



Report on

SUSTAIN- ABILITY 2020



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CONTENTS

<u>LUT in Figures 2020</u>	3
<u>Sustainability at LUT</u>	4
<u>LUT University Strategy 2030</u>	6
<u>Sustainability in Scientific Research</u>	7
<u>Sustainability in Academic Education</u>	9
<u>Sustainability in Societal Interaction</u>	11
<u>Sustainable Actions on LUT Campuses During the COVID-19 Pandemic</u>	13
<u>LUT University's Climate Action and Carbon Footprint in 2020</u>	14
<u>LUT and Sustainable Development Goals</u>	16

CONTACT INFORMATION:

Kati Koikkalainen
Sustainability Manager
kati.koikkalainen@lut.fi
tel. +358 40 584 2793

Editors:

Kati Koikkalainen, Minna Krupka

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Mirkka Vaherkylä

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IN FIGURES 2020

1969

was the year LUT was founded, combining technology and business from the start.

933

scientific publications

5750

Bachelor's, Master's and doctoral students

590

students in continuing education

917

students in open university instruction

1028

staff members

93.4

million euros in funding:
Ministry of Education € 49.7 million,
supplementary funding € 43.7 million

85

nationalities on 2 campuses

15

new professorships established

2

campuses: Lappeenranta and Lahti

97%

of graduates employed

SUSTAINABILITY AT LUT UNIVERSITY

LUT is committed to considering its environmental, financial and social responsibility in all of its activities: scientific research, academic education, societal interaction and supporting functions on its campuses in Lappeenranta and Lahti. This report presents the main goals and progress in these areas in the year 2020.

- » In 2019, LUT revised its strategic path for the coming years. Strategy 2030: System Earth solves vicious problems to save our planet.
- » LUT contributes to an economically, ecologically and socially sustainable society in the research areas in its schools: the School of Energy Systems (LES), the School of Engineering Science (LENS) and the School of Business and Management (LBM).
- » LUT is committed to making its campuses carbon negative by 2024. LUT is planning to reach this objective using its own research expertise. One approach is to influence the global energy system as a whole and to support a systemic change towards an emissions-free future.
- » In 2020, LUT Universities appointed a sustainability manager. The LAB University of Applied Sciences, which is part of LUT Universities, started to pursue carbon neutrality.
- » LUT has promoted sustainability with regard to all 17 goals in the UN's 2030 Agenda for Sustainable Development. LUT is committed to the UN's SDGs; the rector has signed the SDG Accord.
- » As a part of Universities Finland (UNIFI), LUT is committed to the theses on sustainable development and responsibility of Finnish universities.
- » LUT was in the top 200 in the THE 2020 Impact Ranking. This ranking assesses the social and economic impact of universities against the UN's Sustainable Development Goals (SDGs).

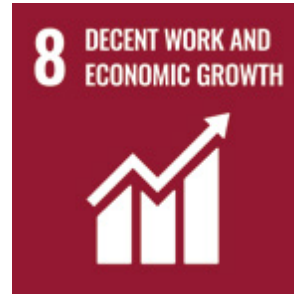


We in the student union LTKY aim to eradicate educational inequalities and ensure that studies are accessible, equal and safe for everyone.

*Tiiia Kettunen
Harassment Contact Person, Advocacy Expert, LTKY*

- » LUT is among the world's top 400 universities in the latest Times Higher Education (THE) World University Rankings, which listed 1527 universities.
- » The LUT School of Business and Management (LBM) is among the world's top 200 business schools (THE Rankings 2020 by subject).
- » LUT takes environmental responsibility into consideration in all procurements and travel.
- » LUT Universities updated its [Equality and non-discrimination plan in 2020](#).
- » The student union LTKY addresses misconduct and discrimination.

- » LUT's organisational structure, board of directors, advisory board and university collegium are transparent. LUT consults its student union in decision-making.

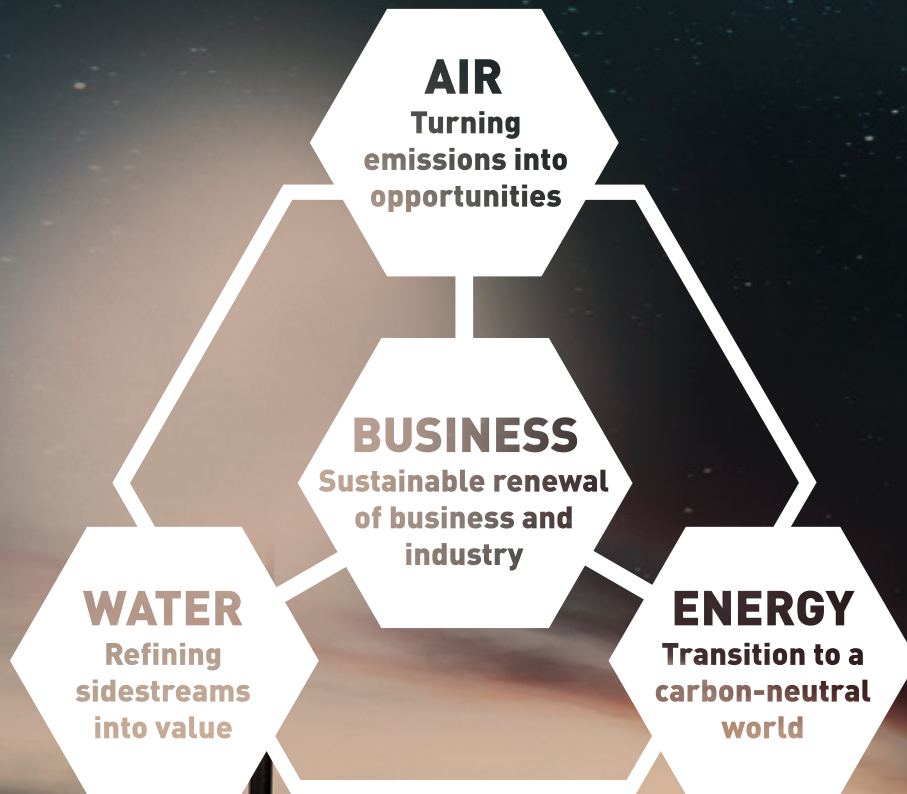


Through its Trailblazer 2030 strategy and research, LUT pursues particularly the following sustainable development goals of the UN:



TRAILBLAZERS

Science with a Purpose



SYSTEM EARTH

LUT UNIVERSITY

The Lappeenranta-Lahti University of Technology LUT is a pioneering science university in Finland, bringing together science and business since 1969.

We typically set very ambitious targets: we are interested in tasks that others may consider impossible.

Because of our trailblazer spirit, we are often in the vanguard and address issues based on our ability for renewal and our visionary outlook.

Our international community is composed of approximately 6 700 students and experts engaged in

scientific research and academic education. As a compact, agile, and highly focused university, we strive to build a financially, ecologically and socially sustainable world together with our partners in cooperation.

LUT opened a new campus in Lahti in August 2019.

We have the **courage** to succeed, a **passion** for innovation through science and a **will** to build well-being.



We are larger in size and more visible, vocal and influential. More companies and science communities want to collaborate with us.

*Teresa Kemppi-Vasama
Vice-chair of the LUT University Board*



SUSTAINABILITY IN SCIENTIFIC RESEARCH

GOAL: Clean energy, water and air are life-giving resources for which we at LUT seek new solutions with our expertise in technology and business. We conduct and publish high-level research which improves the state of the environment and is relevant to society and industries.

- » We released a record number of scientific publications in 2020. The number of publications (Publication Forum rating 2–3) in high-quality journals was 414.
- » A total of 239 of our Scopus publications dealt with at least one sustainable development goal.
- » We achieved a profit of 2.3 million euros.
- » 61.45% of our doctoral students are international.
- » In 2020, we established 15 new professorships.
- » LUT commits to observing good scientific practices and principles of open science and research.

LUT schools conduct interdisciplinary research on research platforms:

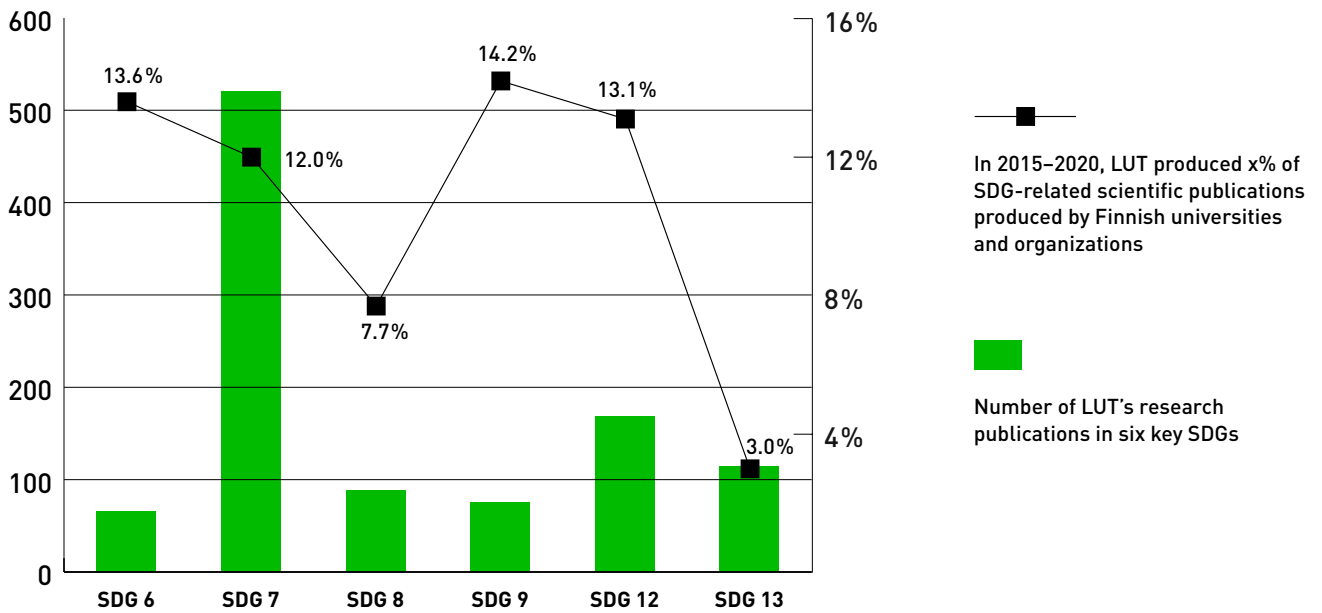
- » SCI-MAT - Sustainable Circularity of Inorganic Materials
- » MORE SIM - Modeling Reality through Simulation
- » GREENRENEW - Green Hydrogen and CO₂ for Industry Renewal
- » AMBI - Analytics-based Management for Business and Manufacturing Industry
- » INERCOM - Integrated Energy Conversion Machinery

Examples of LUT research promoting sustainability:

- » Reincarnation of end-of-life desalination membranes
- » Public procurement change: from a price-centric mindset to value creation for society
- » HUGE - Hydrogen Utilization and Green Energy
- » Towards Carbon Neutral Metals
- » Scaling up power flexible communities' business models empowered by blockchain and AI
- » The "Clean Energy for all Europeans" policy package sets the tone for a more sustainable and customer-centric EU energy transition
- » Food from air: emission-free food production with P2X technologies
- » Energy system based on 100% renewable energy
- » Production of carbon neutral fuels for transportation based on P2X technology
- » LUT's Nuclear Engineering Laboratory is developing a small modular reactor (SMR) for district heating to cut heating-related carbon dioxide emissions.
- » Orchestrating a Sustainable User-Driven Bio-Economy: Policy, Transformation and Benefits (ORBIT)

Research in figures

In its key sustainable development goals, SDGs 6, 7, 8, 9, 12 and 13, LUT produces nationally significant research and academic publications.



Source: SciVal 03/2021

Scientific publications, percentage of scientific publications produced by Finnish universities and organisations. LUT's sustainability policy and reports are all available to the public at lut.fi/sustainability.



SUSTAINABILITY IN ACADEMIC EDUCATION

GOAL: LUT's graduates will become academic decision-makers with expertise in sustainable development. By using their knowledge, skills and competences, they will contribute to sustainable solutions and practices wherever they work.

- » LUT promotes sustainable development in academic education in its schools: the School of Energy Systems (LES), the School of Engineering Science (LENS) and the School of Business and Management (LBM).
- » In 2020, a total of 790 students obtained their Master's degree in business or technology, which is a record number for LUT. In 2020, we also broke our previous applicant records.
- » LUT degree programmes have solidified their commitment to develop their students' sustainability knowledge, skills and competences.
- » All new students undergo the Sustainability at LUT University orientation.
- » The course Introduction to Corporate Social Responsibility and Sustainability has been mandatory for all of LBM's Bachelor's students since 2020.
- » According to the 2020 Master's graduate surveys in both technology and business administration, the sustainability expertise developed in studies at LUT has remained at a high level and above the national average (sources: Finnish Business School Graduates, TEK Graduate Survey).
- » The 2020 Bachelor's graduate survey reveals that sustainability competences have strengthened especially in business administration BSc degree studies technology degree programmes, the situation remains stable. National surveys reveal that the sustainability expertise of Bachelor's graduates is also above the national average.
- » In 2020, the share of degree programmes with sustainability-related intended learning outcomes was 80%, indicating an 8% increase from the previous year.
- » The LUT School of Business and Management (LBM) focuses on sustainable business renewal in education and research. The school is committed to the UN's Principles for Responsible Management Education (PRME).
- » LUT offers rolling admission to Master's programmes in English for those who have completed or are close to completing their degree outside of Finland.
- » LUT welcomes international students from beyond the EU to international Bachelor's studies in technology in education collaboration with HEBUT University, China.
- » In 2020, scholarships have been awarded to 84% of enrolled students who were required to pay a tuition fee.



We are committed to educating responsible business professionals. The SDGs are addressed on several courses, and responsible business skills are a learning goal across all LBM programmes.

Laura Olkkonen, PhD, LBM's coordinator for PRME

Examples of LUT's Master's programmes promoting sustainability:

- » Bioenergy Systems
- » Energy Conversion
- » Biorefineries
- » Chemical Engineering and Water Treatment
- » Sustainable Science and Solutions
- » Circular Economy
- » Global Management of Innovation and Technology
- » Supply Management
- » Erasmus Mundus, the green transition in software development

Examples of LUT's open studies promoting sustainability:

- » LUT Open University:
Sustainable water use,
Energy scenarios
- » Massive open online course (MOOC):
Circular Economy Now
- » MOOC Climate Action –
Solutions for Carbon Neutral
Transport



SUSTAINABILITY IN SOCIETAL INTERACTION

GOAL: LUT bases its collaboration with organisations on a strong entrepreneurship ecosystem and an international process for the commercialisation of innovations involving LUT's business accelerator, students, alumni, investors and enterprise networks. LUT requires sustainable operations and transparent reporting also from its partners.

- » In its cross-disciplinary research projects, LUT creates sustainable solutions, business models, inventions, patents, new products and spin-off companies for society and industries.
- » The business ecosystem includes LUT's research and education units, LUT's business accelerator Green Campus Open (GCO), the J. Hyneman Center (JHC) for rapid prototyping, the LUT Entrepreneurship Society LUTES, and the cleantech seed investor Green Campus Innovations Ltd (GCI).
- » Through the expertise of its board of directors and advisory board, LUT also incorporates the business world's perspective into its sustainability promotion. The impacts of LUT's environmental actions are presented regularly to the university management.
- » € 93.4 million in financing for 2020: € 49.7 million in core funding by the Ministry of Education and € 43.7 million in supplementary funding, amounting to over 47% of the university's turnover and demonstrating the high impact of LUT's research on society.
- » Roughly 3–5 research-based spin-off companies are established each year. In 2020, there were 52 active spin-offs which had been established at least three years ago.
- » LUT's IPR portfolio benefits both new start-ups and established industrial companies. LUT's IPR portfolio is managed by Green Campus Open, the research-to-business accelerator of the university.
- » The LUT Junior University incorporates LUT's sustainability contents into the curricula of local schools, having reached 4 500 people in 2020.
- » The LUT Junior University concept was awarded as an outstanding example of Partnerships for Progress by ISCN.



The LUT Junior University concept educates all students in Lappeenranta to implement sustainable development and business.

*Ilkka Räsänen
Environmental Director, City of Lappeenranta.*

- » Together with the campus cities Lappeenranta (European Green Leaf 2021) and Lahti (European Green Capital 2021), we promote a clean environment and sustainable society.
- » As one front, Finnish universities have published 12 sustainability theses and intend to become leaders in sustainable development.



LUT is a member of highly regarded sustainable development networks:

- » Climate University
- » Network for Business Sustainability
- » Greenreality Lappeenranta
- » Green Lahti
- » Principles for Responsible Management Education (PRME)
- » European Energy Research Alliance (EERA)
- » Sustainable Process Industry through Resource and Energy Efficiency (A.Spire)
- » Water Europe
- » Finnish Climate Change Panel
- » The Finnish Society for Environmental Social Science (YHYS)
- » Nordic Sustainable Campus Network (NSCN)
- » International Sustainable Campus Network (ISCN)



SUSTAINABLE ACTIONS ON LUT CAMPUSES

during the COVID-19 pandemic

GOAL: LUT aims to create a responsible campus culture where it is safe to study and work and the environmental load and carbon footprint are small. LUT monitors and regularly develops its ecological, economic and social impact.

- » LUT follows the COVID-19 situation continuously and updates its coronavirus guidelines whenever necessary. LUT aims to slow down the spread of the coronavirus in accordance with government recommendations.
- » During the COVID-19 pandemic, LUT has provided its staff members and students information regularly via the internet, social media and intranet.
- » LUT offers masks free of charge to its employees and students.
- » During the COVID-19 pandemic, LUT has allowed students to have meals on campus at a student discount whenever possible and safe.
- » To help tackle the COVID-19 pandemic, LUT's researcher proposed the use of hydrogen peroxide vapour to decontaminate face masks.
- » LUT's research has resulted in five ideas for disaster preparedness of authorities in global cases like the COVID-19 pandemic or extreme weather caused by climate change.
- » LUT has also donated computational power to help tackle the coronavirus.
- » Through a strong commitment to digitalisation, LUT has provided good opportunities to study and work online even before the pandemic.



Dean Riina Salmimies, LUT School of Engineering Science

LUT University's

CLIMATE ACTIONS AND CARBON FOOTPRINT IN 2020

GOAL: Clean energy, water and air are life-giving resources for which we at LUT seek new solutions with our Strategy 2030 System Earth. With our expertise in technology and business, we help society and businesses in their sustainable renewal. LUT is committed to making its campuses carbon negative by 2024.

- » LUT has calculated its carbon footprint according to the Greenhouse Gas Protocol since 2019 and has set targets for all three scopes of the protocol.
- » In 2020, LUT's total carbon footprint was 1593 t CO₂eq.
- » LUT is committed to making its campuses carbon negative by 2024. The route to that will be defined by specifying the carbon balance and by a Climate Action Plan.
- » In 2020, the Sustainability Science Carbon Negativity Team carried out a survey on the commuting habits of students and employees at LUT. The results aided LUT's greenhouse gas emission inventory.
- » 100% of the electricity LUT purchases is renewable. Solar panels on campus produce 5% of the electricity LUT consumes.
- » In 2020, LUT's water consumption was 1.84 m³/person. It dropped by 42% from the year 2019, mainly due to the COVID-19 pandemic.
- » 0% of LUT's 105 tons of waste was landfilled.
- » The campus property owners, the University Properties of Finland (SYK) and Isku Center, share LUT's goals for energy efficiency. During 2020, SYK commissioned nature assessments for LUT's Lappeenranta campus.
- » A study conducted by the restaurant LUT Buffet owned by Kampusravintolat examined the state of food waste.



Our outlook on the world is that emission compensation is not the primary solution, as the our task is to actively find solutions to societal problems.

*Risto Soukka
Professor, LUT University*

LUT's total carbon footprint 1593 t CO₂eq



SCOPE 1: 9.7 t CO₂ ekv
Direct emissions from resources owned and controlled by LUT, including emissions from four owned cars.

SCOPE 2: 0 t CO₂eq
Indirect emissions from the generation of purchased energy. LUT's electricity comes 100% from renewables, and therefore, it is considered that emissions from generation are zero. The GHG Protocol says that a company does not account for GHG emissions from operations in which it owns an interest but has no control. The owner of LUT's buildings and the buyer of their district heating, the University Properties of Finland, has included district heating in its own calculations and already compensated for all the emissions. That is why district heating is excluded from the calculations.

SCOPE 3: 1583.7 t CO₂eq
Emissions are all indirect – not included in scope 2 – and emissions that are linked to the value chain and operations of LUT, e.g. business travel via CWT, food at LUT Buffet, construction, maintenance.

LUT University's carbon footprint in 2020



- Commuting 51.4%
- Food 18.6%
- Printed and electronic material* & printing service 11.8%
- Advertising 7.0%
- Research 3.7%
- Education 3.4%
- Business travel 1.5%
- Construction 1.3%
- LUT fleet 0.6%
- Waste 0.4%
- Printing paper 0.3%

**Printed and electronic periodicals and books, FinELib material, electronic course material, other electronic and printed material*

LUT AND SUSTAINABLE DEVELOPMENT GOALS

SDG 1 | NO POVERTY

- » The employment rate of our graduates is 97%
- » Scholarships have been awarded to 84% of enrolled students who were required to pay a tuition fee.
- » As a part of the [Finnish Institute of Technology](#), LUT offers courses free of charge to degree students and adult learners.



SDG 4 | QUALITY EDUCATION

- » [LUT offers rolling admission](#) to Master's programmes in English for those who have completed or are close to completing their degree outside of Finland.
- » LUT will start a [Bachelor's programme in technology also on its Lahti campus](#).
- » The LUT Junior University concept was awarded by [ISCN](#) as an outstanding example of [Partnerships for Progress](#).



SDG 2 | ZERO HUNGER

- » During the COVID-19 pandemic, LUT has allowed students to have meals on campus at a student discount.
- » The campus restaurant constantly monitors the amount of biowaste produced by customers and buffet lines. [Research](#) carried out by the restaurant has shown that measuring and communicating the results decreases biowaste by 25% per customer.
- » [Food from air with a new process: LUT has piloted power-to-x solutions with VTT.](#)



SDG 5 | GENDER EQUALITY

- » At the end of 2020, the share of female employees was 45%.
- » A total of 31% of undergraduate students and 37% of postgraduate students were women.
- » [The student union LTKY](#) eradicates educational inequalities and ensures that studies are accessible, equal and safe for everyone.



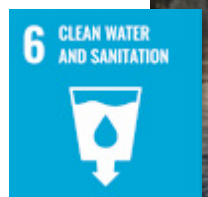
SDG 3 | GOOD HEALTH AND WELL-BEING

- » Employees receive occupational health care services. LUT monitors and develops the health of its employees.
- » The mental well-being of the staff is monitored with a monthly mood tracker survey where employees can also give open feedback.
- » [LUT has created a guide to care robotics and welfare technology in collaboration with German and Swedish universities.](#)



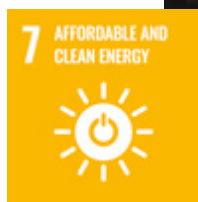
SDG 6 | CLEAN WATER AND SANITATION

- » In 2020, LUT's water consumption was 1.84 m³/person.
- » Amit Bhatnagar, Professor of Water Treatment, [has been recognised on the Highly Cited Researchers 2020 list](#).
- » A [large research project](#) produced new information about reducing pharmaceutical emissions at the primary source and municipal wastewater treatment plants.



SDG 7 | AFFORDABLE AND CLEAN ENERGY

- » 100% of the electricity LUT purchases is renewable. Solar panels on campus produce 5% of the electricity LUT consumes.
- » The "Clean Energy for all Europeans" [policy package](#) sets the tone for a more sustainable and customer-centric EU energy transition.
- » [LUT's Nuclear Engineering Laboratory is developing a small modular reactor \(SMR\) for district heating](#) to cut heating-related carbon dioxide emissions.



SDG 10 | REDUCED INEQUALITIES

- » LUT welcomes international students from beyond the EU [to international Bachelor's studies in technology](#) in education collaboration with HEBUT University, China.
- » In 2020, applications to [international programmes increased by 55.2%](#). A total of 82 nationalities were represented among the applicants.
- » 104 outgoing and 199 incoming exchange students.



SDG 8 | DECENT WORK AND ECONOMIC GROWTH

- » [LUT Universities updated its Equality and non-discrimination plan in 2020](#).
- » The number of full-time equivalent employees in 2020 was 1028.
- » Black Lives Matter movement shows: corporate activism becoming mainstream. Researcher Laura Olkkonen studied the [role businesses play in our society](#).



SDG 11 | SUSTAINABLE CITIES AND COMMUNITIES

- » In 2020, the Sustainability Science Carbon Negativity Team carried out a survey on commuting habits of students and employees at LUT. The results aided LUT's [greenhouse gas emissions inventory](#).
- » JHC Ukkonen is an [electric superbike and an LUT student project](#). Its goal is to achieve the best possible performance in the lightest possible package.
- » The mobile application [CitiCAP](#) for personal carbon trading encouraged Lahti residents towards more ecological mobility.



SDG 9 | INDUSTRY, INNOVATION AND INFRASTRUCTURE

- » 52 active spin-offs have been established at least three years ago.
- » An [LUT-based new start-up](#) supplies new functionalities for water electrolysis applications that make green hydrogen as profitable as possible.
- » The multidisciplinary [Digibuzz project](#) aims to determine the best digital twin and modelling solutions for industry.



SDG 12 | RESPONSIBLE CONSUMPTION AND PRODUCTION

- » In 2020, 0% of LUT's 105 tons of waste was landfilled.
- » A multi-epistemological [inquiry into culture and institutions](#) tells what constrains the sustainability of our day-to-day consumption
- » [The Package Heroes consortium](#) explores food packaging solutions that are environmentally friendly.



SDG 13 | CLIMATE ACTION

- » LUT is committed to [carbon negativity by 2024](#). Our carbon footprint is calculated in accordance with the Greenhouse Gas Protocol.
- » [Energy citizenship researchers](#) aim to understand the conditions that best support people in working both individually and collaboratively towards a more sustainable future.
- » [LUT explores how the valuable carbon dioxide in atmospheric circulation can, with emission-free electricity and new technologies, be transformed into a number of products to replace fossil raw materials.](#)



SDG 16 | PEACE, JUSTICE AND STRONG INSTITUTIONS

- » [Finnish universities have published 12 theses](#) and intend to become leaders in sustainable development.
- » [LUT's organisational structure](#), board of directors, advisory board and university collegium are transparent. LUT consults its student union in decision-making.
- » [Anne Quarshie's research resulted in five global ideas for disaster preparedness](#) of authorities in cases such as the COVID-19 pandemic or extreme weather caused by climate change.



SDG 14 | LIFE BELOW WATER

- » Clean water, energy and air are life-giving resources for which we seek [new solutions](#) with our degree programmes in technology and business.
- » [A research project has identified the pharmaceutical residues](#) that are the most harmful to the environment and the most efficient technological solutions for their treatment.
- » The [Department of Separation Science](#) specialises in water analysis and water, wastewater and soil purification techniques.



SDG 17 | PARTNERSHIPS FOR THE GOALS

Local level:

- » LUT played a significant role in the Green Leaf application process of the City of Lappeenranta; as a result, the city won the [European Green Leaf Award](#) for the year 2021.
- » LUT campuses are located in [Lappeenranta](#) (European Green Leaf city 2021) and [Lahti](#) (European Green Capital 2021) – both forerunners in environmentally friendly activities. In co-operation with the university and a large range of enterprises and other organisations, the cities create a platform for sustainable innovations.
- » LUT is a part of the [Smart Campus National RDI Network](#). It aims to improve the competitiveness, specialisation profiles and digitalisation of higher education (HE) and municipalities.



National level:

- » LUT was actively involved in collaborative theses on the [sustainable development and responsibility of Finnish universities](#).
- » LUT, Wärtsilä and St1: [Power-to-X solutions](#) should be brought to the core of Finland's energy and climate solutions.
- » LUT's research aims to change [public procurement](#) from price-centric to value creation for the society.

International level:

- » LUT's database is used for Wärtsilä's interactive map on [100% renewable electricity systems](#).
- » LUT is a member of many [international networks](#) promoting sustainable development, such as the [ISCN](#) and the [NSCN](#)
- » The [Participatory Communication of Science](#) project explores ways to ensure diversity and inclusion in science participation and communication.

SDG 15 | LIFE ON LAND

- » The [Metsä360 award granted by LUT](#) accelerates forest processing and supports the growth of a responsible bioeconomy.
- » [Satellite images and computational models](#) combat invasive species that threaten biodiversity.
- » In 2020, the University Properties of Finland, the owner of our campus buildings, [commissioned nature assessments](#) for about twenty of its campuses, including LUT's Skinnarila campus.

