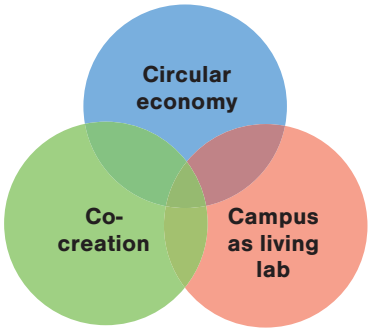
Sustainable Campus Charter Report of Aalto University

2017 ISCN-GULF

Aalto University

Sustainability at Aalto University

The viewpoints of sustainability and social responsibility permeate all university operations from teaching and research to campus development. In 2017, Aalto University decided to launch the Aalto Sustainability Hub at the start of 2018 with a view to bringing together researchers of various fields and promote sustainability throughout the Aalto University operations, at all its schools as well as in joint services. The foundation of the Aalto Sustainability Hub was preceded by a series of workshops organised in 2017, where a large number of university researchers brought forward the special characteristics and viewpoints of their research areas to prepare for future collaboration. In autumn 2017, we launched a research seminar series showcasing the research done on sustainable development at different Aalto schools. The series is scheduled to continue into spring 2018.



Operating principles of Aalto Sustainability Hub

Circular economy

- We see the world as interconnected systems, where human societies and nature are inextricably interlinked

Co-creation

- We engage in interdisciplinary and transdisciplinary research, we work cross disciplinary boundaries and beyond the academia, with partners from different sectors of society

Campus as living lab

- We experiment our sustainability research with our immediate surroundings, Aalto University campus

PRINCIPLE 3:
Teaching, research and societal impact

Teaching

To promote the integration of sustainable development into teaching, we analysed the master's programme courses to identify contents and learning outcomes related to sustainable development. The results highlight variety of understanding on sustainability and the differences in levels of integration. In spring 2017, we piloted the Sustainability Game Changers course. As it was popular and extremely well-received, we will try to make the course an established part of the curricula open to all Aalto University students in the future. Sustainable development is the theme in 9 Aalto University master's programmes and in a total of 370 theses (incl. doctoral dissertations), which corresponds to 12% of all theses written in 2017. The amount was slightly less than in 2016.

Active measures are taken to open Aalto University teaching also to the general public. The Energy Forum lecture series in autumn 2017 gave Finnish key players in the field of energy an opportunity to share their views on future energy systems and the current situation while also presenting future visions and solutions. The lecture series also served as a discussion forum on energy.

In addition, our students have been involved in several sustainability-themed projects:

- CodeBus Africa is designed to provide equal opportunities for young people to engage in the fields of science, technology and innovation. Although the first stage of the project was a type of intensive course in the form of a journey, Aalto University wants to promote the project goal also in the long term. To this end, we trained 4–6 local workshop leaders in each target country to increase the capacity of the local project partners. Project Lead **Irena Bakic** from Aalto University, who travelled with the CodeBus for the whole spring, believes that the project succeeded primarily owing to the passion and seamless cooperation of the project partners. Aalto University students had a role as teachers and facilitators in the CodeBus project. The project is part of the operations of the Aalto Global Impact unit.

- The proposal of a Nordic student group, Eco Art 2, titled 'Polku' was chosen as the winner of the 2017 Nordic City Challenge (NCC) course. The course organisers invited 24 students from five Nordic countries to take part in a multi-disciplinary urban planning competition, Nordic City Challenge. The course assignment was to find sustainable solutions for shaping the identity of the residential area of Pasila in Helsinki in a way that also considered artistic viewpoints. NCC is part of the operations of the Nordic Sustainable Campus Network (NSCN) coordinated by Aalto.

Photo:
Heidi M. Konttinen,
Aalto Creative
Sustainability

Aalto Sustainability Hub is led by a board, consisting of professors from each school. Hub is led by ***Minna Halme****, professor of sustainability management.*

Research

In spring 2017, Aalto University was granted funding for multidisciplinary research on sustainable production in the third call of the Academy of Finland funding instrument for strengthening the research profiles of Finnish universities (PROFI3). The research of this profiling area is further strengthened by the operations of the Aalto Sustainability Hub. In addition, Aalto University made in 2017 its first decisions on allocating seed capital internally to improve the pre-conditions for research on sustainable development themes and, in particular, to facilitate application for international research funding.

Sustainable development is visible in the research themes, contents and results as well as research processes and practices of Aalto University. The new Aalto Sustainability Hub is linked to four key research areas of Aalto University: 1. ICT and digitalisation 2. materials and sustainable use of natural resources 3. arts and design and 4. global business dynamics. In 2017, there were a total of 350 peer-reviewed journal articles and conference papers published on the theme of sustainable development (11% of all publications).

Below are a few excellent examples of research projects with a strong impact sustainable development.

- In 2017, Aalto University founded a new Aalto Bioproduct Center that hosts, for example, Professor **Herbert Sixta**'s research on e.g. refinement of textile fibers from biomass from forests with **Pirjo Kääriäinen**'s (Professor from department of Design) research group.

- Winland research project, led by Professor **Olli Varis** from Department of Built Environment, tackles the questions of food and energy safety in Finland through co-creation and future scenario work. They look for answers to questions such as: How do the shocks and pressures to our energy and food system and their related policy measures affect Finland's comprehensive security in the future? The questions are looked at both local and global perspectives in different context to create solutions for climate change the challenge of sustainability development.

- Professor **Hele Savin** from the Aalto University School of Electrical Engineering was awarded the 2017 Innovation Award for Women by the Finnish Parliament in recognition of Savin and her team's development of black silicon, which broke the efficiency record for nanostructured silicon solar cells in 2015. Once commercialised, the invention will make solar energy production notably more efficient, particularly in the Nordic countries and Central Europe as well as in similar latitudes elsewhere in the world. The invention makes a major contribution to promoting ecologically sustainable development.

- An Aalto-led team, HeatStock was a joint winner of Helsinki Challenge, a science-based idea competition seeking solutions to global challenges. Team HeatStock, led by **Ari Seppälä,** Senior Scientist at the Department of Mechanical Engineering of the Aalto University School of Engineering, developed a material that allows the long-term storage and controlled release of thermal energy. The solution promotes the use of renewable energy, increases energy efficiency in industrial processes, and saves natural resources.

- The doctoral dissertation of MSc (Economics and Business Administration) and MSocSc **Virva Salmivaara** opened up perspectives on sustainable development in entrepreneurship. Entrepreneurship is increasingly emphasised in political debate as a way to tackle social injustice and environmental issues. Understanding the social legitimacy of entrepreneurship helps us to evaluate the debate critically. In addition, the study sheds light on how the hidden potential of entrepreneurship could be more widely accepted as a means for sustainable development.

- The multidisciplinary COPE project focuses on digitalisation and multiculturalism with the goal of developing an application for training healthcare professionals and supporting them in encountering multiculturalism in their work. The development work is directed by postdoctoral researcher **Sari Kujala** and professor **Marjo Kauppinen** from the Aalto University School of Science.

- Professor **Mari Lundström** from the Aalto University School of Chemical Engineering coordinates the CMeco research project, which aims to create favourable conditions for a circular economy for metals in Finland. The project, launched in spring 2017 and granted government key project funding by Tekes, is carried out in collaboration with a wide range of partners, including VTT, Lappeenranta University of Technology and the Geological Survey of Finland, Outokumpu, Outotec, Fortum, Boliden and Nornickel. The project educates experts and develops processes that enable the Finnish metal industry to utilise the valuable metals in solid and liquid secondary flows as effectively as possible.

Aalto University's artistic activities include several projects in which responsibility and sustainable development figure prominently.

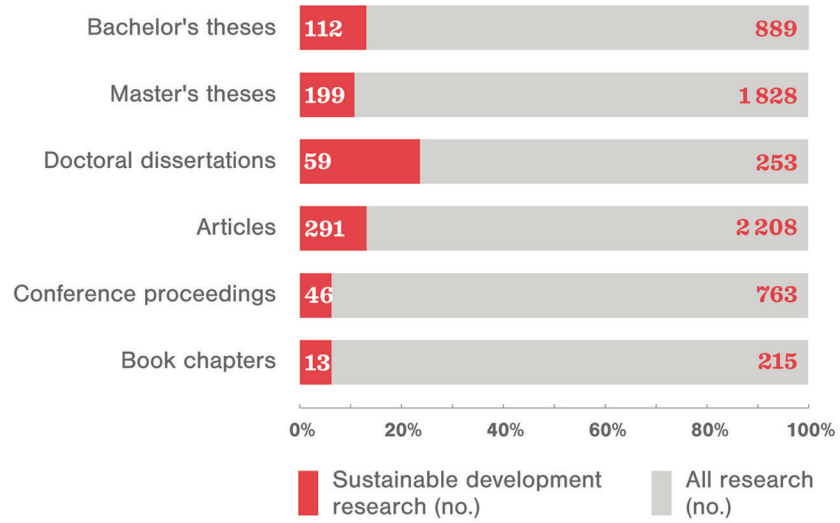
- Lost in the Wood(s), published by Aalto ARTS Books, was awarded an Award of Excellence prize in the International Creative Media Award competition. The book aims to bring together and make visible the new activity that is underway with wood-based biomaterials in Finland. As with Aalto's CHEMARTS collaboration, the book raises the visibility of Aalto's research into new biomaterials, such as Aalto's multipartner collaborative project DWoC – Design Driven Value Chains in the World of Cellulose. The book showcases projects that work towards a future of greater sustainability with new materials.

- An exhibition by Aalto ARTS students, From Nature to Future (Luonnosta tulevaisuuteen), combines tests of different materials. With visionary concepts involving the uses and possibilities of natural raw materials, the exhibition was held at the Helsinki Airport. Twenty-two design students from Aalto took up the challenge of imagining a more sustainable future by developing their own biomaterials.

- **Anssi Pulkkinen**, who is finishing up his film director studies at Aalto University, has created a work that brings the ruins of a home destroyed in war-ravaged Syria to the streets of Europe: the work is a 13.5-metre installation assembled on the platform of a lorry trailer. The work was commissioned by the Finnish Cultural Institute for the Benelux and it was premiered in Brussels. The contemporary art work provokes questions around war and the experience of losing a home and facing homelessness. The work reflects on current issues in Finland and Europe, such as refugeehood, xenophobia and lack of solidarity.

Publications related to sustainable development 2017

Number and share of all publications



- *During 2017 appr. 12% of theses and 11% of publications included sustainability as a theme (2016: 15%)*
- *Additionally, numerous research projects are closely linked to sustainable development.*

Societal impact

Aalto University is an active member in a number of sustainable development university networks in Finland and abroad. Aalto's sustainability reporting is based on the International Sustainable Campus Network (ISCN) model. Aalto University chairs the Nordic Sustainable Campus Network (NSCN). Aalto is also continuing activities in the Nordic Node framework of the European Innovation and Technology Institute's Climate KIC community, carrying out education, innovation and entrepreneurial activity related to climate change.

The international inter-university SDG Accord was published in autumn 2017; signatories commit to promote the UN's sustainable development goals. The NSCN, for its part, serves as an area support network for committed parties in the Nordic countries. The Sustainability Literacy Test, also a Nordic project, created a set of questions specifically for Nordic countries and tested the competencies of students by means of global sustainability competency benchmarks.

Aalto University actively participated in the 'GreenMetric sustainability ranking' seminar held in Copenhagen in October, and in Tsinghua University's international Ecoforum conference in Peking in December. Senior adviser **Meri Löyttyniemi´s** expertise was also in demand to serve on the jury of the Green Gown Awards competition of British universities.

On the national front, Aalto joined forces with the Natural Resources Institute Finland (Luke), the Ministry of Agriculture and forestry (MMM), the Ministry of the Environment (YM), VTT Technical Research Centre of Finland and WWF Finland to establish the Finnish Water Stewardship Commitment as part of its corporate environmental responsibility work. The commitment challenges Finnish companies to assess water risks in their value chains, see to the sustainability of water usage at their operational sites and among their subcontractors, develop sustainable water use and engage in collective action with stakeholders. This commitment is coordinated by postdoctoral researcher **Suvi Sojamo.**

The Cookbook for Sustainability Innovation, published by Aalto in 2017, stresses the importance of business–stakeholder cooperation in sustainable development, examining the collectively created sustainability innovations of BMW, Skanska, Frosta, EcoVeritas and Rockwool.

At the end of the year, Aalto became a member of the Climate Leadership Coalition (CLC) to join with business in countering the harmful effects of climate change by means of research and education.

PRINCIPLE 1:
The environmental effects of the campuses

Societal impact and the campuses play a central role in Aalto's sustainability activities. The aim of Aalto's Sustainability Hub is to integrate all of the university's activities and thus to support sustainability solutions.

Sustainability occupies a key position in the development of the Otaniemi campus. The campus' main environmental effects relate to energy consumption, transport and waste sorting. Energy efficiency investment is a part of campus planning and an important step towards energy self-sufficiency at Otaniemi. The use of geothermal heat and solar power is being incrementally expanded on a continual basis, while consideration is also given to cultural heritage sites and the proximity of the campus to the outdoors, including a nature preserve. Improved occupancy rates of building spaces, economic sustainability and the well-being of those who work and study in the spaces are also essential elements of responsible campus development.

Solar power is in use at six properties at Otaniemi. The TUAS building at Maarintie 8 and the T Building at Konemiehentie 2 have a combined total of 920 solar panels, amounting to 340 m^2 altogether. They furnish some 6% of the buildings' electricity needs, and up to 20% in the summertime. In optimal conditions, one panel square meter produces 1 kWh of energy. The consumption of electricity by campus buildings has also been reduced as a result of switching to LED lighting and better power management of the computers.

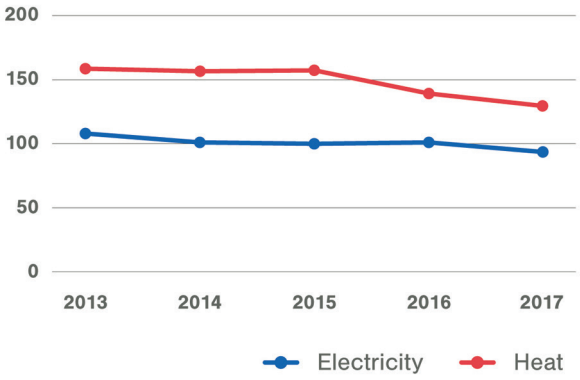
A showcase for Aalto University, Dipoli opened in 2017 after a full renovation as an easy-threshold meeting place and as a main building for the whole community. Aalto purchased the building from the student union in 2014. Aalto students, staff and partners took part in creating the operational concept and vision behind Dipoli. Approximately 45% of Dipoli's heating comes from geothermal energy; for cooling the amount is nearly 75%. Electric automobile charging stations are contributing to sustainable transport, and restaurant concepts are supporting healthy and climate-friendly menu choices, while Aalto buildings are also used as testing grounds for trying out activity-based offices, digital tools and new ways of working.

The electricity and heat consumption in Aalto University had decreased slightly. Water consumption has remained relatively constant. The level of Aalto University's greenhouse gas emissions had continued to improve. In addition to high recycle level, Aalto aims to decrease waste production.

Main environmental impacts of campuses are energy consumption, mobility and recycling.

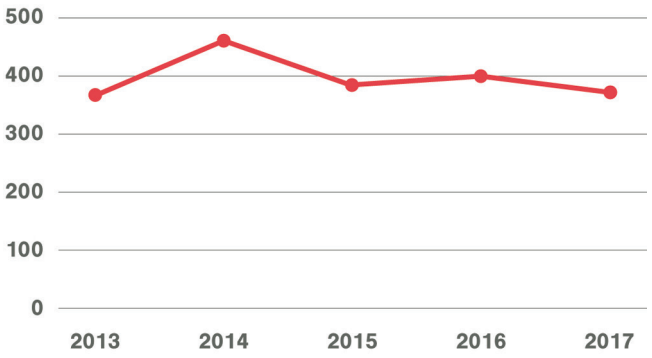
Specific consumption of electricity and heat

Aalto University Campus & Real Estate (kWh/brm^2)



Specific consumption of water

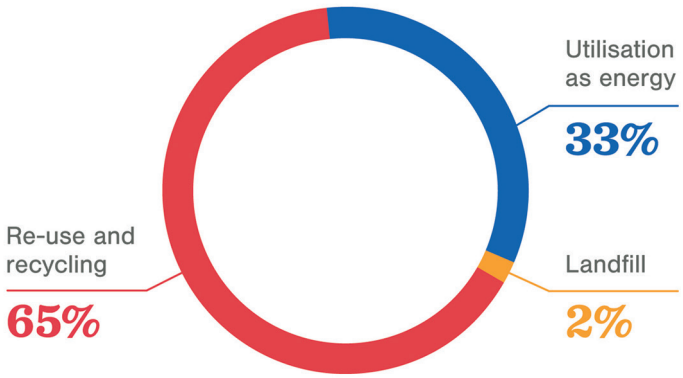
Aalto University Campus & Real Estate (l/brm^2)



Greenhouse gas emissions (tCO$_2$ eq.)

	2015	2016	2017
Electricity consumption in facilities			
a) market-based	1 426	1 299	936
b) location-based			5 247
Heat consumption in facilities	8 867	7 615	5 945
Personnel flights	4 664	4 288	4 343
Total, market-based	**14 957**	**13 202**	**11 224**

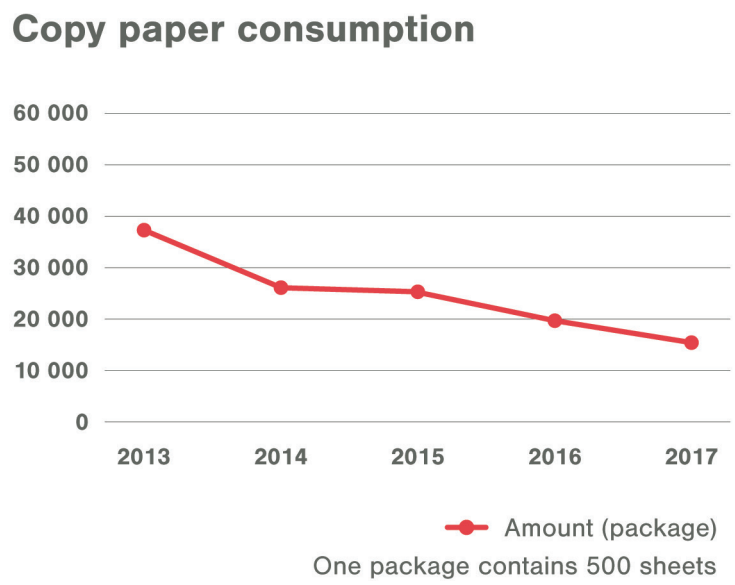
Waste amounts according to handling method 2017



PRINCIPLE 2:
Campus planning and indirect effects

The Espoo metro and Aalto's own metro station in Otaniemi opened for use in November 2017, facilitating fast commuting between the Töölö and Otaniemi campuses. Due to the opening of the new WEST metro as well as the construction work underway at the site of Aalto's new building, Väre, the public transport routes have changed and the main traffic hub has shifted to Otakaari street. The number of charging stations for electric automobiles has also been increased.

The university's service functions have continued to integrate sustainable development perspectives into their operations. A substantial change in support of sustainability is the reform implemented by IT Services in the model used for printing. The Secureprint method reduces paper consumption, facilitates multisite work and improves data security. Through active communications, Aalto strives to reach the wider community by e.g. annual observance of Earth Hour, sponsored by the World Wide Fund for Nature (WWF), and by participating in Finland's national energy saving week. Aalto University's real estate company ACRE, for its part, opened its Aalto Green Campus website in autumn 2017. In addition, the Aalto Code of Conduct was introduced during the year for everyone in the Aalto community.



The university's service functions have continued to integrate sustainable development into their operations.

The switch to Secureprint method by Aalto IT has helped reducing paper consumption.

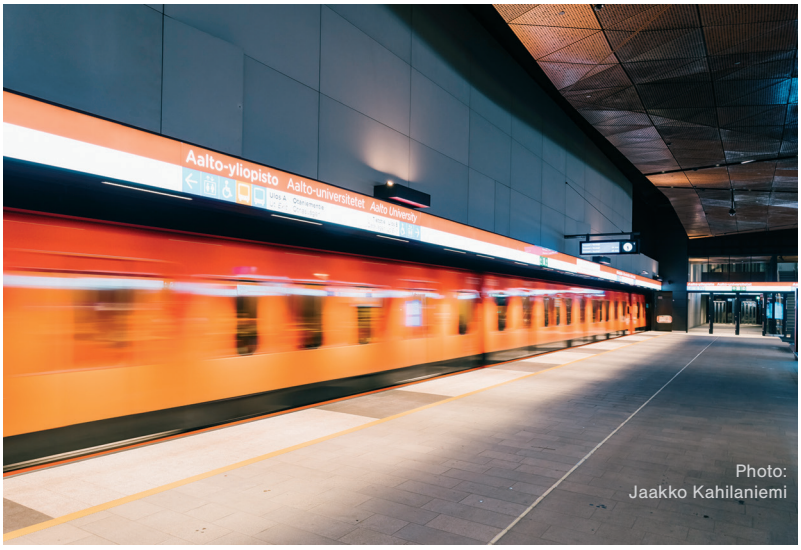


Photo: Jaakko Kahilaniemi

Aalto University´s own metro station was opened in November 2017. The extension of Helsinki subway to Espoo provides fluent connections, also between campuses.

aalto.fi/sustainability