycle thinking and stricter sustainability criteria including certificates and ecolabels.

Procurement emissions 2025

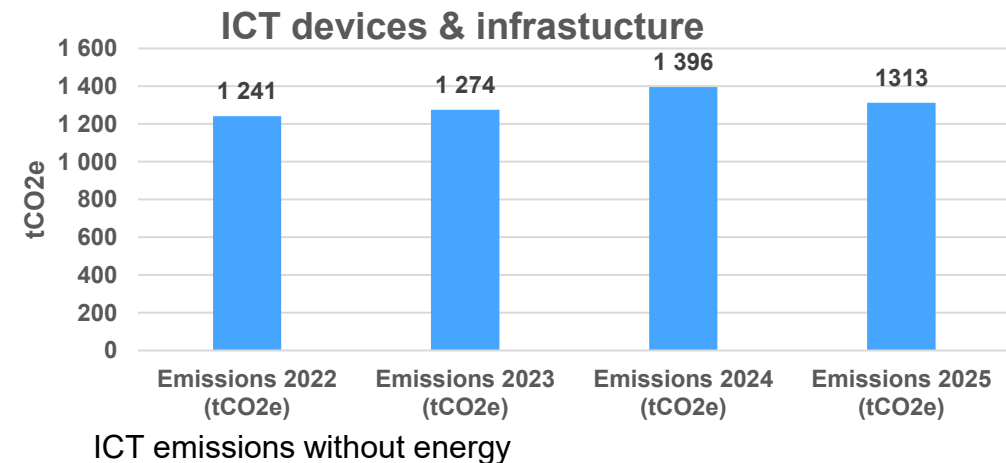
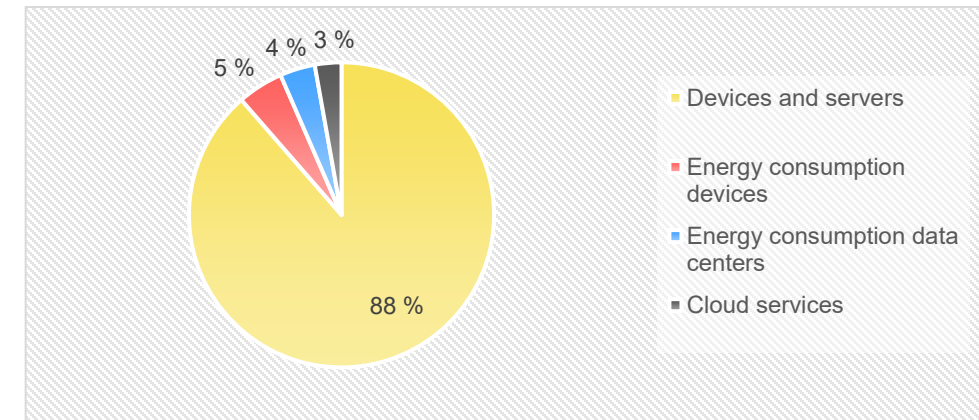
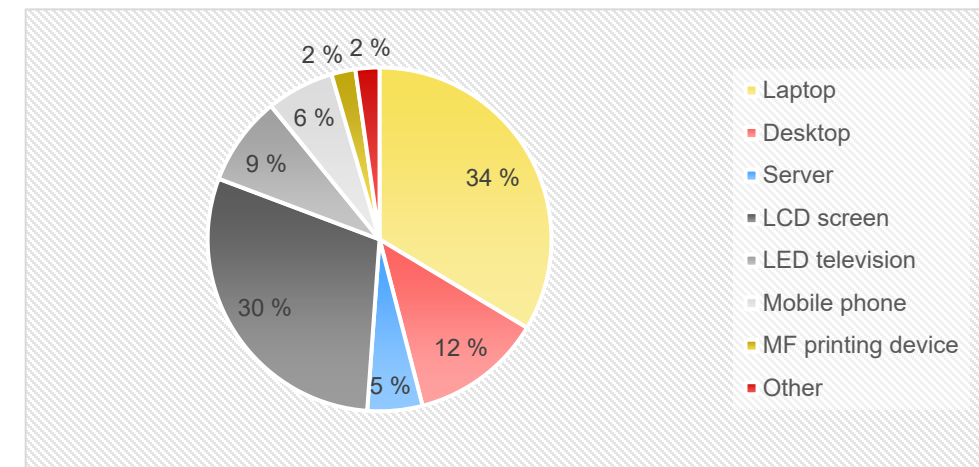


Scope 3

ICT devices and infrastructure

- Devices make up almost 90 % of the ICT emissions. The biggest emissions categories include laptops, screens, TVs and desktops.
- Data centers run mainly on emission free electricity. Heat recovery is in use.
- Electricity consumption is growing fast
- Utilization rates of data centers managed by Aalto are high.
- Process for reuse and recycling of devices are in place
- Energy saving of devices is managed
- Methodologies and tools to calculate ICT emissions have been developed in Aalto.
- Emissions of cloud services are monitored.
- Tools to optimize web site traffic are in use.

➤ Emissions reductions can be achieved through further optimization of stock, green coding practices and further optimization of heavy processing and storage



Scope 3

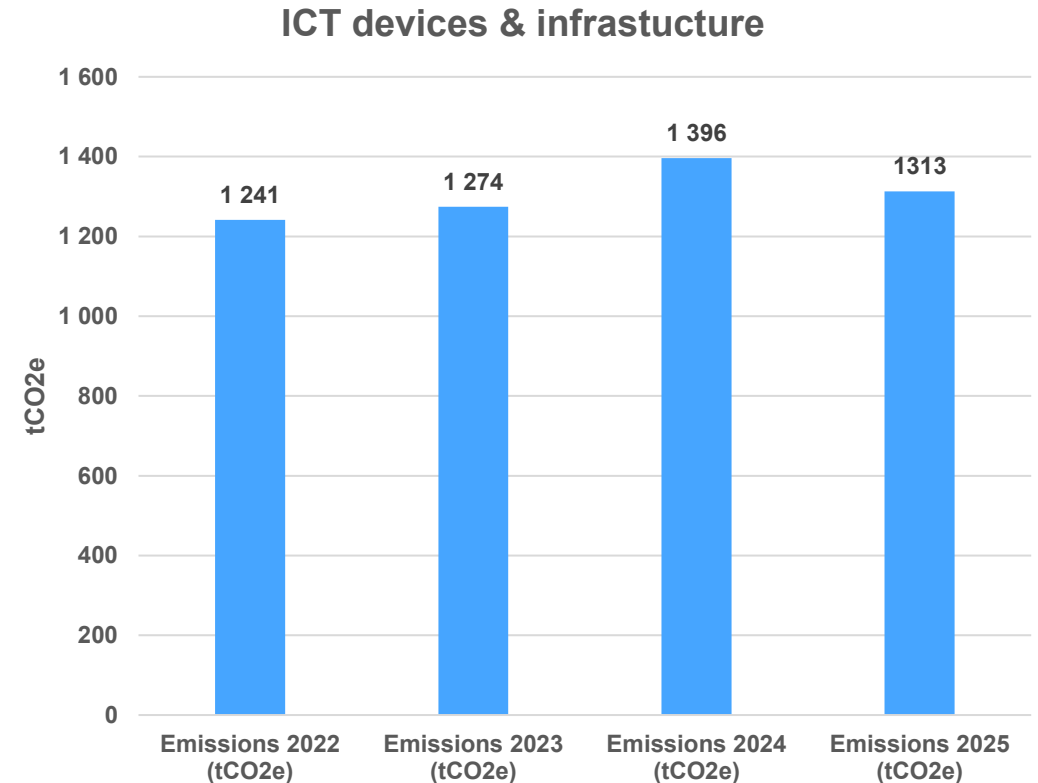
ICT devices and infrastructure

The category covers the ICT infrastructure of Aalto university including desktops, laptops, LCD screens, TVs, mobile phones, tablets, data centers, Wi-Fi access points, routers, switches and firewalls and commercial cloud services.

Aalto University collects IT device amounts annually. The emission calculation is product category based and takes into account the amount of devices and their average lifespan. Product based emissions calculation improves the accuracy of emissions calculation compared to spend-based calculation.

Emissions of cloud services are based on service provider reports.

Emissions of IT devices for 2025 were 1313 tCO₂e. (2024: 1396 tCO₂e, 2023: 1274 tCO₂e, 2022: 1241 tCO₂e).



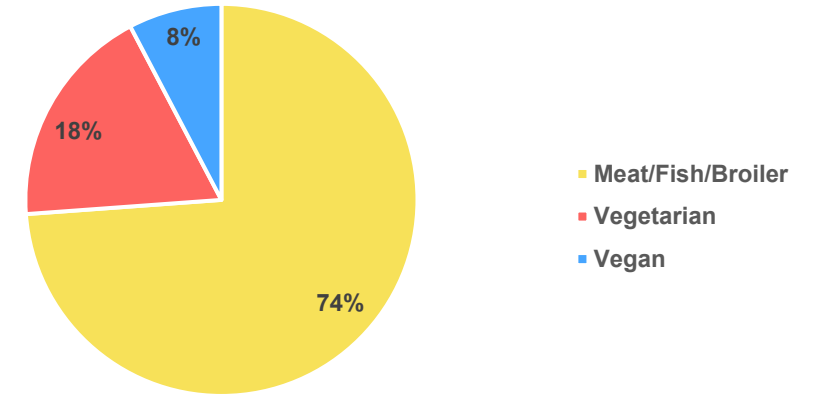
Scope 3

Meals

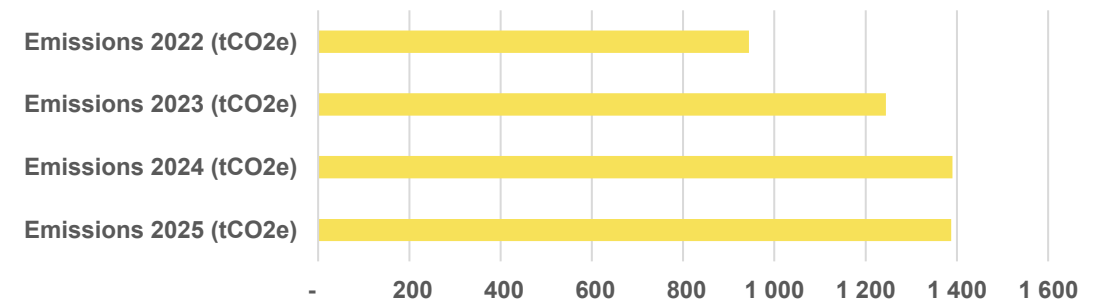
- Emissions have decreased slightly although the number of meals sold has increased. The decrease in emissions is based on a slight increase in the share of vegetarian food.
- The cornerstones of campus restaurants are sustainability, variety of meals and wellbeing. Student restaurants emphasize high sustainability standards and certificates in their operations and supply chains and have set ambitious carbon reduction goals. Operations are guided by the providers' own sustainability programs and the Policy principles of student restaurants on campus.
- Sustainability awareness is promoted through campaigns and restaurant users are guided towards sustainable meal choices. Climate friendly options are marked clearly and information on the carbon footprint of meal options is available.
- Sustainably produced, local and vegetarian ingredients are extensively used. The use of energy and water and the amount of food waste is tracked. Possibility to buy leftover food is available in some restaurants.
- Sustainability is promoted in catering services and guided by the Aalto event planning guideline

➤ Emissions can further be reduced by increasing user awareness, greening dietary choices, operations and supply chains.

Distribution of meal types based on quantity (2025)



Emissions from meals 2022-2025



Scope 3

Meals

Food emissions were calculated from the number of meals (other, vegetarian or vegan) sold from restaurants in Otaniemi during 2025. All the personnel and student restaurants were included in the emission calculation. It was determined based on the data collected that the restaurants sold 1,482 million meals (2024: 1 481 000, 2023: 1 300 000, 2022: 1 000 000).

Approximately 18 % were vegetarian meals and 8 % vegan meals, (2024: 25 %, 2023: 28 %, 2022: 32 %) Meal quantities were obtained from the following restaurants: Sodexo (Kvarkki, T-Talo, Subway), Täffä, Kipsari and Compass.

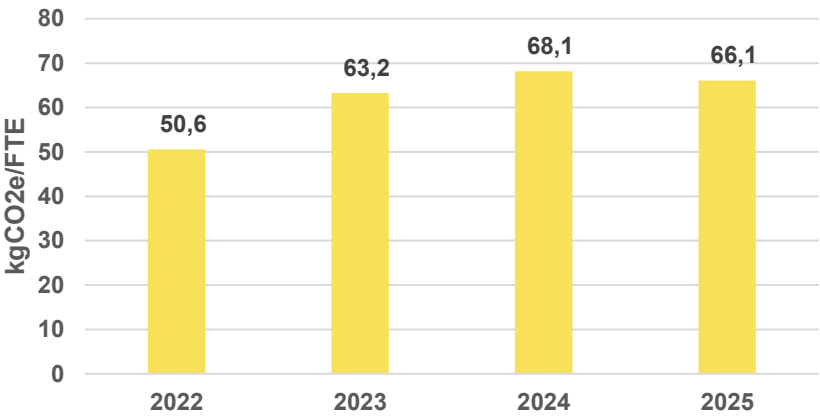
The emissions of meals sold were 2025 1 387 tCO₂e. (2024: 1 390 tCO₂e, 2023: 1 245 tCO₂e, 2022: 945 tCO₂e)

Meal emissions in 2023–2025 have increased due to the increase in the number of visitors to the campus. Specific emissions in 2025 were lower than in the previous year due to the increase in vegetarian food.

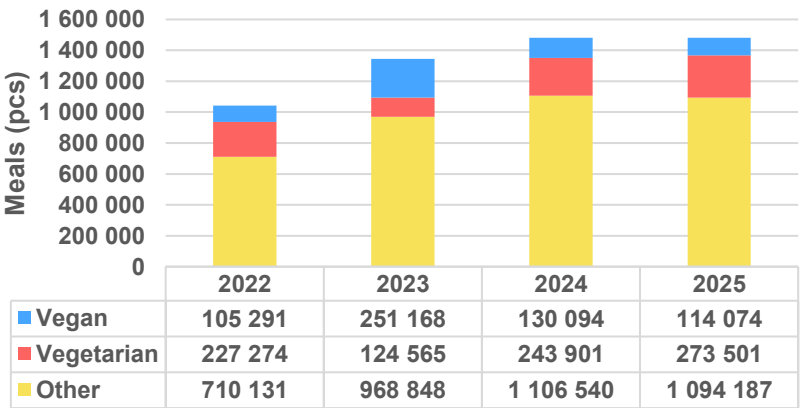
NOTE: The error margin for a specific meal is quite large, since the size and proportions of meals vary greatly. Emission factors used were from Compass Group Finland, which represents a major amount of all meals sold in the Otaniemi campus:

- Meal, other 1,07 kgCO₂e/pcs
- Meal, vegetarian 0,60 kgCO₂e/pcs
- Meal, vegan 0,46 kgCO₂e/pcs

Specific emissions



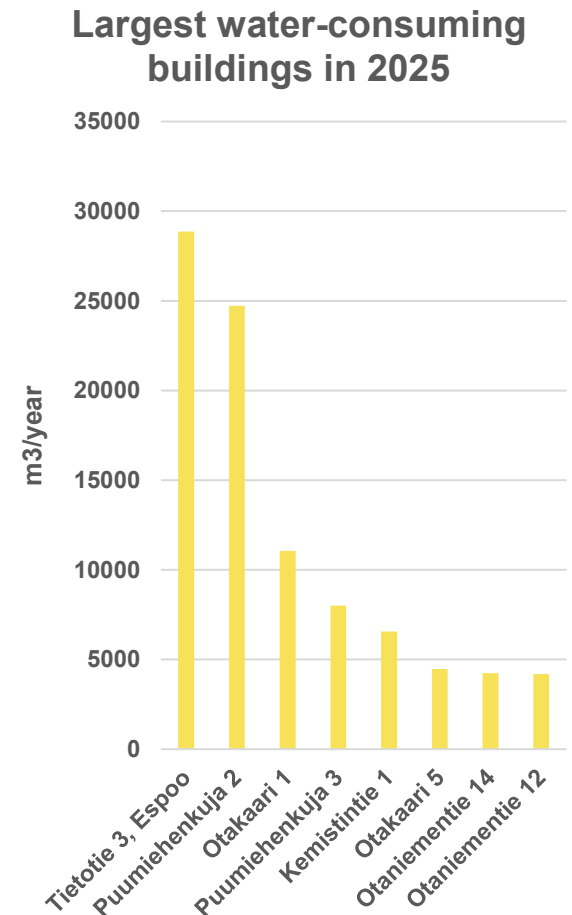
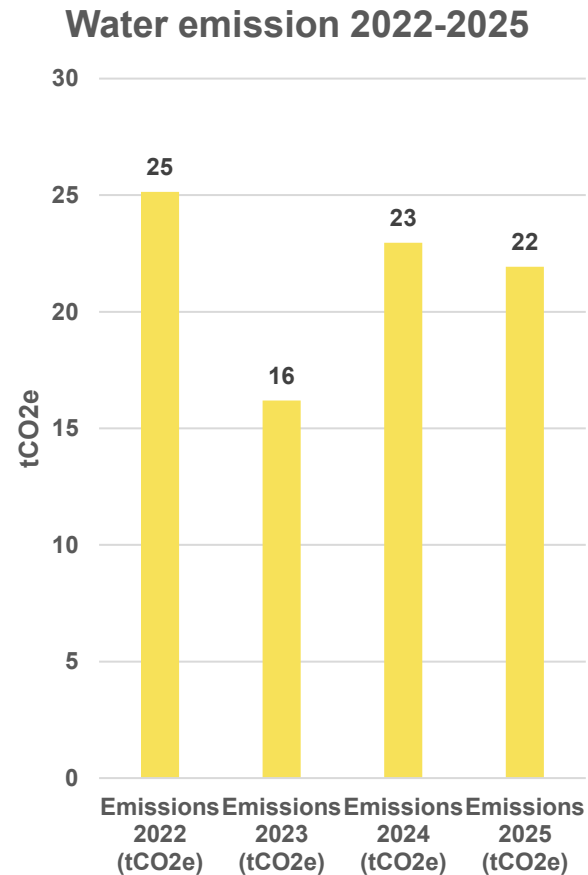
Meals



Scope 3

Water emission

- Water emissions have been calculated using emission factors for tap water. Emission factor is 0,15311 kgCO₂e/kg for tap water (Defra).
- Water consumption in 2025 was 113 114 m³ in Aalto owned properties (2024: 112 742 m³, 2023: 146 319 m³, 2022: 124 407 m³).
- Total emissions from water consumption in 2025 was about 21,9 tCO₂e (2024: 23 tCO₂e, 2023: 16,2 tCO₂e and 2022: 25,1 tCO₂e).
- Wastewater discharges belong to scope 3 category 3.5 and are presented with waste.

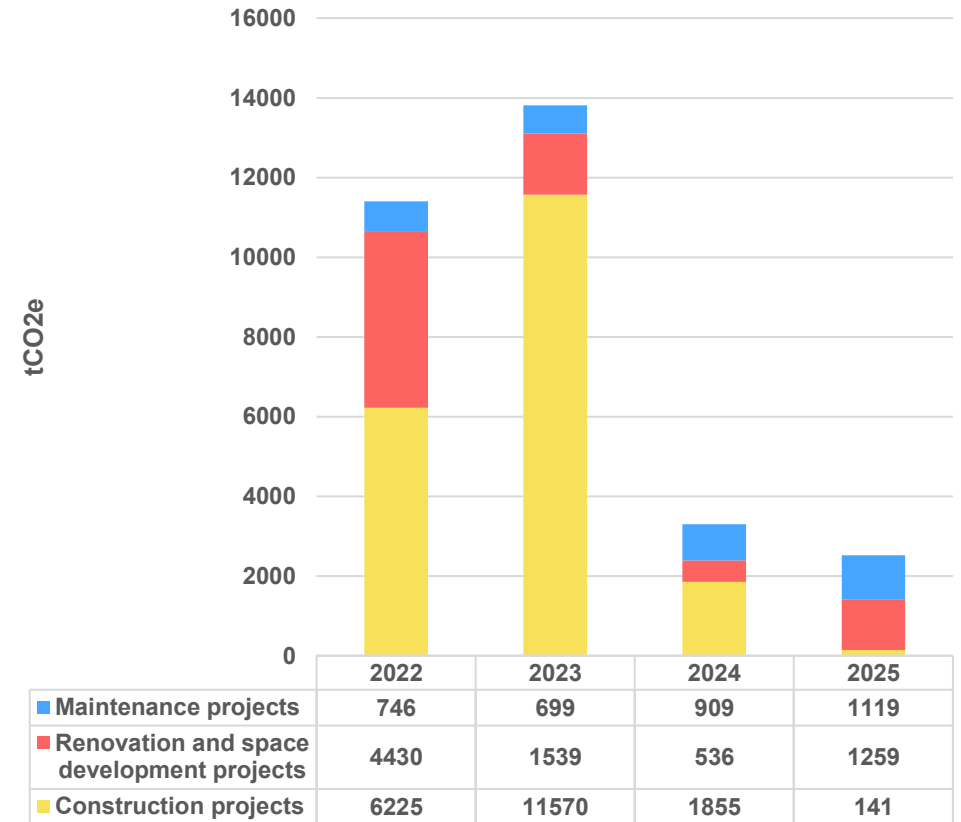


Scope 3

Construction, renovation, and maintenance

- Construction and renovation emissions have decreased significantly in 2024. Total emissions from construction and renovation were lower in 2025 than before due to only small construction activities compared to previous years.
- The results of the construction and renovation emissions calculation could be specified with a project-specific carbon footprint calculation. Upcoming legislation requires carbon calculation from new construction. Similarly, material listings are required to be produced.
- Ongoing monitoring and thoughtful improvement of the utilization rate of space increases space efficiency and enables new ways of working and studying on campus.
- These advancements generate a basis for future carbon goal-setting as well as recycling of building materials.
- Aalto aims for -15 % - 25 % reductions in carbon emissions of construction activities compared to a business as usual scenario.
- Evaluation of the impact on nature and actions to increase biodiversity are included in campus development plans.

- Further emissions savings can be achieved by increasing life-cycle thinking in renovations and through the constant improvement of utilization rates.
- Using project-specific carbon footprint calculations increases the accuracy of this scope 3 category



Scope 3

Construction, renovation, and maintenance

Aalto University executes annually several new constructions, renovations, and maintenance projects. Emissions from said projects can be included to Scope 3 calculations (e.g., emissions from material usage).

The emission factors of the projects are from CEDA and Exiobase. Emissions for 2022–2024 have been calculated retrospectively with the same coefficients to enable comparability.

In 2025, there was very little new construction. The majority of the emissions were caused by renovations and space developments projects. Total emissions from construction, renovation and maintenance decreased from the previous year.

Type	Investment (€)	Emission factor (kgCO ₂ e/€)	Emissions (tCO ₂ e)
Construction projects	450 000	0,3144	141,5
Renovation and space development projects	5 400 000	0,23316	1259,0
Maintenance projects	4 800 000	0,23316	1119,2
Sum	10 650 000		2519,7



Scope 3

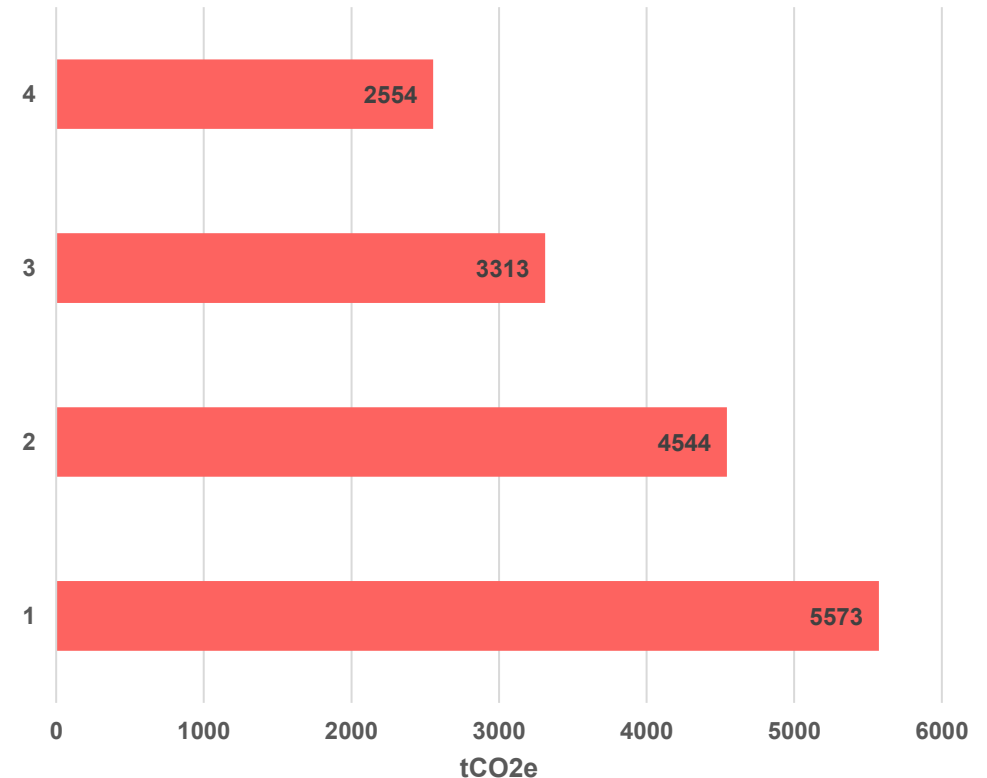
Investments in research, teaching and other activities

Investments in research, teaching and other activities are included under the category 3.2. Emissions from investments in research, teaching and other activities were based on capital investments.

Investments in research, teaching and other activities have increased year by year, and therefore emissions have also increased. Emissions are based on average emissions factors, which create a high degree of uncertainty.

- Emission factor used in the calculation of tangible investments is Exiobase's 2019 factors (regional emission factors of Finland) with annual inflation adjustment.
- An emission factor for 2024 was calculated for service procurements based on the emissions of Aalto's largest service providers, which was used for all intangible investments. An inflation adjustment was also applied to intangible investments.

The calculation of emissions from investments in research, education and other activities needs to be further developed.



Scope 3

Indirect life cycle emissions of energy

As part of the value chain approach, scope 3 can include category 3.3. indirect life cycle emissions of energy. Since 2022 the life cycle emissions of electricity from the grid have also been calculated. The indirect emission coefficient of electricity used in the calculation is 45,9 kgCO₂e/MWh (Defra) in 2022–2024.

For the calculation of 2025, more accurate IPCC coefficients based on purchased electricity were used:

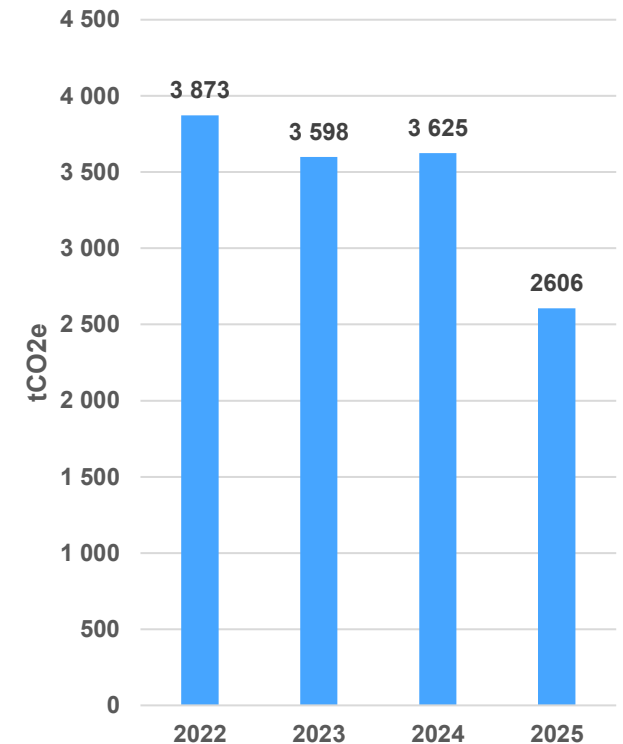
- Wind power 16 kgCO₂e/MWh
- Hydropower 19 kgCO₂e/MWh
- Nuclear power 18 kgCO₂e/MWh
- Other 45,9 kgCO₂e/MWh (Defra)

For solar energy, the emission factor is 0,04 kgCO₂e/kWh (GEMIS 2015) and for geothermal heat 0,089 kgCO₂e/kWh (GEMIS 2015).

Indirect emissions and network losses from district heating as well as network losses from electricity were taken into account in the calculation for the first time. These emissions were also calculated retrospectively for the years 2022–2024. The emission factors for WTT and T&D losses in district heating are from Defra. The T&D loss percentage of electricity is from Fingrid.

Indirect life cycle emissions for purchased electricity, district heating, solar energy and geothermal heat in 2025 were 2 606 tCO₂e (2024: 3 625 tCO₂e, 2023: 3 598 tCO₂e and 2022: 3 873 tCO₂e).

Energy life cycle emissions



Scope 3

Waste emissions

- Category 3.5. Waste generated in operations
- Waste operators Globes and L&T have provided supplier specific waste data.
- Forsman and HSY provided the amounts of different waste categories (biowaste, municipal solid waste, batteries, waste wood, and metal). Their emissions have been calculated based on average emission factors (SYKE Y-hiilari).
- Waste emissions have decreased year by year. Emissions from waste were in 2025 261,7 tCO₂e (2024: 267,7 tCO₂e, 2023 282,9 tCO₂e, 2022: 304,6 tCO₂e)
- Wastewater discharges have also been added to scope category 3.5. The amount of wastewater is assumed to be the amount of clean water consumption. The emission factor of wastewater is 0,18574 kgCO₂e/m³ (Defra).



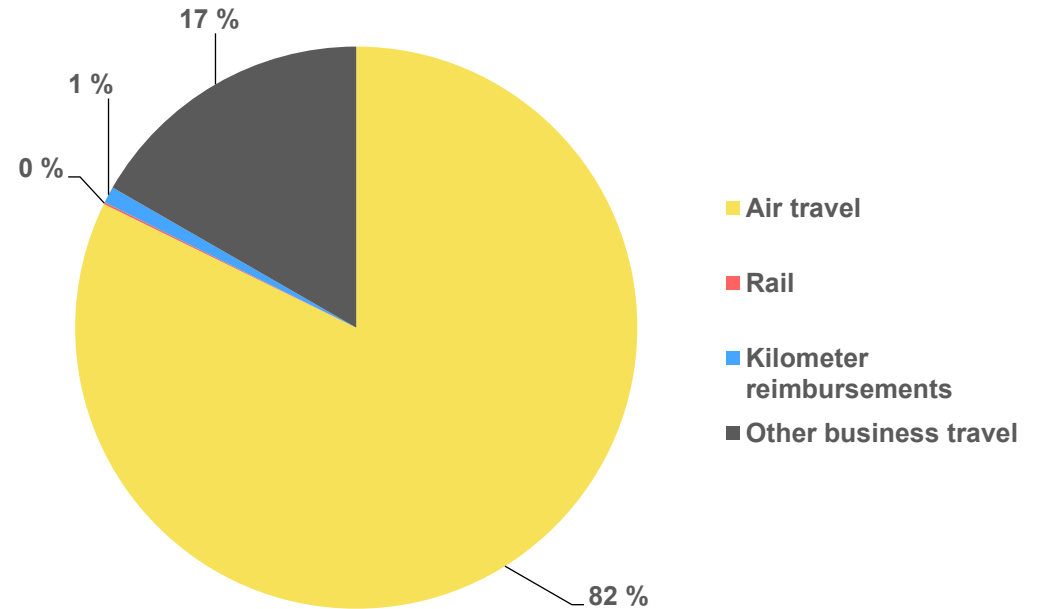
Scope 3

Business travel

- Category 3.6. Business travel
- Travel has slightly decreased since 2024. Business travel is dominated by air travel. Air traffic emissions have slightly decreased.
- Aalto travel policies guide users in evaluating the need for traveling and the possibilities to replace a trip with alternative meeting methods. The climate-friendliness of different travel options are evaluated using a decision tree.
- The calculation of emissions from business travel has been refined in 2025.
 - Rail emissions are based on VR's emissions calculation.
 - Hotel emissions are based on the number and costs of overnight stays.
 - Kilometer reimbursements have been calculated on a per-kilometer basis.
- Other business travel emissions are calculated based on costs. This calculation method is less accurate. The calculation method will be refined in the coming years.

➤ Further means to lower emissions include, e.g.: setting carbon quotas to schools, traveling by train domestically, decreasing the number of long-haul flights and participants per event, using only direct flights, putting pressure on academic funders.

Emissions tCO₂e



Aalto-yliopisto
Aalto-universitetet
Aalto University

Scope 3

Business travel – Air and train travel

- According to the travel agency accounting, the total travel amount in kilometers in 2025 was 25 893 452 km (2024: 27 561 093 km, 2023: 28 141 424 km, 2022: 20 426 814 km).
- The calculated total emission amount of those trips in 2025 was 2543 tCO₂e (2024: 2664 tCO₂e, 2023: 2253 tCO₂e, 2022: 2463 tCO₂e)
- Air travel emissions were obtained directly from the travel agencies. The travel agencies have used DEFRA's emissions factors in the calculation. Emissions calculated by travel agency and flight kilometers have decreased in 2025.
- In addition, the emissions from train travel were estimated to be 3,5 tCO₂e in 2025. The absolute number of train travel is not known. The result of the emission calculation is based on the amount of emissions reported by the train company and an estimate of the proportion of known trips.



Scope 3

Business travel

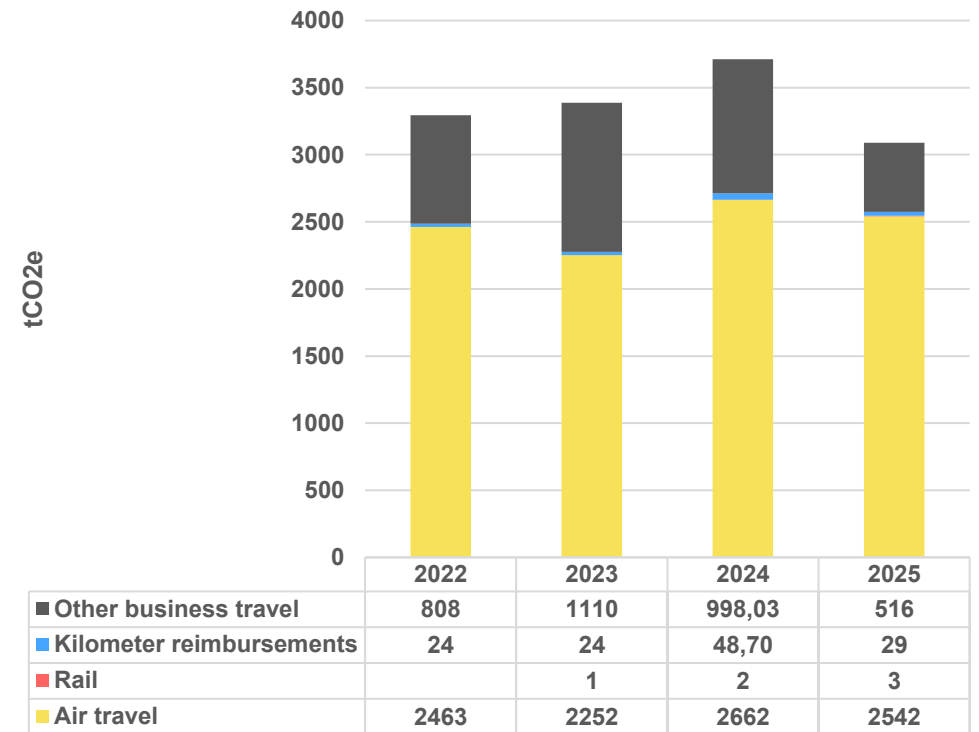
Emissions of other business travel expenses were calculated mainly using the spend-based method.

The calculation of emissions from other business travel has been specified for the 2025 emissions calculation. The emissions of hotel nights are based on the number and costs of overnight stays. The use of your own car is based on the kilometres driven.

Other emissions from business travel (boat travel, public transport, rental cars, taxis, invoicing of meeting venues and other travel expenses) have been calculated on a cost-based basis. These are based on average cost-based emission factors, which creates uncertainty in the results.

A more accurate and reliable calculation of other travel expense categories would require more accurate input data than is currently available.

Business travel emissions



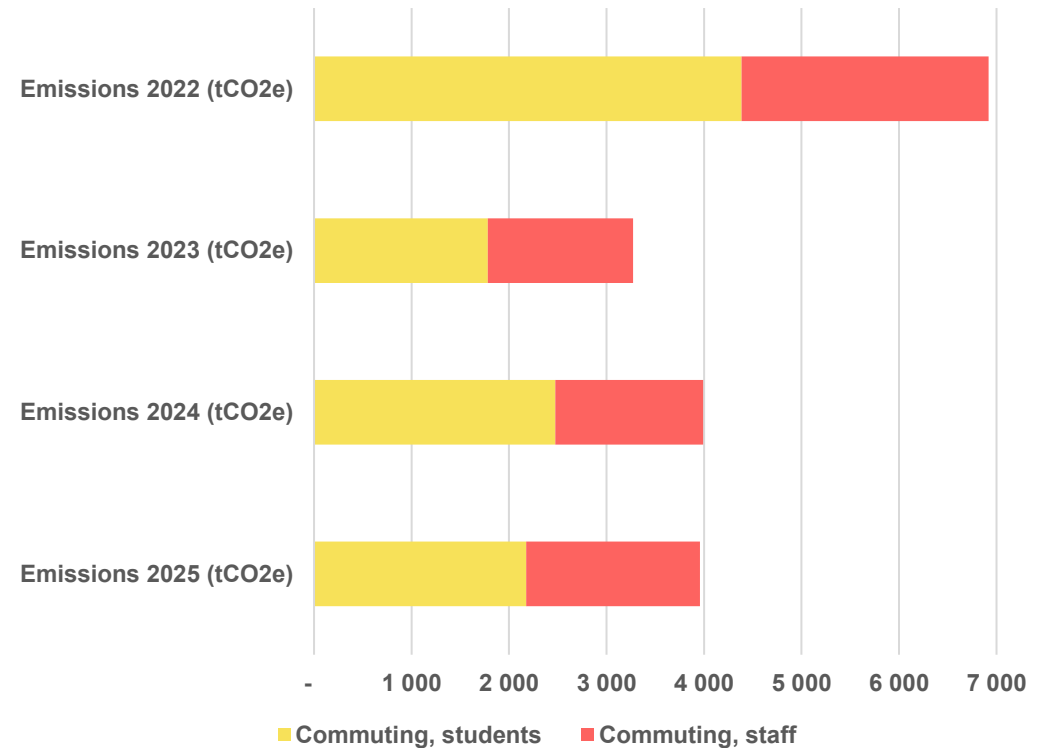
Scope 3

Commuting

- **Category 3.7. Employee commuting**
- **Emissions from commuting have decreased slightly from the previous year due to the reduced use of personal cars by students and staff.**
- **Aalto aims to be a pioneer in sustainable mobility. The campus is easily reached by sustainable means of transport and has easy access to cycling and walking paths. Recreation and wildlife is also taken into consideration in the Aalto sustainable mobility action plan.**
- **The majority of Aalto community commutes using public transportation**
- **Emissions of commuting are calculated based on distance, frequency and means of travel (surveyed).**
- **Staff emissions were higher/FTE mainly due to higher use of cars.**

➤ **Emissions reduction potential: increased public transport benefits, metered parking, electric cycling benefits and increased number of storage facilities**

Commuting 2022-2025



Scope 3

Commuting

Emissions from commuting in 2025 were:

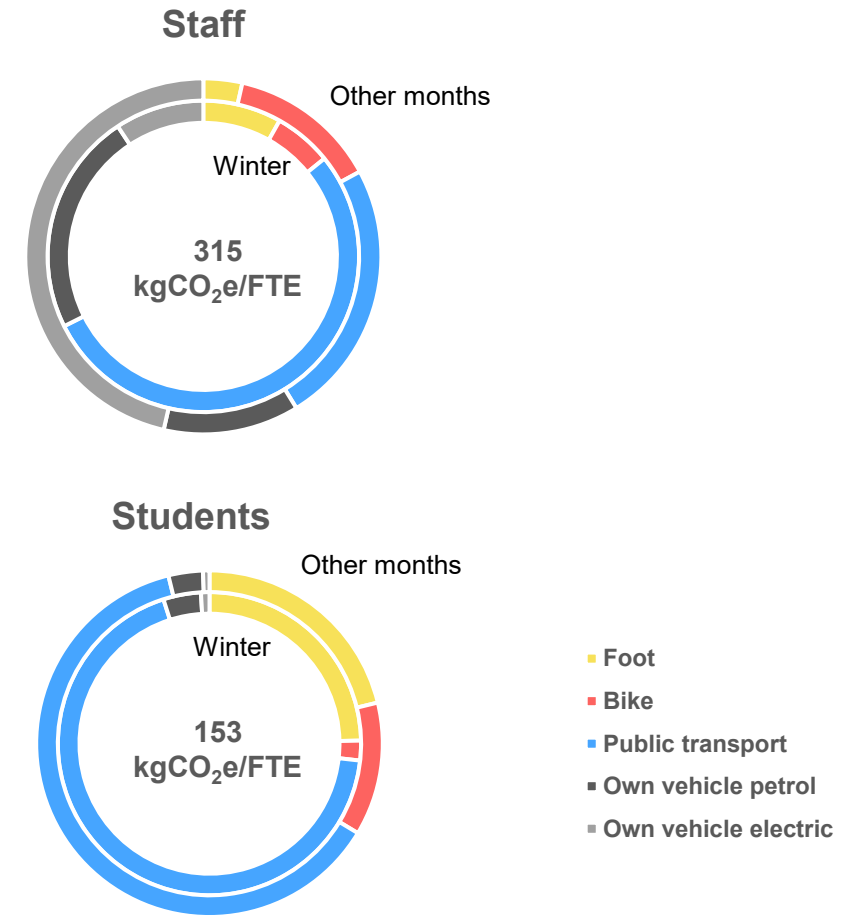
- Staff 1 513 tCO₂e (2024: 1 670 tCO₂e, 2023: 1 456 tCO₂e, 2022: 2 536 tCO₂e)
- Students 2 472 tCO₂e (2024: 2 676 tCO₂e, 2023: 1 660 tCO₂e, 2022: 4 383 tCO₂e)

The emission factors used for vehicles was 0,1639 kgCO₂e/km (DEFRA) and for the public transport 0,02059 kgCO₂e/km (derived from SYKE Kulkuri calculation for commuting based on the use of different methods of public transport). Since rail travel is a popular transport method for students and staff, the emission factor has decreased.

When calculating emissions, the total amount of students and staff was evaluated by using the FTE-value.

- Students 2025: 16 184 (2024: 15 725, 2023: 15 203, 2022: 14 313)
- Staff 2025: 4 809 (2024: 4 675, 2023: 4 478, 2022: 4 360)

In 2025 there were 245 workdays for staff and 200 days for students used for calculation. Modes of transport and days spent at the campus are based on Aalto's questionnaires.



Scope 3

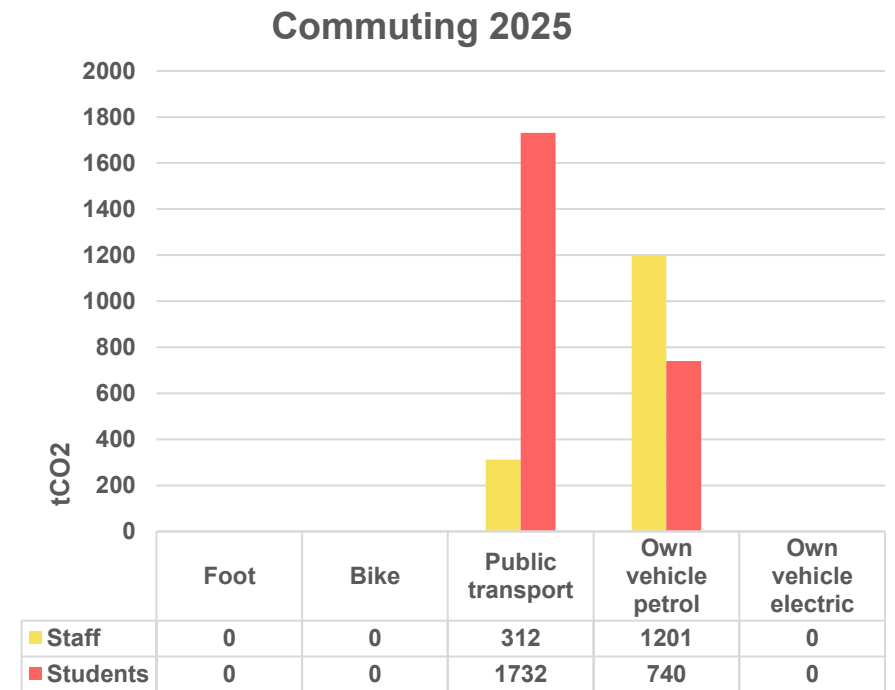
Commuting

To evaluate the average daily commuting distance, information about the postal codes of the staff was used (no identifiable information). Due to the large number of postcodes, commuting trips were divided into the following groups according to distance from postal code area to Aalto University.

- 5 km
- 10 km
- 25 km
- 50 km
- >50 km.

Based on distances and Aalto University's survey on time spent on campus and transport methods, commuting emissions were calculated.

NOTE: The above values are rough estimates based on previous surveys and residence information. It is very important to understand that the figures are best available estimates, not exact results.



Scope 3

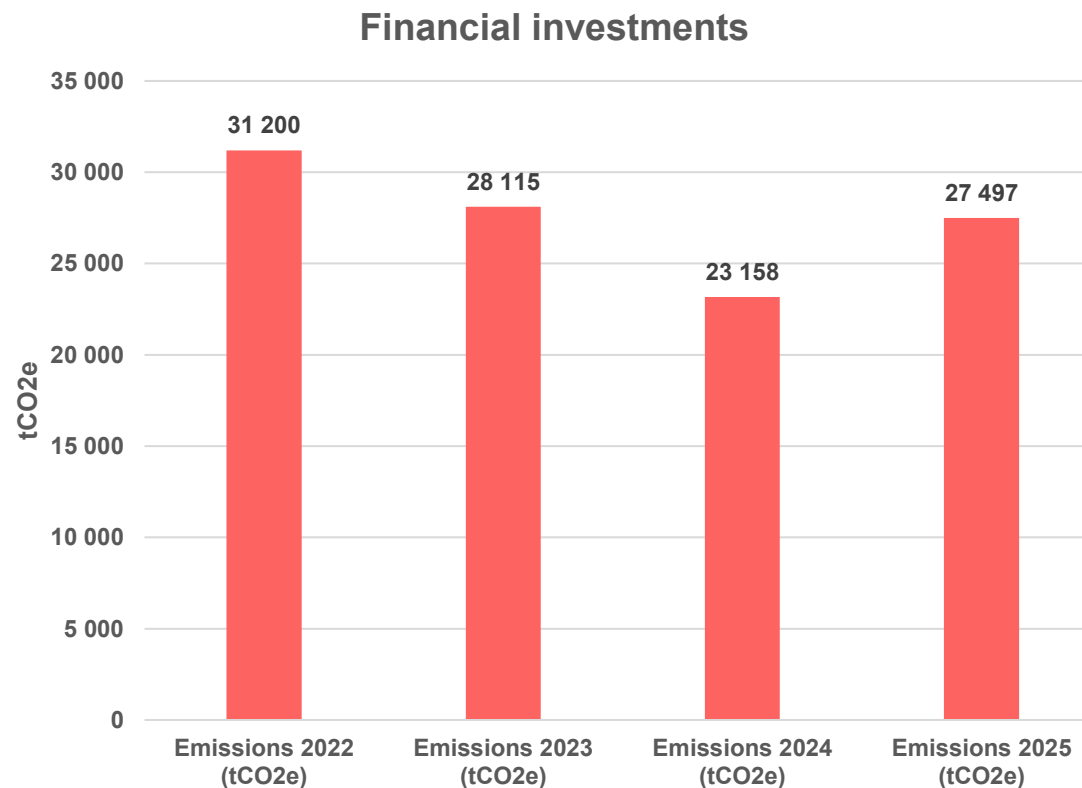
Financial investments

Category 3.15. Investments

The total carbon emissions of the investment portfolio were 27 497 tCO₂e in 2025.

Total Carbon Emissions of the portfolio allocates emissions to the investor based on the level of capital invested in a company. Enterprise value is used as the base when calculating the level of company ownership. Scope 1 and Scope 2 GHG emissions are included.

The calculation of emissions covers listed equities, i.e. ~45% of the entire portfolio. There is no emission information available for the remaining financial instruments, so it has not been possible to calculate emissions.



Scope 3

Financial investments – Sustainable investment policy

Aalto University is committed to responsible investment and sustainable management of the university's investment assets, in line with the university's values and the responsibility policy of the university's investment strategy.

Separate sustainability and emissions targets have been set for the investments, taking into account the carbon intensity of the investments.

Aalto University also publishes an annual sustainability report on its investment activities:

[Endowment Sustainability Report 2025](#)

1. We reduce carbon intensity, a measure of risk related to GHG emissions, of at least 30-50% compared to a global market index with a declining trend towards 2030.
2. We make sure all external managers have integrated sustainability considerations into their investment process and act as active owners (as applicable).
3. Investments with no credible transition path to a carbon neutral world or investments that are incompatible with our values have been excluded from passive investments. These are:
 - Global norm violators measured by UN Global Compact
 - Controversial weapons manufacturers
 - Thermal Coal and Oil Sands
4. Investment in areas with high transition risk (e.g. energy, materials) are subject to monitoring and risk mitigation by controlling exposure to or within these industries.
5. We aim to utilize opportunities born out of the transition towards a more sustainable society. This includes investments benefiting from positive sustainability profiles and trends with a potential to contribute to the real economy transition.

Portfolio sustainability profile

Of our external managers,

86%

have signed the Principles of Responsible Investment (PRI).

98%

have a dedicated Environmental, Social & Governance (ESG) Policy.

39%

explicitly target a positive sustainability profile.

71%

use negative Screening or have an Exclusions policy.

90%

have an Active Engagement Policy.

48%

are classified as Article 8 or 9 according to the EU Sustainable Finance Disclosure Regulation (SFDR).

Data collected by surveying all external managers.
Figures weighted by invested capital.

Summary

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Biogenic emissions

According to the GHG Protocol, carbon dioxide emissions from the combustion of biomass must be reported separately from the rest of the carbon footprint calculation.

Such emissions are referred to as biogenic emissions.

Biogenic emissions refer to greenhouse gas emissions that originate from biological sources, such as the combustion or decomposition of biomass (e.g. wood, crops, biofuels, and organic waste). When accounting for biogenic emissions, Scope 1–2 biomass combustion is included.

The carbon dioxide released is part of the short-term carbon cycle, as it was recently absorbed from the atmosphere through photosynthesis. In greenhouse gas accounting, biogenic CO₂ emissions are reported separately from fossil emissions to ensure transparency. For heat consumers, biogenic emissions are determined by the fuel mix used in heat production and are therefore outside the consumer's direct control.

Biogenic emissions in 2025 were 3,7 tCO₂.

Summary

- Aalto University has made commitment to sustainability and has ongoing efforts to reduce its carbon footprint through various initiatives and strategies.
 - Aalto University calculates its carbon footprint annually and continuously develops its measurement and reporting processes.
- Carbon footprint 2025
 - Footprint was calculated using GHG Protocol covering scope 1 - 3 and scope 3 subcategories 1-15
 - Total emissions increased by 4 % in 2025 compared to 2024, mainly due to the expansion of emission calculations to all scope 3 categories.
 - The total GHG emissions for 2025 were 59 270 tCO₂e.
 - 96 % of Aalto University's emissions are Scope 3 emissions, which include Financial investments, Investments in research, teaching and other activities, Energy life cycle emissions, construction projects, travel, material and service procurement, commuting, ICT, meals, water and waste.
 - The biggest sources of emissions are Financial investments, Investments in research, teaching and other activities, Energy life cycle emissions, Business travel, Service procurements, Energy life-cycle emissions and commuting (students and staff).
 - Financial investments were included in the total emissions as a new category and they cover almost half of the total emissions.
 - Also investments in research, teaching and other activities and service procurements have been included as new category in total emissions. Cost-based calculation weakens the reliability of the results, and the aim is to make the calculation more accurate in the future.
 - Emissions from business travel have decreased. Emissions from flights are lower, and the calculation of emissions from other business travel has been specified.
 - Energy life-cycle emissions were calculated more comprehensively, and the share of the category has therefore increased. However, taking renewable electricity into account also in indirect emissions curbed the growth in emissions.
 - Similarly, commuting is a significant emission source. The emissions are evaluated based on questionnaire on average days spent on campuses, most used transport methods, and average travel distances.
- Aalto University aims to achieve a carbon-neutral campus by 2030 in regards to energy consumption, with a 50 % reduction in greenhouse gas (GHG) emissions and increased biodiversity.

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Strategies to reduce emissions vary based on the source. E.g. for commuting the strategy is to promote sustainable mobility. For energy consumption the first reduction step is to improve energy efficiency.

Annex 1. Calculation Methods

Emissions calculation - Background

- Aalto university calculates its carbon emissions **annually** and has a program in place to set and follow actions to increase sustainability of operations and **reduce GHG emissions**.
- This calculation is for 2025 and presents the total amount of emissions and a comparison to previous years.
- The calculation has been supplemented to cover scope 3 categories 3.15 Investments and 3.2. Capital Goods. In addition, the calculation has been retrospectively supplemented and harmonised for 2022–2024 to ensure comparability.
- Operational processes, GHG calculation methods and emissions data are constantly improved. Some emission factors have been changed to more precise or newer sources. Changes in emissions and emission categories are explained in the report.
- We use the most accurate calculation method possible to calculate emissions from procurements. For example, emissions from meals are based on the number of meals and emission factors per meal calculated by the campus restaurants. If an accurate method is not available, emissions from procurements are calculated using a cost-based method with average emission factors for different goods and expenses in the reporting year. Emissions calculated in this way are more general in nature than those based on specific units, such as consumed electricity.

Emissions calculation - Goals

- Aalto University publishes a comprehensive greenhouse gas footprint according to the GHG protocol.
- All the emissions are tCO₂e, which cover the emissions of all seven required greenhouse gases (Carbon dioxide, Methane, Nitrous oxide, Hydrofluorocarbons, PFCs, Sulfur hexafluoride and Nitrogen trifluoride).
- The calculation and emission factors used are transparent and listed in the report.
- The annual GHG results 2022 - 2025 are comparable. I.e. the changes between years result from Aalto University's operations rather than from changes in calculation methods or emission factors.

Calculation methods

GHG Protocol

- The calculation has been conducted according to the internationally widely used GHG Protocol method, covering scopes 1 - 3 of the standard.
- Emission categories in the report are divided into scopes 1 - 3. Furthermore, scope 3 emission categories have been divided into 15 subcategories.
- All emissions are measured in tonnes of carbon dioxide equivalent (tCO₂e), i.e. they cover all the seven greenhouse gases determined in the GHG Protocol. Most emission factors are from DEFRA (2025) or Exiobase (2019) databases. District heating emissions are from Paikallisvoima. Emission factors are mainly regional to Finland, but some are European averages.
 - In 2025, scope 3 category 15. Investments and 3.2. Capital Goods have been added to the calculation category. They have also been calculated retrospectively for the years 2022–2024.
 - In all categories where the emission calculation was revised, emissions have also been recalculated for 2022–2024. These include energy life-cycle emissions, some procurements categories, wastewater and water emissions, and investments in research, teaching and other activities.

Calculation methods 1/3

GHG Protocol

- The calculation has been conducted according to the internationally widely used GHG Protocol method, covering scopes 1 - 3 of the standard.
- Emission categories in the report are divided into scopes 1 - 3. Furthermore, scope 3 emission categories have been divided into 15 subcategories.
- Calculation methods have been described in more detail in the later parts of the report.
- Unless otherwise mentioned, all emissions are tonnes of carbon dioxide equivalent (tCO₂e). Most emission factors are from Defra (2023) or from Exiobase (2019). Emission factors are mainly regional to Finland, but some are European averages.

Scope 1

- Stationary combustion
 - Emission calculation is based on the amount of used fuels and fuel specific emission factors.
 - Emission factors are from Polttoaineluokitus 2024 published by the Finnish Statistical Office. As they only publish the emission factor covering carbon dioxide's impact, Granlund has calculated the corresponding methane and nitrogen oxide emissions based on Emission Factors for Cross Sector Tools file Stationary Combustion tab (<https://ghgprotocol.org/calculation-tools-and-guidance>).
- Fugitive emissions
 - Emission calculation is based on added refrigerants in 2025 and refrigerant-specific emission factors determined according to global-warming potential. Only fugitive emissions are considered in the emission calculation according to the GHG protocol.
 - Emission factors are from standard EN15804
- Mobile combustion
 - Emission calculation is based on fuel types and amounts of vehicles and their estimated usage in 2025.
 - Emission factors are from DEFRA.

Calculation methods 2/3

Scope 2

- Energy procurement
 - Emission calculation is based on the emission factors of consumed district heating and electricity.
 - Scope 2 is calculated market-based and location-based. In the market-based method, the type of purchased electricity and heating are considered. I.e., the emission factors of purchased carbon neutral products are used in the calculation. In the location-based method, average emission factors of used energy grids are used (e.g. the average emissions of Fingrid for electricity).
 - District heating emissions are calculated with emission factors from Paikallisvoima's KL-päästölaskuri. As they only publish the emission factor covering carbon dioxide's impact, Granlund has calculated the corresponding methane and nitrogen oxide emissions based on Emission Factors for Cross Sector Tools file Stationary Combustion tab (<https://ghgprotocol.org/calculation-tools-and-guidance>).
 - It is recommended for Aalto University, that the report is based on market-based emissions, since it considers the energy products that Aalto University purchases for its properties.

Scope 3

- Procurements
 - Scope 3.1 supplier-specific method and spend-based method
 - For other procurements, the emissions were determined using spend-based method. Emission factors are mainly from Exiobase 2019.
- ICT devices
 - Scope 3.1
 - ICT were based on the number of devices in use, device lifetimes and device-specific emission data from suppliers and similar data sources. Calculations were improved in 2022 using more device categories and supplier-specific data. Calculation for 2025 emissions were conducted using same methods as in the previous three years.
- Construction projects
 - New construction is included in Scope 3.2 and renovation and alteration projects in Scope 3.1.
 - Emission calculation is based on spend-based method and emission factors are from Exiobase and CEDA.
- Financial investments
 - Scope 3.15

Calculation methods 3/3

Scope 3

- Commuting of staff and students
 - Scope 3.7, distance-based method.
 - Emission calculation is based on employee and student commuting distances based on postal codes and from a survey on commuting methods, and time spent on campus.
 - Emission factors for vehicles are from DEFRA and for public transport from SYKE's Kulkuri counter.
- Traveling
 - Scope 3.6, supplier specific data and spend-based method.
 - Air travel emission amounts have been obtained from the data of travel agencies that are based on DEFRA's emission factors.
 - The emissions of hotel overnight stays are based on the number of overnight stays and costs. Other emissions from traveling have been calculated based on spent euros in procurements. Emission factors are mainly from Exiobase 2019.
- Meals
 - Scope 3.1
 - Emission calculation is based on average-data method. Calculation is based on campus restaurants' meal amounts and types. Emission factors are provided by Aalto University campus restaurants.

Scope 3

- Indirect energy life cycle emissions
 - Scope 3.3, average-data method.
 - Emission calculation is based on the type of used electricity and an estimation for emissions for solar electricity and geothermal heat. The calculation also considers indirect emissions from district heating and energy losses in networks.
 - Emission factors of electricity are from IPCC and Defra. District heat emission factors are from Defra. Solar and geothermal emission factors are from GEMIS database.
- Water consumption
 - Scope 3.1 (tap water) and scope 3.5 (wastewater), average-data method.
 - Emission calculation is based on the amount of used water and an emission factor for one cubic meter of water (from Defra).
- Waste
 - Scope 3.5, supplier specific method and average-data method.
 - Emission calculation is based on the waste amount produced in the campus and the emission information from waste companies.
 - In calculations, it is assumed that the amount of tap and wastewater are equal.
- Investments in research, teaching and other activities
 - Scope 3.2

Annex 2: Emission Categories and Their Impact

Emission Categories and Their Impact 1/2

Upstream/ Downstream	Scope	Category	Calculation methods and assumptions
	1	Direct Emissions (company facilities and company vehicles)	Aalto University's scope 1 emissions include generation of heat, use of fuels in company-controlled vehicles, and use of refrigeration and air conditioning equipment. - One of the properties (Metsähovintie) uses oil to generate heat. Energy consumption is calculated from the amount of fuel used and its calorific value. - Many of Aalto University's properties use refrigerants for cooling. The emissions are determined by the need to replace refrigerants into systems from leakages and by the amounts of renewed refrigerants and their waste treatment. - The fuel consumption volumes of the Internal Combustion Engine Laboratory used in the calculation are in accordance with the Laboratory Manager's estimate. - The fuel consumption of vehicles and kilometers travelled have been estimated for the SYEK calculation and the same estimates have been used in the calculation of emissions.
	2	Indirect Emissions (purchased energy)	Aalto University's scope 2 emissions include purchased energy, e.g. electricity and district heating. Both location- and market-based emissions have been calculated. For location-based electricity emissions, Finland's average emission factor has been used. For market-based electricity, Energiavirasto's residual distribution (jäännösjakauma) has been used. For district heating, emission factors of specific district heating companies have been used. A large part of the purchased electricity is purchased as emission-free with a guaranteed certificate of origin. All district heating is purchased as carbon neutral with some rented premises using regular district heating. The district cooling used in the properties is carbon neutral.
Upstream	3	1: Purchased Goods and Services Category includes all upstream emissions from the products and services purchased or acquired in the reporting year	Aalto University purchases a vast variety of different goods and services each year. They vary from office supplies to occupational health care and education services for the personnel. All the emissions are spend-based and it creates uncertainty as the emission factors are based on average goods and services in Finland. The emission factors for tangible procurements are mainly from the Exiobase database for 2019. A weighted emission factor for 2024 was calculated for service procurements based on the available emissions of Aalto's largest service providers. Inflation between 2025 and the year of emission factors have been taken into account. The inflation has been strong in recent years, and the emissions would seem to increase a lot only based on it. Therefore, all costs have been corrected to the right inflation level. In Finland, Tilastokeskus reports inflation levels based on 12 main categories for goods and services and on numerous subcategories. All the purchased goods and services have been divided into different inflation categories before emission calculations. This category includes maintenance and renovation projects. In addition to this, food and ICT devices & infrastructure are included.
Upstream	3	2: Capital Goods The category includes all upstream emissions from the production of capital goods in the reporting year. Capital goods are final products that have an extended life and are used by the company to e.g. provide a service	Investments in research, teaching and other activities such as fixed furniture and construction fall into this category because they have a longer lifespan. Emissions have been calculated using a spend-based method.
Upstream	3	3: Fuel- and Energy-Related Activities Not Included in Scope 1 or Scope 2 The category includes emission related to the production of fuel and energy purchased and consumed by the reporting company in the reporting year	Aalto University's indirect lifecycle energy emissions are included in this category. The category includes fuel-dependent emissions from electricity production and electricity transmission losses, district heating transmission losses and WTT, as well as emissions from own renewable energy production (solar power and geothermal heat). Emissions have been calculated using the average data method. The measured amount of energy is used as the initial data for the calculation.
Upstream	3	4: Upstream Transportation and Distribution The category includes third-party transportation and distribution service purchased in the reporting year	Aalto University's transportation of its procurements is included to spend-based method in categories 1 and 2 in scope 3.
Upstream	3	5: Waste Generated in Operations The category includes emissions from third-party disposal and treatment of waste generated in the company's owned or controlled operations in the reporting year. This category includes emissions from disposal of both solid waste and wastewater	Globes and L&T have calculated emissions from their operations for Aalto University's waste and therefore supplier-specific method for emission calculation have been used. Furniture and Hazardous waste emissions have been calculated based on an average-data method using average waste emissions in Finland for waste different categories. The calculation based on waste firms' own operations is more accurate than calculation based on average emission factors. The category also includes wastewater emissions, the calculation of which is based on water consumption.

Emission Categories and Their Impact 2/2

Upstream/ Downstream	Scope	Category	Calculation methods and assumptions
Upstream	3	6: Business Travel The category includes emissions from the transportation of employees for business related activities in vehicles owned or operated by third parties	Aalto University's business travel includes air and rail traffic. Their emissions have been calculated by the tour operator. The calculation of emissions from other business travel has been specified for the 2025 emissions calculation. The emissions of hotel nights are based on the number and costs of overnight stays. The use of your own car is based on the kilometres driven. Other emissions from business travel (ship travel, public transport, rental cars, taxis, invoicing of meeting venues and other travel cost items) have been calculated on a cost-based basis.
Upstream	3	7: Employee Commuting The category includes emissions from the transportation of employees between their homes and worksites	Employee commuting includes commuting of Aalto employees as well as students. Commuting is based on Aalto University's questionnaire on how people commute in winter and in other seasons. The questionnaire also covers the time spent in the Aalto campus ranging from always working at the campus to rarely never working in the campus. Based on this information, average commuting types and days traveled to the campuses were estimated. Aalto University also has data from 2025 on postal codes (i.e. where staff and students live). The different postal codes were divided into five categories based on distances from the main campus; 5 km, 10 km, 25 km, 50 km, and >50 km. Based on the information, average emissions have been calculated for public transport, own vehicle, biking, and walking.
Upstream	3	8: Upstream Leased Assets The category includes emissions from the operation of assets that are leased by reporting company in the reporting year not included in the reporting company's scope 1 or scope 2 inventories	All Aalto University's emissions from operations of leased assets are covered in scopes 1-2.
Downstream	3	9: Downstream Transportation and Distribution The category includes emissions that occur in the reporting year from transportation and distribution of sold products in vehicles and facilities not owned or controlled by the reporting company	Aalto University does not transport or distribute its products outside its own facilities.
Downstream	3	10: Processing of Sold Products The category includes processing of sold intermediate products by third parties subsequent to sale by the reporting company	Aalto University does not produce intermediate products.
Downstream	3	11: Use of Sold Products The category includes emissions from the use of goods and services sold by the reporting company in the reporting year	Aalto University produces some printed textbooks and other publications. Their use is not considered to create emissions.
Downstream	3	12: End-of-Life Treatment of Sold Products The category includes emissions from the waste disposal and treatment of products sold by the reporting company in the reporting year at the end of their life	Aalto University is selling products, as it prints some books used in the university courses and other publications. When compared to other emission sources of the university, their end-of-life treatment is considered to be so insignificant, that it is not taken into account in the carbon footprint calculation.
Downstream	3	13: Downstream Leased Assets	All known energy consumption of Aalto University's leased assets is included in categories 1–2. Information on electricity purchased by tenants is not available.
Downstream	3	14: Franchises	Aalto University does not have franchising operations.
Downstream	3	15: Investments	Aalto University's financial investments were included in the emissions calculation for the first time this year. Emissions were also calculated retrospectively for the years 2022–2024. The total portfolio carbon footprint allocates emissions to the investor based on the amount of capital invested in the company. The company value is used as the basis for calculating the company's ownership stake. Scope 1 and scope 2 greenhouse gas emissions are included in the calculation.

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