Sustainability Report of Aalto University 2018 ISCN-GULF

Sustainable Campus Charter Report



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 network, and the network's activities began in 2018. The objectives of the network are to bring researchers from different fields together, facilitate the inclusion of sustainable development perspectives in teaching and to promote sustainable development as an extensive part of the university's operation.

In February 2018, Aalto University signed the Sustainable Development Goals (SDG) Accord, committing to advance the UN goals for sustainable development.

More than 500 people
participated in
Aalto Sustainability
Day organised in
the Dipoli building in
May 2018. Keynote
speakers were
Minna Halme and
Janez Potočnik,
among others.
Photos: Heidi Konttinen







Aalto University is a member of the International Sustainable Campus Network (ISCN) and complies with its reporting charter, emphasising teaching, research and artistic activities in particular. This report utilises the ISCN's three core principles as tools for reporting on Aalto University's responsibility and sustainable development. The university's focus areas – teaching, research and societal impact (Principle 3) – are reported on first followed by the environmental impacts of campuses (Principle 1) and indirect impacts (Principle 2).

PRINCIPLE 3:

Teaching, research and societal impact

Teaching

One of Aalto University's long-term objectives is to integrate sustainable development perspectives into all teaching activities. This objective has been approached in various ways: integration of basic concepts, partial expertise and specialisation in specific areas.

Sustainable development education at Aalto University Baseline Minor in sustainable **Dedicated Master's** understanding development, field specific **Programmes** Compulsory courses and topics Sustainable development as a Systemic perspective on competence area as part of Bachelor's related to sustainable development sustainable development and challenge-based in course assignments for all students in a Bachelor's and Master's degree programmes programme Ability to translate and implement Ability to relate and take into account Ability to challenge and transform

Sustainability in teaching -working group 2018 -19

The integration of basic concepts involves providing students with the capacity to understand how the themes of sustainable development integrate into their discipline by including sustainable development perspectives in essential bachelor's degree courses.

In 2018, Aalto Sustainability Hub created a joint teaching model for working groups focused on teaching and some of Aalto's schools in collaboration with the university's other cross-disciplinary cooperation groups.

The model supports teachers of basic courses and offers a sustainable development specialist's help in the integration of basic concepts. The School of Electrical Engineering was the first school to pilot the model in 2018. In 2019, the model will be applied by the School of Engineering, the School of Business and the School of Arts, Design and Architecture and in Swedish language teaching.



Students of the Measuring the Biological Phenomena course disassembled measuring instruments donated by the Hospital District of Helsinki and Uusimaa in order to investigate products' life cycle impacts.

Photo: Annukka Jyrämä

Integration was also supported by organising a two-day workshop, Tvättstugan, for teachers. The workshop examined various pedagogical solutions for combining the principles of sustainable development in teaching. The workshop was implemented jointly with the Swedish KTH Royal Institute of Technology and Helsinki Institute of Sustainability Science (HELSUS). Doctoral students were offered an opportunity to receive Aalto Sustainability Hub's support for participation in the KTH's sustainable development course via the Nordic 5 Tech network.

All of Aalto University's disciplines offer courses and modules that discuss the viewpoints of sustainable development. Students can improve their expertise through themes of sustainable development. The university offers nine master's degree programmes that focus on sustainable development.

In 2018, a total of 333 theses (including doctoral dissertations) completed at Aalto discussed the theme of sustainable development. The number corresponds to 12% of all theses written at the university during the year. The relative share remained the same as in 2017.

Students participated in numerous projects related to the theme of sustainable development throughout the year:

- Four Aalto University students studied and designed solutions for increasing the sustainability of the Lux Helsinki light festival. Julia Renko (School of Business), Kelly Purcell, (School of Engineering), Hsiao-Pei Liao and Angela Hernandez (School of Arts, Design and Architecture) developed a measuring tool and a collaboration platform that facilitate the improvement of the event's sustainability by order of Helsinki Marketing and the City of Helsinki. They also examined sustainability-related issues faced in the event industry in their research.
- School of Chemical Engineering students Mikko Niemeläinen and Milla-Mari Vastavuo won the Wood U Make It
 Happen Innovation Contest organised by the Finnish Forest Industries Federation. The prize-winning innovation,
 Relaps, offers a model that enables food production to respond to population growth and the pressures caused
 by climate change.
- Led by Senior Researcher Mika Kuisma, the School of Business course Corporate Social and Environmental Responsibility defined the most central sustainable development goals (SDGs) for Aalto University's operation.
- The Master's Degree Programme in International Design Business Management and Assistant Professor Miikka Lehtonen's Nordic Rebels course investigated optional courses of action with which the cities of Helsinki and Copenhagen could achieve SDGs.
- Elizabeth Miller's (School of Business) master's thesis Trash to treasure: A Multiple Case Study of Finnish
 Companies That Create Economic Value from Waste Materials won the 2018 university category of the Association
 for Environmental Management YJY's thesis competition. The thesis examines companies' use of recycled materials
 as raw materials. Enabling the qualitative and quantitative availability of correct recycled raw materials to meet the
 demand for raw materials is a great challenge.



The Tvättstugan course organised jointly by the KTH, University of Helsinki and Aalto University introduced teachers to methods for integrating sustainable development into their courses.

Research and artistic activities

In Aalto University's research and artistic activities, responsibility and sustainable development are apparent in themes, content and results, as well as in research processes and practices. Sustainable development is included in all of Aalto University's key research areas: ICT and digitalisation, materials and sustainable use of natural resources, art and design, and global business dynamics. Aalto Sustainability Hub presented various viewpoints for sustainable development research in numerous seminars.

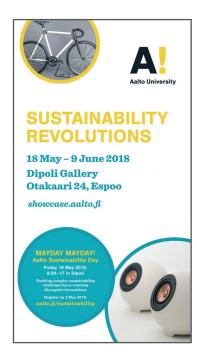
Through its operation, the university aims to create novel, cross-disciplinary solutions and projects that focus on responsibility and sustainable development. The purpose of Aalto University's internal seed funding is to facilitate multidisciplinary projects.

All of Aalto University's schools conduct research that focuses on responsibility and sustainable development and plays a remarkable role in solving societal challenges. Here are some examples of research projects:

- On request by the European Commission, Aalto University and Outotec carry out coordinated research into recycling
 within the European battery industry. Recycling is one of the key sectors of the Batteries from Finland campaign
 initiated by Business Finland at the start of the year. The objective is to make Finland the leading country in battery
 recycling expertise. In Aalto, the project is coordinated by Mari Lundström, Assistant Professor in Hydrometallurgy.
- According to the most recent studies, there are many ways to reduce the consumption of water resources.
 Researchers at Aalto University wanted to create a better way to pass this research data to people so it can be utilised. The Water Scarcity Atlas online application was developed by Postdoctoral Researcher Joseph Guillaume and Assistant Professor Matti Kummu. It uses interactive world maps to provide information on the world's water situation and methods for addressing water scarcity.
- FinnCERES is a competence centre for the materials bioeconomy formed jointly in 2018 by Aalto University and VTT
 Technical Research Centre of Finland. It supports, for example, Professor Orlando Rojas' research on alternatives for
 fossil raw materials. FinnCERES' objective is to develop bioeconomy materials using timber as raw material in order to
 secure the capacity for a sustainable, environment-friendly future.
- The project Strengthening problem-based learning in South Asian Universities develops and pilots cross-disciplinary
 project courses in partner universities, addressing the challenges of global sustainable development. In addition to
 Aalto, the project is participated in by nine universities in India, Nepal, Bhutan, the Netherlands and Lithuania. Another
 objective of the project is to strengthen the universities' capacities to include problem-based learning (PBL) in their
 teaching and curricula through teacher training and network building. The project is coordinated by Aalto Global
 Impact.

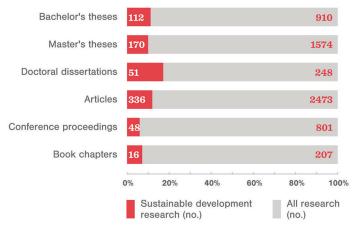
Aalto University's artistic activities, too, include numerous projects in which responsibility and sustainable development form the core:

- In 2018, the evening gown worn by Jenni Haukio, the wife of the current president of Finland, was made of 100% birch-based loncell fabric. The gown was designed by Aalto University's Fashion and Clothing Design student
 - **Emma Saarnio**, and her working partner, Textile Design student **Helmi Liikanen**, was responsible for the fabric design. The gown's concept was based on the second century of Finland's independence which brings with it a novel, more environmentally aware mindset, new materials and a new generation of designers.
- The Eco-Art Exhibition at Helsinki Airport provided visitors with a peek into
 what the future may hold for ecological materials. The exhibition presented
 22 students' works which made use of, for example, dog hair, coffee grounds,
 cellulose in different forms, wood, potatoes and biowaste as materials.
- Aalto sustainability Hub's exhibition, Sustainability revolutions, which was
 opened in connection with the Sustainability Day conference in May, presented
 Aalto University's research, teaching, art and design in the fields of sustainable
 development and circular economy. The exhibition brought together Aalto's
 innovative and multidisciplinary sustainable development projects which deal
 with, for example, water recycling systems, poverty alleviating innovations, food
 circulation design, sharing-related arts instruction, a bicycle manufactured from
 nanocellulose and several video art works. The exhibition was curated by
 doctors Riikka Mäkikoskela and Taneli Tuovinen.



Publications related to sustainable development 2018

Number and share of all publications



In 2018, a total of 400 peer-reviewed articles and conference papers on the subject of sustainable development were published in the university (12% of all publications). The number of articles remained on the same level as in the previous year.

Societal impact

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) published the report Global Warming of 1.5 °C. The report highlights the urgency of taking remarkable actions in all societal sectors to mitigate global warming. Global challenges emphasise the significance of research and education now more than ever.

In February 2018, Aalto University signed the international Sustainable Development Goals Accord for universities. By signing the document, Aalto became the first Finnish university to commit to advancing the UN goals for sustainable development as part of its teaching, research, innovation activities, and campus development. The implementation of the Accord was initiated through Aalto SDG network's various events and development projects as well as teaching.

Aalto University continued its active operation in sustainable development networks both in Finland and internationally. Sustainability Hub organised 14 events which had a total of 1,200 participants, and it supported the organisation of numerous events. We are actively collaborating with different stakeholders. Our corporate engagement include e.g. membership of CLC, Climate Leadership Coalition. In total, Aalto University was involved in organizing hundreds of sustainability events.

More than 500 people participated in discussing innovations that promote sustainability and disrupt established operating models at the Aalto Sustainability Day conference in May 2018. The Sustainability Revolutions exhibition, which was organised as part of Aalto Festival, provided versatile information about Aalto's innovations and work on sustainable solutions. In the spring of 2018, the theme of the university's stakeholder magazine, Aalto University Magazine, was sustainability.

The University of Helsinki's HELSUS and Aalto Sustainability Hub engaged in close collaboration in 2018. The SDG seminar held in October attracted an audience of more than 120 people. Photo: Anu Ruokolainen

CLC held it's annual meeting in Dipoli at the Aalto Sustainability Day in May. President Ilkka Niemelä discussing climate change and disruptive technologies with key company representatives. Photo: Heidi Konttinen





Aalto University continued its close collaboration with the City of Espoo. In November 2018, Espoo hosted the annual Ahtisaari Days, and Aalto participated in the organisation of the event by holding a public event that included a panel discussion in which researchers of water management, participatory design and social computing discussed the concept of designing peace. In addition to Nobel Peace Laureate and former Finnish President Martti Ahtisaari and Helsinki Festival Artistic Director Marko Ahtisaari, the discussion was participated in by Alexander Stubb, Chairman of the Board of the conflict resolution organisation CMI.

Aalto University acts as Chair of the Nordic Sustainable Campus Network (NSCN). In addition, Aalto's operation as part of the European Institute of Innovation and Technology (EIT) expanded further at the end of the year as two new Knowledge and Innovation Communities launched their operations. Altogether, Aalto University participates in six EIT Knowledge and Innovation Communities: EIT Digital, EIT Raw Materials, EIT Climate, EIT InnoEnergy, EIT Urban Mobility and EIT Manufacturing.

Operation of the UN's first Technology Innovation Lab (UNTIL) was launched at Aalto's A Grid startup community in Otaniemi. The Lab's operation focuses on circular economy, education, peace, safety and health. UNTIL labs form a global forum in which the UN, private sector operators, universities and civil society representatives can solve problems with the support of start-up companies.

PRINCIPLE 1:

Environmental impacts of campuses

A campus operating in line with the principles of sustainable development is a key part of the university's strategy and operation. The objective of Aalto Sustainability Hub's operation is to generate synergy between the university's functions in order to support sustainable development solutions on campus. Aalto University's sustainable campus solutions are promoted and its carbon footprint is reduced jointly by the University's Vice President of Campus Development, Aalto University Campus & Real Estate, and its sustainable development team, Aalto University's Sustainable services Working Group chaired by Aalto Sustainability Hub and stakeholder representatives.

The essential environmental impacts of the Otaniemi campus relate to energy consumption, transport and recycling. Aalto University invests in energy efficiency in its campus development: the continuous increase in the use of geothermal heat and solar energy on campus is implemented gradually. In addition, campus development designs take account of cultural heritage sites and the campus' proximity to nature and the Laajalahti Nature Reserve. Furthermore, improving the utilisation rate of campus facilities, their financial sustainability and the wellbeing of people working and studying in the facilities are central aspects of responsible campus development.

Aalto University's heat and power consumption have decreased within the past five years, but water consumption has increased slightly. The share of renewable energy production increased by 2.5% out of total consumption in 2018. The volume of greenhouse gas emissions has kept declining. In addition to maintaining a high recycling rate, the university aims to decrease the generation of waste.

At the end of 2018, the total area of facilities used by the university was 228,000 m². Thanks to the space-saving programme, the university's spaces were reduced by 11% during the year. The School of Arts, Design and Architecture's activities relocated from the Arabia district to Otaniemi as Aalto University moved its facilities away from the Arabia campus in the summer of 2018. The School of Arts, Design and Architecture's building, Väre, was inaugurated in September 2018, and the shopping centre A Bloc, which was opened in the same block, was bustling with activity right from the start. The aim set for the Väre is to achieve energy class A, and the building's heating system uses district heating only for the share of domestic water. The building has 90% self-sufficiency in heating and cooling, and the solar panels installed on its roof cover part of its energy requirements.

During 2018, furniture was donated to personnel and students in connection with removals. Otaniemi's junk bike collection and sales improved the capacity for sustainable mobility remarkably.

In 2018, Otaniemi recycling centre was granted the "Sustainability champion" recognition for its persevering and remarkable work in implementing circular economy on the campus. The diploma was received by long-term recycling centre volunteers **Annika Rantala** and **Johan Strandman**.

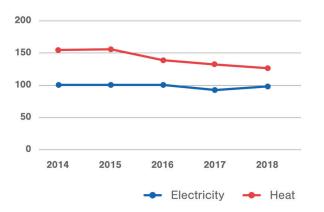
The new Väre building was inaugurated in 2018 at the heart of the campus. Photo: Helena Hyvönen



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

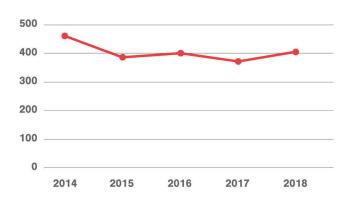
Specific consumption of electricity and heat

Aalto University Campus & Real Estate (kWh/brm²)



Specific consumption of water

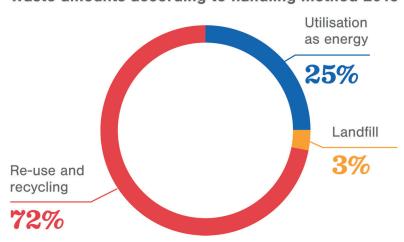
Aalto University Campus & Real Estate (I/brm²)



Greenhouse gas emissions (tCO_2 eq.)

	2016	2017	2018
Electricity consumption in facilities a) market-based	1299	936	705
b) location-based		5 427	4 961
Heat consumption in facilities	7 615	5 945	5 652
Personnel flights	4 288	4 343	5 141
Total, market-based	13 202	11 224	11 499

Waste amounts according to handling method 2018



PRINCIPLE 2:

Campus planning and indirect impacts



The opening of student's sustainable development testing area was celebrated in Ossinlampi in May 2018.

Photos: Heidi Konttinen

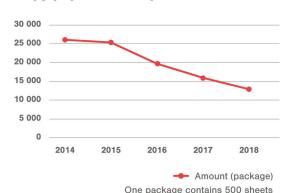


In addition to Otaniemi, Aalto University's operations operated in Mikkeli, in the Metsähovi Observatory in Kirkkonummi and in the district of Töölö in Helsinki. Centralising activities in Otaniemi highlights the significance of planning for the land use and transport solutions of the area. For its part, centralisation has facilitated the mobility of personnel and students as well as their reciprocal interaction. As students have been provided the opportunity to book facilities with the Aalto Space application, the utilisation rate of facilities has improved.

The landscape architecture firm SLA completed its comprehensive plan for the area of Otaniemi in 2018. The plan emphasises sustainable development, user-orientation and the development of the campus as the university's test lab. The idea is to create more urban areas in Otaniemi and, at the same time, form connected entities from the scattered green areas. The core of SLA's plan is formed by a nearly natural shoreline and three green zones that run through the urban environment. Sports facilities and an exercise trail that connects the buildings in Otaniemi have also been designed for the green areas.

In order to maintain biodiversity of the campus, a natural capital assessment was implemented as part of the FIBS Corporate Responsibility Network's programme.

Copy paper consumption



During the year, several events were organised with the aim to assess optional methods for organising parking in Otaniemi. The campus received HSL's city bikes to improve its capacity for sustainable mobility. Eight of Espoo's 105 city bike stations were placed within Otaniemi. Preparations for the Jokeri Light Rail have also been made on the campus.

University services continued integrating the viewpoint of sustainable development into their operation. In order to improve the user-friendliness and sustainability of university services, the Sustainable Services Working Group sets annual objectives for each service unit.

The decline of paper consumption has continued as electronic services have been improved and particularly as a result of the printer reform implemented by the IT Services.

Active communication reaches all members of the Aalto community. The Sustainable Aalto brochure for new students is published annually in Finnish, Swedish and English. Theme days, competitions and events aim to comply with sustainable operating models. During 2018, Aalto Sustainability Hub participated in the organisation of dozens of events, bolstering the university's societal impact.

Aalto Sustainability Hub's and its stakeholder groups' presentations were delivered to the university's management to support the preparation of the university's new strategy, Exploring Aalto 2020–2035. The university's operational environment analysis placed a strong emphasis on questions related to sustainability, and the personnel voted sustainable development as the university's most important objective.



The operation of Aalto Sustainability Hub Advisory Board was initiated. The Advisory Board's assignment is to support and strengthen Aalto University's actions that aim at solving the challenges of sustainable development. The Board's members include Risto Isomäki, Annareetta Lumme-Timonen, Kaisa Hietala, Liisa Rohweder, Riikka Timonen, Sirpa Pietikäinen, Kaisa Korhonen-Kurki, Göran Finnveden, Tuula Antola and Taina Nikula among others. Photo: Cvijeta Miljak



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