Sustainability Report of Aalto University 2019

ISCN-GULF report

Aalto University

To build a sustainable future

Sustainable development acquired more prominence at Aalto University in 2019 through the work of preparing the new Aalto strategy. With the adoption of the new strategy, the whole university community commits to building a sustainable future. Aalto University was the first Finnish university to endorse the **UN Sustainable Development Goals Accord**, which it signed in February 2018. In so doing, Aalto pledged to promote the UN goals of sustainable development through its teaching, research, innovation and campus development. Aalto University is a member of the **International Sustainable Campus Network (ISCN)**.

This document reports on Aalto University's work to support sustainable development and responsibility through research, teaching, and societal impact activities and on the environmental effects of Aalto University's campus and how our own actions play an indirect role in those effects.

Over the course of 2019, Aalto University staff and students came together to create a strategy for the coming decade. In March 2019, issues such as United Nation´s Sustainable Development Goals were discussed at the Harald Herlin Learning Centre.

Research, teaching and societal impact

Research

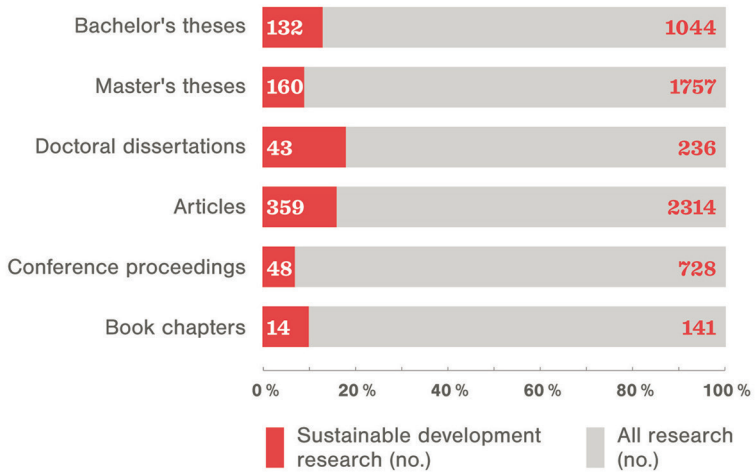
Science and art help us make sense of our complex world and, at the same time, challenge our own ways of thinking. Together they bring new knowledge and perspectives, which we need more than ever to solve global grand challenges. Aalto University's research covers broadly and innovatively different disciplines and contributes strongly to sustainable development in a multitude of areas.

It is important to note that a significant part of Aalto University's basic research is carried out each year in areas with a high potential for long-term sustainable development, although the vocabulary of sustainable development is not always directly reflected in the project descriptions. These areas include energy and materials research and ICT research. In 2019, for example, Professor **Jan Deska** received significant European Research Council (ERC) funding for a new type of biosynthesis research.

Last year saw the launching of a host of sustainable development research projects. The quality of Aalto University's research is shown in the funding received: a total of 9.2 million euros, or 18% of the overall disbursement awarded by the Academy of Finland Strategic Research Council went to three Aalto-coordinated consortiums: **FINIX**, which promotes sustainability in the textile industry; **SmartLand**, whose land-use management provides for sustainable cities; and **ValueBioMat**, which investigates the potential of value chains of bio-oil and polymeric composites. Over 13% of the conference papers and peer-reviewed articles published by the university in 2019 dealt with sustainable development.

Publications related to sustainable development 2019

Number and share of all publications



The publications on sustainable development as well as the total number of publications were retrieved from the Aalto Current Research Information System, and the data on theses from the Aaltodoc publication archive. The numbers are based on entries made up to the beginning of February 2020. Bibliometric search is based on Aalto University´s search word list, available at aalto.fi/en/sustainability/sustainability-reports.

Aalto University's active engagement in sustainable development networks in Finland and abroad continues apace. A well-attended seminar series on circular economies was organised and Aalto also participated in the World Circular Economy Forum in Helsinki. In May, the Sustainability Science Days conference was organised together with Helsinki Institute of Sustainability Science (HELSUS).

*Universities´ sustainability strategies were discussed at SSD conference. From right: Aalto University's professor **Minna Halme**, Sitra's President **Mikko Kosonen**, University of Helsinki's professor **Anne Toppinen** and Vice President **Tom Böhling** and HELSUS trainee **Maria McPartlin**.*

*WWF Finland´s General secretary **Liisa Rohweder** discussing universities´ sustainability strategies in May 2019 at Sustainability Science Days conference. Panel participants: Jyväskylä University's School of Business and Economics' Dean **Hanna-Leena Pesonen**, Ministry of Education and Culture´ Senior Ministerial Adviser **Riina Vuorento**, Aalto University's Vice President, Research **Ossi Naukkarinen** and University of Helsinki's Rector **Jari Niemelä**.*

Photos by Arttu Mäkinen

World Circular Economy Forum held by Sitra, June 2019 at Finlandia Hall. Aalto Sustainability Hub with University of Helsinki´s Institute of Sustainability Science (HELSUS). From left: Jaana Korhonen, Anne Toppinen, Meri Löyttyniemi, Minna Halme and Taru Henriksson.

In November, the university published Aalto Sustainability Stories. The publication presents research and teaching projects on sustainable development and circular economy.

Aalto Sustainability Stories is available online at Aalto University's website.

More about Aalto University´s current sustainability related research: aalto.fi/en/sustainability/research-for-sustainability.

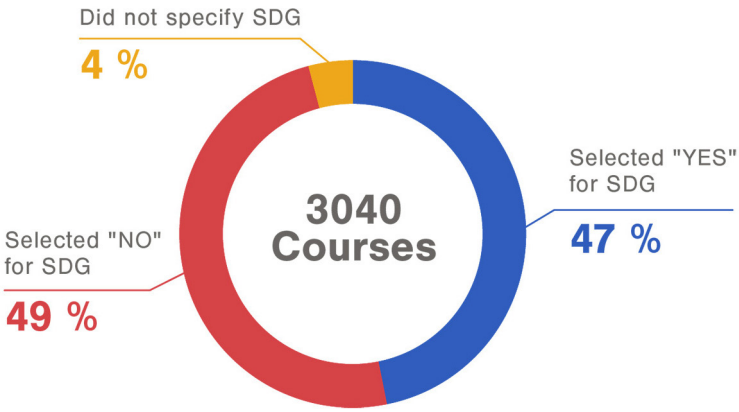
Teaching

Aalto University offers a range of courses and study modules on various aspects of sustainable development. Some 11% of all the theses and doctoral dissertations published by Aalto in 2019 dealt with sustainable development themes. Nine master's degree programmes at Aalto focus on sustainable development in the 2019–2020 academic year. The Financial Times placed Aalto University's Master's Programme in Creative Sustainability on its ranking list of best practices in business education at the end of 2019. The School of Chemical Engineering prepared the launch of a new master's degree programme in English, Biological and Chemical Engineering for a Sustainable Bioeconomy, for the 2020–2021 academic year.

More about our educational programmes at aalto.fi/en/sustainability/education-for-sustainability

Courses 2020–2022 and Sustainable Development Goals

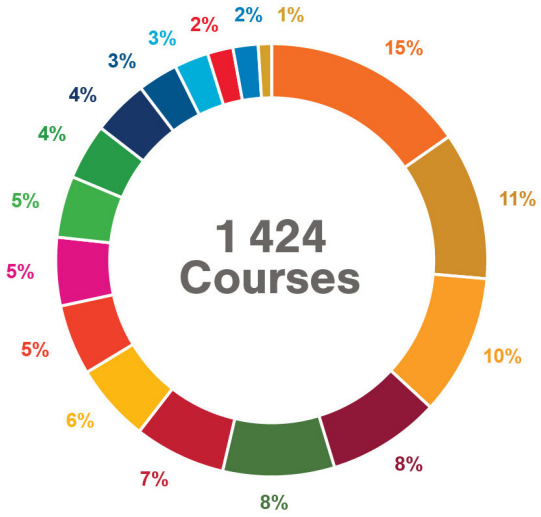
All courses



In 2019, Aalto University introduced a new Curriculum Planner tool for Bachelor´s and Master´s programmes. Curriculum plans are drawn up for two academic years at Aalto University. The United Nations Sustainable Development Goals (SDGs) were also included in the new curriculum tool. Teachers-in-charge determined whether the course contained SDGs. In addition, the teachers were asked to select 1–3 of most prominent SDGs of the course, but they were also able to select more goals for their course (table below).

The SDG entries off Aalto University courses apply to the curriculum and course offerings for the academic years 2020–2022.

SDG distribution in course contents



Courses: courses.aalto.fi
Curriculum Planner: curriculum.aalto.fi/
Courses and SDGs: aalto.fi/en/sustainability/strategic-focus-areas-of-courses

Aalto University is a participant in Climate University, a collaboration project between 11 universities, which promotes teaching about climate change in Finnish upper secondary schools and universities. The material produced by the project is online and available to all. Project funding for 2019–2020 has been provided by Finland's Ministry of Education and Culture, the Finnish Education Fund Sitra and project partners.

Active students organised Fridays for Future events in spring and autumn 2019 on Aalto University main campus.

Societal impact

The worldwide Times Higher Education Impact ranking assessed for the first time how well universities perform in advancing the UN Sustainable Development Goals. Aalto placed 19th in the overall ranking, and 5th in the category of Partnerships for the goals.

Three of the fifteen members on the Finnish Climate Change Panel for 2020–2023 are Aalto University professors: **Peter Lund, Ari Ekroos, and Jarek Kurnitski**. The panel promotes dialogue between scientists and policymakers in formulating climate and energy policy. Professor **Minna Halme's** membership continued in 2019 on the national Expert Panel on Sustainable Development as well as on the advisory panel for the Helsinki Institute of Sustainability Science (HELSUS) of the University of Helsinki.

Aalto University participates actively in the working group for sustainable development and responsibility of Universities Finland (UNIFI). Aalto University is represented in the group by **Meri Löyttyniemi**, Aalto University's senior advisor for sustainability.

The Aalto University School of Business and the Aalto Sustainability Hub are organisers of an **annual responsibility reporting competition**. Assistant professor **Emma-Riikka Myllymäki** from Department of Accounting acted as the competition jury member. The competition is significant for its societal impact as it brings businesses and other players together to help effect change towards a more sustainable future.

Aalto Sustainability Hub´s Advisory Board member, Member of the European Parliament, ***Sirpa Pietikäinen*** *(picture on the right), acted as the chair of the competition jury for the National CSR Reporting competition. Aalto University School of Business and Aalto Sustainability Hub were among the organisers. Pietikäinen´s speech from Brussels is available on YouTube. Winning team of the National CSR Reporting competition, Stora Enso, pictured on the left.*

AaltoSDG mobile application launched

In 2019, a call for tenders was put out to find an innovation partner tasked with providing digital solutions to support Aalto University in its work to reach the UN's Sustainable Development Goals (SDGs). A result of the competition was AaltoSDG, a mobile application to inspire Aalto students, employees and partners to make sustainable choices in their daily lives. Geniem Oy won the bid to produce the application. Aalto University released the application in January 2020, the 10th anniversary year of the university. The application, now in the development phase, will provide information about the SDGs and the diverse forms of Aalto University's SDG work. With the application, Aalto community can also find out how they can individually help the university to reaching the goals. AaltoSDG can be downloaded from Google Play and Apple Store.

*Launch of AaltoSDG mobile applicationin Dipoli at Aalto 10 year celebrations, 8 January 2020. Members of the project team (from left).: **Katriina Korhonen, Margareta Björkstén, Martti Rahkila, Emma Sairanen, Arttu Lahti, Jari Haggren, Meri Löyttyniemi** and **Jasu Vehtari**.*

A socially sustainable university community

In 2019, the principles of sustainable development have been prominent regarding the social aspects of work and learning environments. Gender equality is an important part of the measures listed in the university's Equality Plan. The university has sought to reduce gender inequality among staff and students in specific fields by means of communications, training and development of the work community. The process of student and staff recruitment as well as recruitment marketing and the evaluation of recruits has been revised to put greater emphasis on equality and diversity.

Antidiscrimination training has raised awareness among staff of diversity issues in their own work. Communications measures aim to make the Aalto University's work and study community more attractive to staff and students of diverse backgrounds. For example, Shaking up Tech event and related campaigns encourage women currently studying at upper secondary schools to enter the field of technology. Shaking up Tech expanded to other Finnish universities in 2019. The Day of the Girl with its 'professor for a day' event of Plan International Finland works towards similar objectives.

Aalto University continues to work actively to ensure that people of all genders have equal opportunities to advance in their careers, progress through studies and feel a positive sense of belonging as they grow and develop in their work or study community.

The environmental effects of the campus

Sustainable development is intrinsically joined to the Aalto University campus strategy. Aalto University Campus and Real Estate, which manages real estate for the university, invests in the university's capacity to produce energy through environmentally friendly means. The campus uses ever increasing amounts of geothermal heat and solar power.

For example, the new complex that includes A Bloc, the School of Business and Väre, the main building of the School of Arts, Design and Architecture, is 90% self-sufficient in its heating and cooling systems. Solar panels atop the complex generate the electricity and wells drilled beneath the complex transmit the geothermal energy.

Life on Aalto University's campus is close to nature. The move of the School of Business from Töölö to Otaniemi in February 2019 has already strengthened the region's livelihood and opportunities for interdisciplinary interaction.
Photo: Mikko Raskinen 2018

This development work of Aalto University Campus and Real Estate is funded by Business Finland through **the Smart Otaniemi project**. The Geological Survey of Finland (GTK) together with Aalto University Campus and Real Estate launched a study to monitor data on the functionality of the geothermal field for the new complex. Data concerning automated system for the complex has been released to Aalto University for energy research. Aalto Works, which is currently under construction, aims at providing efficient energy solutions on a campus block scale.

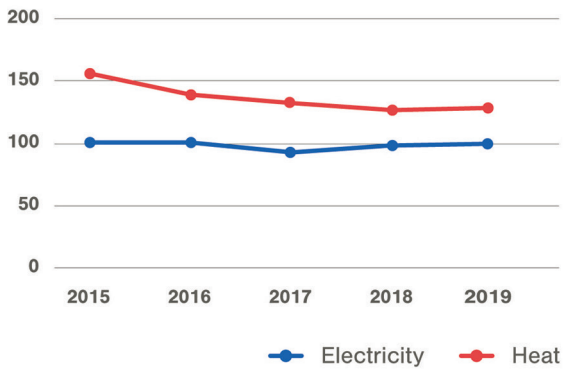
The Aalto Works block has also launched a study into how Internet of Things (IoT) technology could be utilised in connection with renovation of the block to serve the needs of both Aalto University's research and Aalto University Campus and Real Estate. The development of intelligent access control to serve the needs of the users of coworking spaces was launched and hence complemented the services already offered by the Aalto Space mobile application used to book spaces and navigate on campus.

Other sustainable development work has been done for improving the campus' natural capital in the development of outdoor areas, furthering the circular economy with re-use of furniture and for training staff in waste sorting and training staff in waste sorting by an engagement in the development of the AaltoSDG mobile application.

Aalto University celebrated **WWF Earth Hour** by turning off the lights in six buildings on campus, organised a sustainable campus event during **the national Energy Awareness Week** and played Motiva's Energiavartti quiz on energy consumption and saving. Aalto University continued to document and develop sustainable space utilisation solutions by monitoring space utilisation, expanding the use of the Aalto Space application to seven new buildings and implementing a survey on the changes implemented in the working environment. The statutory energy audits as well as the reports required by energy performance contracting for office spaces were implemented as agreed.

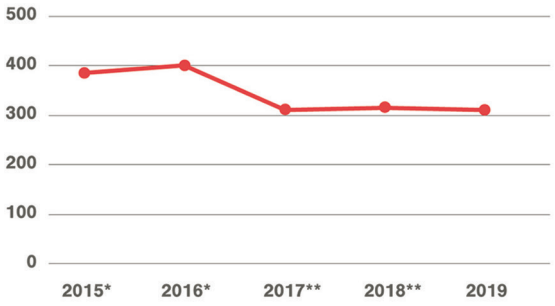
Specific consumption of electricity and heat

Aalto University Campus & Real Estate (kWh/brm²)



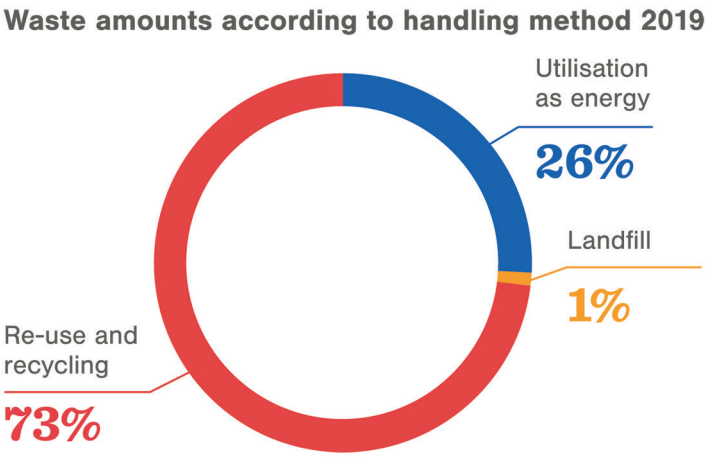
Specific consumption of water

Aalto University Campus & Real Estate (l/brm²)



*The water consumption data for 2015 and 2016 are not comparable due to monitoring system error. **The water consumption data for 2017 and 2018 has been corrected due to an error found in 2019.

The final sections of the report present the carbon dioxide emissions caused by the university operations, more specifically the campus buildings and air travel.



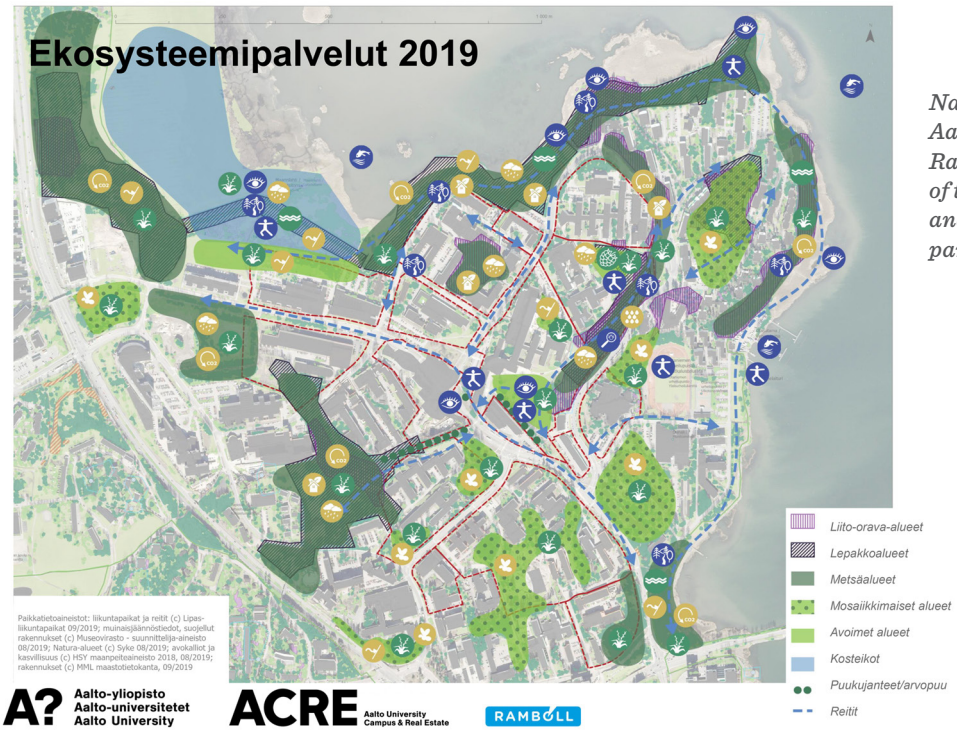
Amounts of hazardous waste produced by Aalto in 2019

Aalto University delivered 19,1 tons of hazardous chemical waste and 24,1 tons of waste electrical and electronical equipment to certified waste management companies, yielding a total of 43,2 tons of hazardous waste in 2019 (for 2018 the respective totals were 40,9 and 37,3 tons, yielding a total of 78,2 tons).

General risk management is a continual process and a key element in the Aalto University strategic and operative planning as well as in the daily decision-making and internal governance. It is incorporated into the Aalto University processes and serves the strategic objectives of the university.

Campus planning and indirect effects

As the unique verdancy of the Otaniemi campus area has been recognised as one of its major assets, Aalto University wants to develop the greenspaces and outdoor areas into a key campus attraction. In 2019, Aalto University commissioned Ramboll Oy Finland to survey the natural capital and ecosystem services of the Otaniemi campus. With a view to identifying and describing the effects of the campus's natural capital on the monetary value of the buildings and the wellbeing of people in the area,



Natural capital mapping of Aalto University's campus by Ramboll Finland Oy. Description of the Otaniemi´s natural capital and ecosystem services (2019), partial extracts.

Ramboll's report presents research knowledge regarding the effects of outdoor areas on people's health and on the properties while surveying the notable natural habitats and native and non-native species in the area. The Otaniemi campus plans are guided by the idea of bringing the city and people into the heart of the natural environment. This makes the area's natural capital crucial for Otaniemi's identity as well for maintaining and reinforcing its value.The natural capital survey serves as a preliminary plan for future campus development projects on infrastructure, architecture and landscape architecture. Moreover, it contributes to safeguarding the value of the premises, the connected outdoor areas and bio-diversity of the campus, its recreational value and the unique identity of Otaniemi as a forest-surrounded campus.

It will be followed up by a benchmark report on international good models of sustainable development describing those international examples that are innovative and applicable to the outdoor areas of the Otaniemi campus.

In 2019, two landscape architecture projects were launched on campus: the amphitheatre square and a pedestrian route to Dipoli. In 2018, Aalto University commissioned an extensive conceptual landscape plan for the Otaniemi campus area. It sets the framework for planning a network of outdoor areas that will be planned further in individual projects. The goal is to redesign the area to meet current and future needs without forgetting the area's historic value. With the help of the survey on the natural capital of the area, the plans will also be made in a manner that preserves and reinforces the biodiversity of the area. The two redesign projects are scheduled to be completed during 2020.

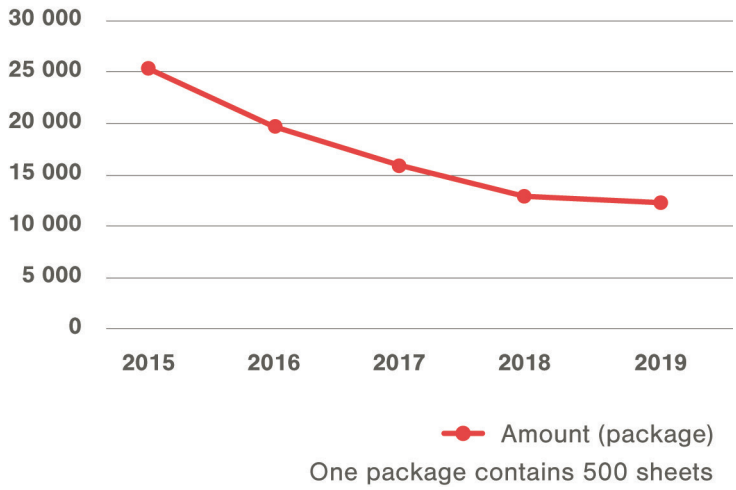
About Aalto sustainable campus: aalto.fi/en/sustainability/a-campus-geared-for-sustainable-development

Services and procurement

The university services have continued to integrate sustainable development perspectives into their operations. **The Aalto working group on sustainable services** sets each service annual goals in order to guide them towards making their services more user-friendly and sustainable.

IT devices are procured through joint public procurement agreements handled in a centralised manner by Finland's public procurement company Hansel; and responsibility and environmental aspects are well considered in them. The most significant IT agreement is that on the procurement of computers and related accessories; the suppliers and supply chains obligated by this agreement have been given a Code of Conduct. In addition, Hansel's framework agreement model has been awarded Hansel's own environmental certificate, which sets requirements for energy efficiency, materials and recyclability. The framework agreement on the procurement of computers is also a forerunner for the assessment of supply chains and responsibility. The Code of Conduct was born out of Hansel's cooperation with Finnwatch, a non-governmental organisation investigating the global impacts of business enterprises.

Copy paper consumption



One package contains 500 sheets

About Aalto University's carbon footprint

Greenhouse gas emissions (tCO_2 eq.)

	2017	2018	2019
Electricity consumption in facilities*			
a) market-based	299	-	-
b) location-based	5 247	4 961	4649
Heat consumption in facilities	5 945	5 652	3942
Personnel flights**	4 343	5 141	6393
Indirect emissions from purchased electricity	646	715	724
Total, market-based	**11 233**	**11 508**	**11 059**

* The calculation method for electricity consumption emissions was updated in 2019, and calculations for 2017 and 2018 were updated accordingly. ** More information about the change in the calculation method for personnel flights at the end of the report.

Aalto University's own renewable energy production and the purchasing of energy with renewable energy certificates has allowed it to keep reducing its carbon footprint, which has been on a downward trend for years. The certificates obtained for ecological district heating and renewable energy is reviewed annually.

The emissions caused by official university travel and compensating for them was examined in the university's sustainable travel policy working group, whose report assessed the costs and effects of different compensation options and operating models extensively. Aalto University decided that for the time being, it will not compensate for the emissions of its staff's air travel on business but will strive to reduce the need for travelling by organising more video conferences. When travelling is necessary, low-emission travel methods should be used while considering travel costs and time. The university's travel guidelines were updated to support the reduction of emissions by all available means. The university will switch to a different travel booking system in 2020, after which travel bookers can assess their travel options based on the associated emissions.

About sustainable Aalto: aalto.fi/en/sustainability/sustainable-aalto

NUAS Forum 2019 gathered over 500 Nordic university representatives to Arctic University of Tromsø in August 2019. Aalto University's CIO ***Kati Hagros*** *(in picture) was among the keynote speakers, and NUAS Sustainability chair* ***Meri Löyttyniemi*** *was responsible for a workshop examining the possibilities to reduce negative impacts of air travel.*

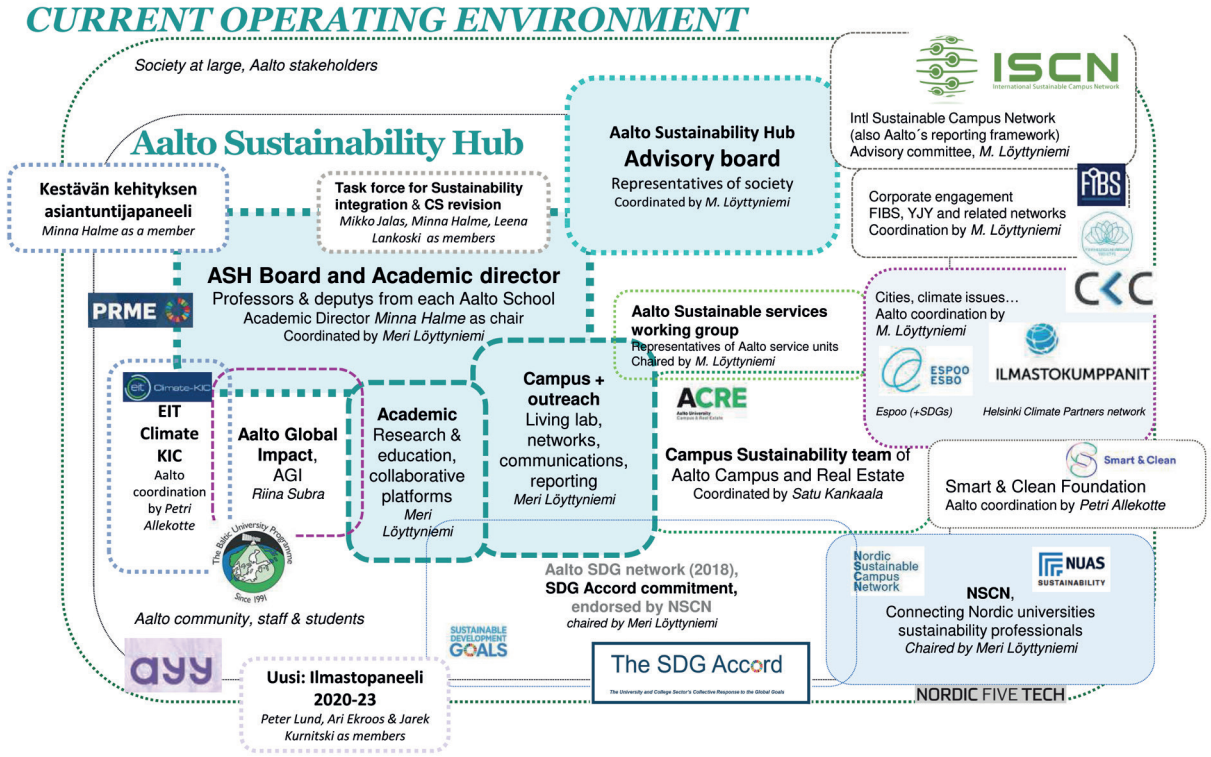
NUAS

nuas.org/sustainability

Actors operating in the area of sustainable development at Aalto University

aalto.fi/en/sustainability/aalto-sustainability-hub

Collaborative partners play a key role in implementing sustainability actions. Aalto University Student Union (AYY), startup company renewing the operations of Otaniemi Recycling Center Viako Oy founder and partner ***Mari Ant-Wuorinen*** *and alumnus* ***Paavo Vallas*** *from Särkifood Oy were participating in Aalto Day One activities at Alvarinaukio square, early September 2019.*



Sustainability Science Days in May 2019 gathered closest collaborators to a happy luncheon at University of Helsinki´s rector office. From left: Jyväskylä University School of Business and Economics' Dean ***Hanna-Leena Pesonen****, Aalto Sustainability Hub's Director* ***Minna Halme****, HELSUS's Director* ***Anne Toppinen****, HELSUS's Research Coordinator* ***Kaisa Korhonen-Kurki****, General Secretary of WWF Finland* ***Liisa Rohweder****, Ministry of Education and Culture´Senior Ministerial Adviser* ***Riina Vuorento****, Aalto University's President* ***Ilkka Niemelä****, Aalto University's Vice President, Research* ***Ossi Naukkarinen****, University of Helsinki's Rector* ***Jari Niemelä****, University of Helsinki's Vice Rector* ***Tom Böhling****, University of Helsinki's Vice Dean of Faculty of Agriculture and Forestry* ***Janna Pietikäinen*** *and Aalto University's Senior Advisor for Sustainability* ***Meri Löyttyniemi****.*

About the calculation methods used for the key figures

Publications

The publications on sustainable development as well as the total number of publications were retrieved from the Aalto Current Research Information System, and the data on theses from the Aaltodoc publication archive. The numbers are based on entries made up to the beginning of February 2020. Bibliometric search is based on Aalto University's search word list, available at aalto.fi/en/sustainability/sustainability-reports.

Courses

The Sustainabile Development Goals (SDG) entries for Aalto University courses apply to the curriculum and course offering of Bachelor's and Master's programmes for the academic years 2020–2022. Teachers-in-charge determined whether the course included SDG objectives. More detailed information and links on page 4 of the report.

Heat, water, electricity

The data on energy and water consumption are collected from facility management systems. The energy consumption and the specific energy consumptions of buildings owned by Aalto University include the total energy consumption (purchased energy and self-produced) and the gross areas of the buildings (expressed in gross square meters). The utilisation rate of the facilities in Aalto University use has been calculated in proportion to the floor area rented by Aalto University. The energy consumption data does not include the electricity and heat that was consumed due to the renovating of the area; a share of the total consumption proportionate to the renovated share of the area has been deducted from the total consumption.

The greenhouse gas emissions of purchased energy have been calculated in accordance with the Greenhouse Gas Protocol (GHG). The emission calculations of market-based electricity consumption have been made taking into consideration the 38 443 MWh of electricity purchased in 2019 which was produced using wind energy with a guarantee of origin. The location-based calculations of energy consumption are based on Motiva's average CO_2 emission factor for Finnish energy production, 158 g/kWh. The emissions of other district heating than emission-free ecological district heating has been calculated using the emissions factor calculated by Motiva for the Finnish combined heat and power (CHP) production, 164 $gC0_2$/kWh. The indirect emissions of purchased energy have been calculated taking into consideration the lifecycle greenhouse gas emissions generated by bioenergy production (2017 and 2018) and wind energy production (2017–2019). using the emissions factors of the Intergovernmental Panel on Climate Change IPCC and the Department for Environment, Food and Rural Affairs of the United Kingdom (Defra). Transmission and distribution losses have not been considered in the calculations.

Air travel

The emissions caused by flight travel by Aalto University staff are based on information obtained from the travel agency. (kilometres, CO_2 emissions). Due to a change of travel agency and some related corporate acquisitions, the calculation methods have varied somewhat during the year. The 2019 figures are based on the Defra 2012 conversion factors, which are published by the UK Department for Environment, Food & Rural Affairs.

Recycling, copying paper

Waste data are collected from the waste management suppliers' database. The rate of reuse and recycling includes recycling as material, other recycling and management of special waste. The data on copy paper usage is collected from the procurement system for office supplies.

Aalto Sustainability Hub´s System Pearls combines scientific knowledge with artistic elements. Pearls remind us of the important components and interdependencies of the systems of nature and mankind. Its purpose is to concretize the understanding of complex systems in a way that is easily present in everyday life.
The concept is created by Aalto Sustainability Hub director ***Minna Halme****, and the kit was designed and manufactured by Aalto University student* ***Luisa Jannuzzi Fonseca****. The pearls are made of 16 different qualities of leftover wood, manufactured in Fiskars.*
Photo: Meri Löyttyniemi

The SDG Accord

The University and College Sector's Collective Response to the Global Goals

AaltoASH

aalto.fi/sustainability

aalto.fi/SDG