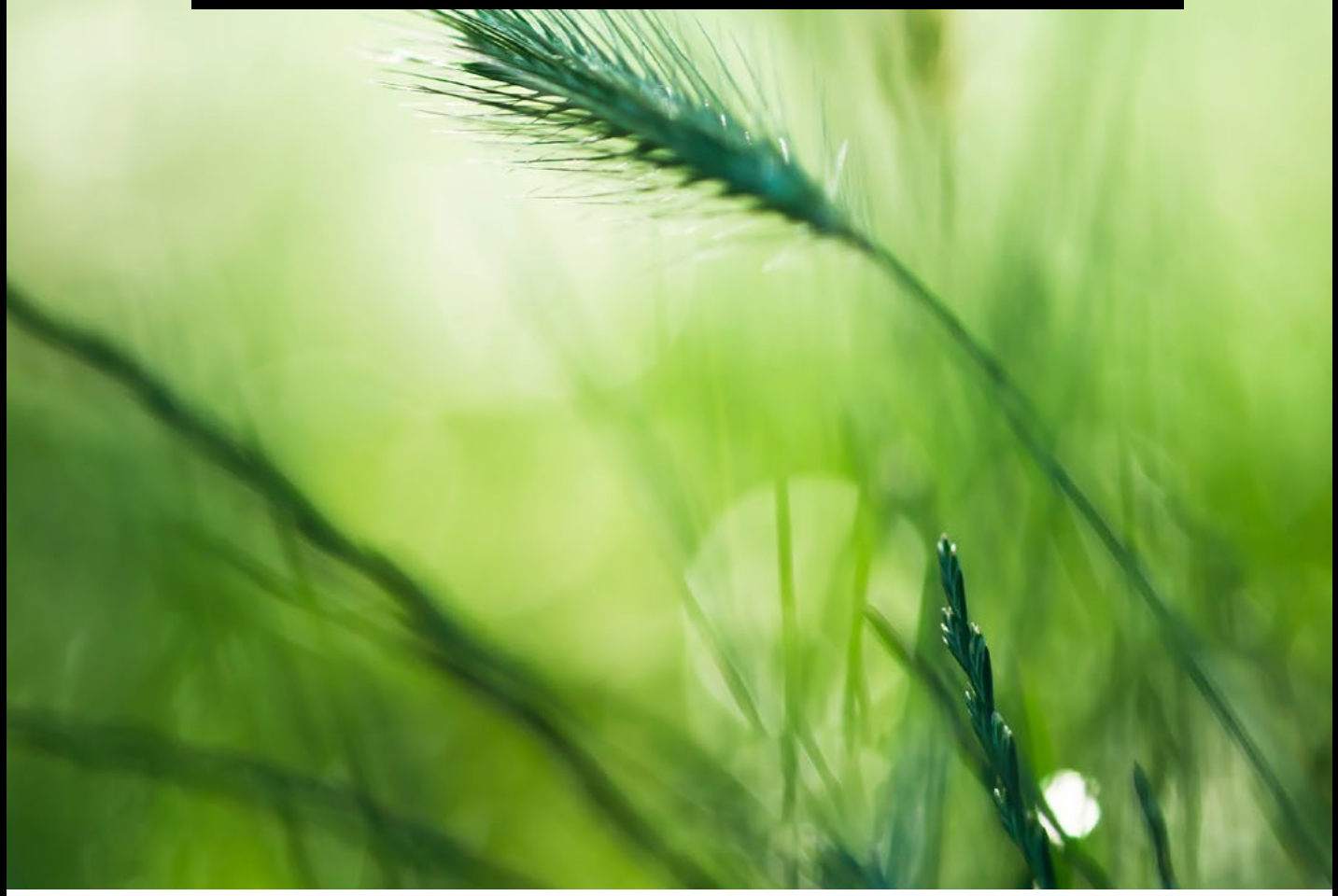
SHARING INFORMATION ON PROGRESS REPORT 2015-2017

PRINCIPLES FOR RESPONSIBLE MANAGEMENT EDUCATION

LAPPEENRANTA UNIVERSITY OF TECHNOLOGY
SCHOOL OF BUSINESS AND MANAGEMENT



PRME Principles for Responsible Management Education

an initiative of the United Nations Global Compact

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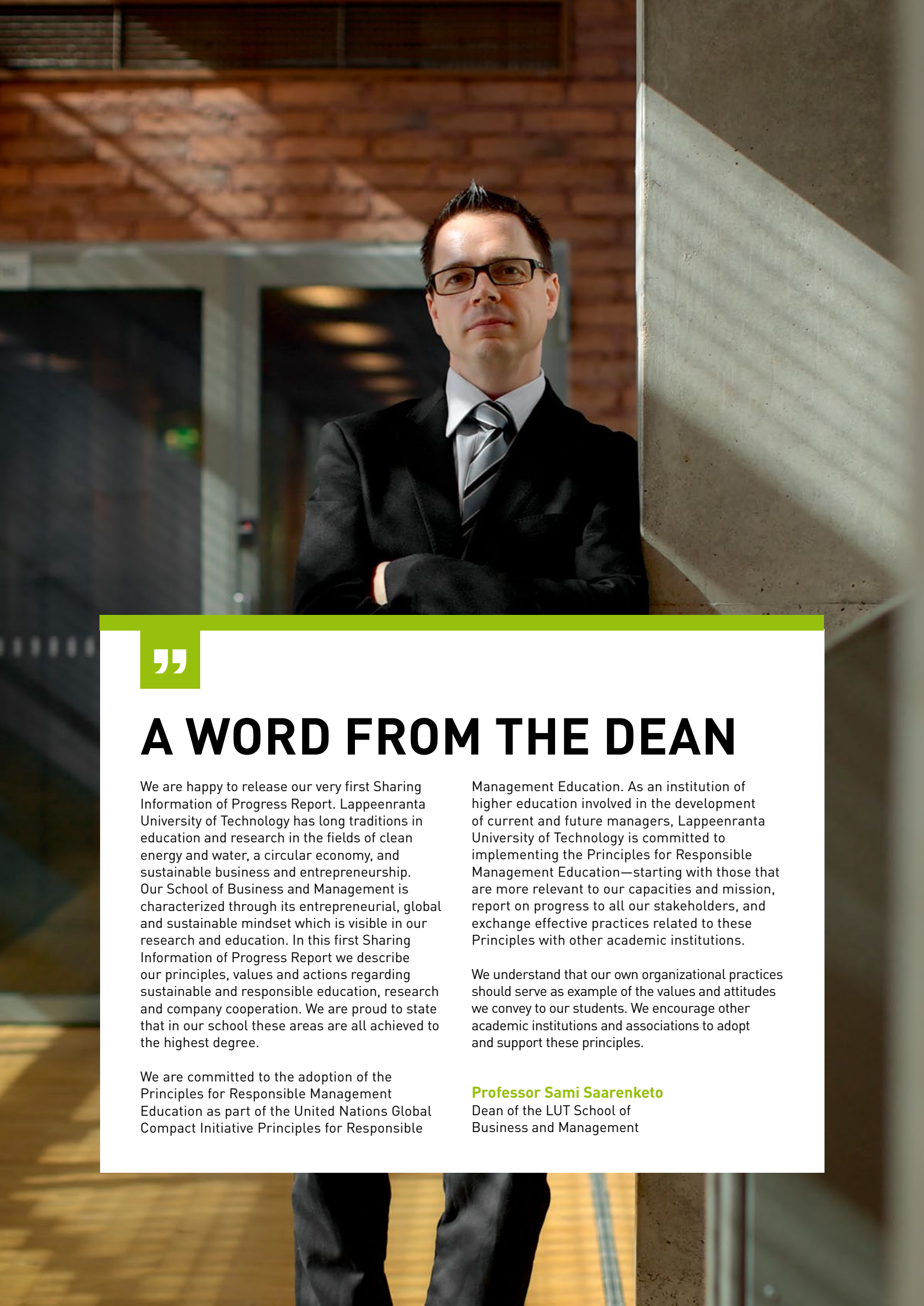


A WORD FROM THE DEAN

We are happy to release our very first Sharing Information of Progress Report. Lappeenranta University of Technology has long traditions in education and research in the fields of clean energy and water, a circular economy, and sustainable business and entrepreneurship. Our School of Business and Management is characterized through its entrepreneurial, global and sustainable mindset which is visible in our research and education. In this first Sharing Information of Progress Report we describe our principles, values and actions regarding sustainable and responsible education, research and company cooperation. We are proud to state that in our school these areas are all achieved to the highest degree.

We are committed to the adoption of the Principles for Responsible Management Education as part of the United Nations Global Compact Initiative Principles for Responsible Management Education. As an institution of higher education involved in the development of current and future managers, Lappeenranta University of Technology is committed to implementing the Principles for Responsible Management Education—starting with those that are more relevant to our capacities and mission, report on progress to all our stakeholders, and exchange effective practices related to these Principles with other academic institutions.

We understand that our own organizational practices should serve as example of the values and attitudes we convey to our students. We encourage other academic institutions and associations to adopt and support these principles.

Professor Sami Saarenketo
Dean of the LUT School of
Business and Management

MISSION

LAPPEENRANTA UNIVERSITY OF TECHNOLOGY

Lappeenranta University of Technology (LUT) is a pioneering science university in Finland, bringing together the fields of science and business since 1969. Our international community is composed of approximately 6,000 students and experts engaged in scientific research and academic education. We have a tradition of strong links with the business community. Our international scientific community consists of some 3,120 bachelor's and master's students, 250 doctoral students and 890 staff members. There are close to 70 different nationalities at our university. In 2015, LUT was organised into three schools. The LUT School of Energy Systems, the LUT School of Engineering Science and the LUT School of Business and Management. Clean energy and water, a circular economy, and sustainable business and entrepreneurship are key challenges to which LUT seeks solutions through technology and business expertise.

LUT is characteristically a challenger university. We set very ambitious targets, and we are often in the vanguard and address issues based on our ability for renewal and our visionary outlook. We desire to conduct research that is of a high quality, and also relevant to society and industries. As a compact, agile, and highly focused university, we contribute to an economically, ecologically and socially sustainable society in our focus areas together with our partners in cooperation. In everything we do, we observe our values: the courage to succeed, passion for innovation through science, and a will to build well-being.

The core of our strategy and mission consists of four key questions:

Are we going to burn up everything?

Is humanity condemned to suffer from the water it has polluted?

Will waste be the grave of our future?

Will we let Europe degenerate to the world's backyard?

THE ANSWER IS: **NO.**

We will show the way with a trailblazer spirit. To respond to these questions, we will concentrate on the following scientific solutions in our focus areas. All our research themes call for both theoretical-methodological and applied research:

- clean energy
- the circular economy, emphasising clean water and waste streams
- sustainable business and entrepreneurship

Clean energy and water, a circular economy, and sustainable business and entrepreneurship include key questions to which LUT seeks solutions through technology and business expertise. Employing our core expertise, we focus on select global themes which are important nationally and locally.

We educate future problem-solvers to change the world and work as we know it. We lead the way with our international master's degree programmes and in the export of education. Our graduates have high employment rates and find challenging work corresponding to their education. Studies show that students are very satisfied with LUT. In an extensive international student survey, we were ranked first in Finland, in the top three in Continental Europe, and eighth worldwide.

> *We have shown that activities, attitudes and the existing constructed base can be further developed greener rather quickly, if we only dare to be bold together"*
> Juha-Matti Saksa, President of LUT

The implementation of our strategy is supported by our action plans which reflect: our high levelof research, revolutionary education, being an entrepreneurial university, and demonstrating leadership and well-being at work.

OUR TARGETS

EDUCATIONAL REVOLUTION

- We train the next generation of entrepreneurial problem-solvers who have a sense of responsible curiosity and who are willing and able to transform challenges into opportunities, seizing and shaping the business environment of tomorrow
- We use state-of-the-art teaching methods
- Our graduates' employment rate tops that of other universities

RESEARCH IN HIGH GEAR

- We are committed to excellence. This translates into high quality research with a significant impact and visibility and into successful competition for funding
- We work together with the best possible international partners
- We recruit the top candidates internationally

IMPACT

- We contribute to providing answers to today's important societal challenges
- We are the first Finnish entrepreneurial university which meets OECD criteria
- We are consolidating our position among the world's best universities

LUT VALUES

COURAGE TO SUCCEED

We focus on and develop our specialised expertise.

We are committed to strong performance, collaboration and shared results.

We capitalise on new ideas and courses of action open-mindedly.

PASSION FOR INNOVATION THROUGH SCIENCE

We base our activities and actions on a high level of academic rigour and ethics.

We promote the visibility and application of scientific results.

We actively participate in public discourse.

WILL TO BUILD WELL-BEING

We desire to make the world a better place.

We operate in a manner which inspires trust and confidence in stakeholders within and beyond the university.

We are accountable to ourselves and to society around us.

LUT SOLUTION-ORIENTED PLATFORMS

REFLEX

Recycling carbon in a flexible competitive energy system

RE-SOURCE

Resource efficient production processes and value chains

DIGI-USER

Smart services for digitalisation

RED

Revealing emission discrepancies

SAWE

Safe water for all

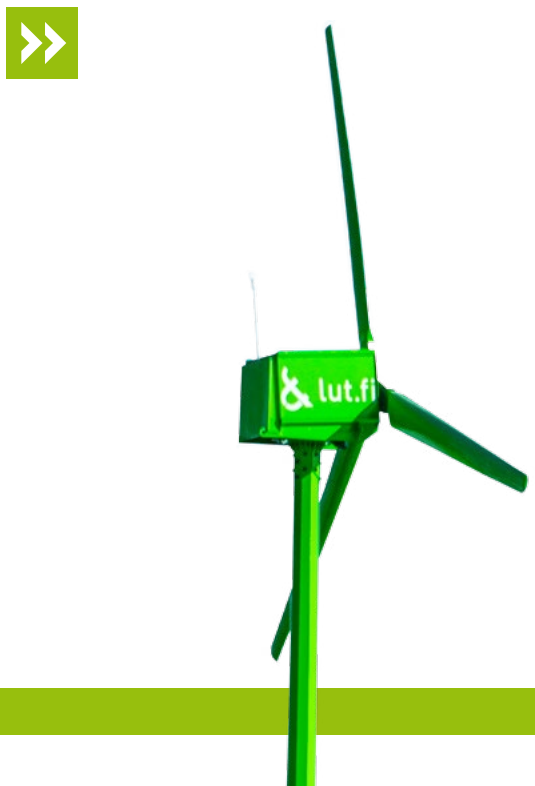
SIM

Sustainable product processes through simulation

LUT GREEN CAMPUS

The Green Campus is our way of thinking and operating, in which interdisciplinary research and teaching activities are utilized innovatively in order to decrease our environmental load and to increase our positive environmental effect. The Green Campus embodies Lappeenranta University of Technology's strong expertise in the field of energy and our research and innovations concerning renewable energy sources. We utilize our own expertise in developing the infrastructure on our campus - a solar power plant and a wind turbine are just some examples.

LUT applies an environmental policy in its work. Environmental issues are developed according to targets which are set in environmental programmes and the work is governed by an environmental management system in accordance with the ISO 14001 standard. In 2012, the university was also awarded the WWF Green Office certificate and is committed to fulfilling its criteria. In recognition of our expertise, Lappeenranta University of Technology was awarded in the international Sustainable Campus Excellence Award competition as the best university in Excellence in Campus category in summer 2013. The awards were given based on actions and proof that promote sustainable development and green technology in a concrete way.



GREEN CAMPUS TARGETS IN NUMBERS:

- By the end of 2018, we aim to cut overall consumption of electric power/ student by 5 % of what it was in 2015.
- By 2020, LUT will produce 5 % of the electricity it consumes with renewable energy.
- 100 % of the energy purchased will be generated by renewable energy sources.
- By 2020, we aim to cut overall water consumption by 20 % of what it was in 2012.

WE HAVE ALSO COMMITTED TO:

- developing the way in which we sort waste
- improving the life span of chemicals
- increasing the share of environmentally-friendly acquisitions
- minimising the environmental impacts of traffic on our campus

GO GREEN. YOUR ACTIONS ARE IMPORTANT.

WE ARE COMMITTED to bear our environmental, responsibilty in research, education, social interaction and support functions.

WE MAKE USE of our know-how to reduce our environmental load and promote our positive inluence on the environment trhough research and education.

WE MONITOR the environmental indicators and we are constantly developing our activities.

ENERGY CONSERVATION

- **Turn off the computer screen and the lights.** Whenever you leave the room.
- **Shut down the computer after working hours.** We can save up to 40,000 euro/year.
- **Adjust the power-savingsetting of your computer.** instructions can be found on the intra, the Green Campus section.

WATER CONSERVATION

- **Report leaking faucets and running toilets.** In the intra, using the property service request form.
- **Place your food on one plate.** You will reduce the ammount of water used in washing up.
- **Use water sparingly.** Turn off the faucet while you apply soap to wash your hands or take a shower.

WASTE

- **Sort your waste properly and recycle.** For more information see intra, the Green Campus section.
- **Take only the amount of food you will eat.** You will reduce the environmental impact of food waste.
- **Think before you print.** If you print, only print the necessary.

TRANSPORTATION

- **Hold remote meeting and promote distance learning.** An easy way to reduce emission and save time.
- **Favor carpooling and public transportation.** Fewer vehicles, less emissions.
- **Commute by bicycle or walk.** It's good for the environment and for you.

GOAL

-5%

of the consumption of electricity per student by the end of 2018.

-20%

of the total consumption of water by the end of 2020.

5%

At least 5 percent of the electricity consumed by us to be self-produced by the end of 2020.

FURTHER INFORMATION | www.greencampus.fi/en / Green Campus intranet pages

The staff and the students of the university have an important role in the development of LUT's environmental activities and in the development of the Green Campus operation model. The university's environmental responsibility touches all those working and studying at the university: therefore, the opportunities for participation provided commit the campus to environmentally-friendly ways of doing things. The university staff has participated in defining the university's most important environmental considerations and given their input for the creation of environmental objectives, goals and programmes. The students are able to participate in the Green Campus activities through the LUT Assistance service, for example. The university's internal service that has been in place since 2011 also channels work assignments to the university's degree students registered with the service. In this way units at the university get help in their work, and the students have an opportunity to earn a bit of money during their studies.

LUT has an Environmental Programme with the key areas of Energy, Natural resources and waste, Scientific research and academic education, Transportation, and Impact of the environmental management system. In the area of Scientific research and academic education, we have specified in our environmental programme that:

LUT conducts and publishes high-level research which improves the state of the environment

- A total of 75 % of the publications in the LUT research database will involve sustainable development by 2020

Academic experts and decision-makers with expertise in sustainable development will graduate from LUT

- A total of 100 % of LUT's new students will undergo an orientation related to environmental issues. A Green Campus briefing is included in the freshman orientation
- Transparent criteria for courses meeting the definition of sustainable development will be developed and adopted to support the curriculum
- In autumn 2018, a target will be set for the relative share of courses meeting the definition of sustainable development
- LUT's graduates at the Bachelor's, Master's and doctoral levels will assess that their sustainable development expertise has increased
- The share of Master's theses dealing with sustainable development is monitored

The Green Campus' parks and naturally beautiful landscape create a pleasant setting for studies, and allow students and staff to spend time on the shore of lake Saimaa. The Green Campus has numerous perks including a rowing boat, which can be borrowed, and honey from the campus' own beehives. We research and develop the use of renewable energy by producing energy with our wind turbine and one of Finland's largest solar power plants. For research purposes we have a Smart Grid, built to serve the needs of decentralised electricity production units. In the Smart Grid, electricity is produced, consumed and stored. In addition to these, we use electric bikes, scooters and motorcycles, as well as our electric and hybrid cars to research options for electricity aided mobility. These vehicles are part of our Smart Grid.

FOR MORE: http://www.lut.fi/web/en/green-campus

SCHOOL OF BUSINESS AND MANAGEMENT

MISSION:

We educate research-based problem solvers in the fields of business, industrial management and software engineering.

We do this by creating and sharing business relevant knowledge for the benefit of students, businesses, the academic community and society at large.

VISION 2020:

We are internationally recognized for our impact on sustainable business renewal – enabled by new technologies and entrepreneurial spirit.

ABOUT THE LUT SCHOOL OF BUSINESS AND MANAGEMENT

The LUT School of Business and Management combines business, industrial engineering and management, as well as software expertise in a unique way. The focus of both education and research is on building sustainable competitiveness and promoting green technology.

Students in our research-based degree programmes graduate as Bachelors, Masters and Doctors of Science in Economics and Business Administration, as well as Bachelors, Masters and Doctors of Technology in Industrial Engineering and Management or Information Technology. Our graduates are experts with excellent problem solving and professional skills. Our graduates on the Master's Degree Programmes fare exceptionally well on the job market. The employment percentage for new graduates has at time reached 80 %.

Our research is focused on expertise in sustainable competitiveness, innovation activities and software engineering. We produce research data of a high standard that can be applied in practice for the use of companies and the public sector in development and societal decision-making. The objective of our school's research is to form a better understanding of the factors that lead to sustainable value creation, i.e. approaches that will ensure that companies are successful in international competition and, at the same time, operate in a way that is economically, ecologically and socially sustainable.

Entrepreneurial, global and sustainable mindset characterizes our research and education. We focus on understanding the factors that lead to sustainable value creation i.e. approaches that enable growth, renewal and internationalization of firms in a way that is economically, ecologically and socially sustainable. We seek to better understand the role of businesses and management in addressing the big problems of humankind. In particular, we focus on changes and growth opportunities that are driven by new and digital technologies and new forms of organizing. Our core strength is close collaboration with the business world combined with strong theoretical, analytical and methodological expertise.

PRINCIPLE 1
- PURPOSE

We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy.

The mission of LBM is to educate research-based problem solvers in the fields of business, industrial management and software engineering. We do this by creating and sharing business relevant knowledge for the benefit of students, businesses, the academic community and society at large. LBM has high values regarding sustainability and responsibility, and these issues are highly represented both in the teaching and research at LBM. LBM has integrated corporate responsibility and sustainability in the curriculum in several ways. The master's degree programme Master in Strategy, Innovation and Sustainability (MSIS) focuses on sustainability and meets the increasing international demand for strategic and innovation management professionals, who understand how sustainability issues create both challenges and opportunities for firms. Several individual courses focusing on sustainability are offered in other bachelor's and master's programmes as well (see Principle 3). Furthermore, many LBM researchers are exploring sustainability from different viewpoints in various research fields, and we have high number of publications and research projects on the topic (see Principle 4).

The values and mission of LUT highly support the principles and values of PRME to be embedded into the actions of LBM. The PRME coordinator is responsible for the identification, development and follow up of principles and actions set regarding the values of PRME. Together with the Dean of School of Business and Management the PRME coordinator sets targets for the future actions. The Head of Degree Programme in Business Administration is responsible for the development of education and together with the Directors of Bachelor and Master's programmes, the education is developed from the viewpoint of sustainability and responsibility. The Dean has nominated one person to be responsible for organizing workshops and seminars about sustainability in order to develop the research of the topic.

The principles and values of PRME are held in high esteem at LBM. Thus, our aim is to train responsibly the next generation of entrepreneurial problem-solvers who are willing and able to transform challenges into opportunities, seizing and shaping the business environment of tomorrow.

PRINCIPLE 2

- VALUES

We will incorporate into our academic activities and curricula the values of global social responsibility as portrayed in international initiatives such as the United Nations Global Compact.

The aim of LBM is to educate the next-generation of research-based problem solvers to shape the business environment of tomorrow. LBM is committed to strengthening the links between research activity and teaching. This is exemplified, for example, in that all teachers in charge of master's-level courses have a doctorate and that the teachers are in touch with the latest research in their field. Especially in master's level courses teachers can utilize and draw from the latest journal publications and cases in their teaching activities. The links between research activity and teaching are evident also in the supervision of Bachelor's and Master's theses as the students are guided towards relevant theories and journals within their subject matter. Also we engage the students in our ongoing research projects and tie their thesis topics closely with our own research activities. The strong links between teaching and research actives not only motivate the teachers but also the students as they can better position their own work in a bigger whole.

The overall intention is to develop a strong student-centred culture, which means putting more emphasis on learning than on teaching. The overarching aim of the strategy is thus to ensure that all students are provided with an outstanding learning experience in a research-focused environment. LBM aims to build common educational programme management processes. All the programmes are designed to promote high-level learning and to achieve a balance between academic rigour and managerial relevance committing to highest international standards in teaching and learning. The idea is to build a shared educational culture highlighting entrepreneurial, sustainable and global spirit. Entrepreneurial, sustainable and global mindsets are seen as cross-cutting themes in our programme portfolio and the mindsets are embedded in the teaching methods employed throughout the course portfolio (for example case exercises related to sustainability).

In accordance with LUT and LBM strategies, the objective is that all students will acquire

- Strong analytical skills
- Up-to-date substance knowledge
- Key managerial skills
- Research-based problem solving skills

We follow the values and principles of LUT set for enhancing sustainability and responsibility in research and education.

PRINCIPLE 3
- METHOD

We will create educational frameworks, materials, processes and environments that enable effective learning experiences for responsible leadership.

The students at LUT School of Business and Management graduate as Bachelors, Masters and Doctors of Science in Economics and Business Administration, as well as Bachelors, Masters and Doctors of Technology in Industrial Engineering and Management or Information Technology. In total, we have 3 Bachelor's Degree Programmes, 6 Master's Degree Programmes in Economics and Business Administration, and 7 Master's Degree Programmes in Technology.

LBM has integrated corporate responsibility and sustainability in curriculum in several ways. The master programme Master in Strategy, Innovation and Sustainability (MSIS) meets the increasing international demand for strategic and innovation management professionals, who understand how sustainability issues create both challenges and opportunities for value creation. Several courses focusing on sustainability are offered in other programmes as well. We have also evaluated our education regarding sustainability and responsibility. The internal audit of "Sustainability in the education of LBM" was executed in 2016. The person in charge of auditing was the LUT Quality Manager and interviews involved both faculty and students.

THE MASTER'S PROGRAMME IN STRATEGY, INNOVATION AND SUSTAINABILITY (MSIS)

Doing business in a more sustainable way is becoming increasingly relevant in today's society. Thus, balancing economic, environmental and social sustainability is one of the major drivers of companies' strategy and innovation initiatives. LUT School of Business and Management focuses on these aspects throughout its programme portfolio, and particularly in the MSIS programme.

The Master's Programme in Strategy, Innovation and Sustainability (MSIS) is a two-year programme, focusing on the intersection of strategic management, sustainability and innovation. MSIS students develop an understanding of the modern business environment where economic value needs to be created in a way that simultaneously creates value to the entire society in a responsible manner. After completing the studies, graduates will understand how sustainability issues create both challenges and opportunities for innovative value creation. During the studies, they also learn what links sustainability and innovation. The focus of the programme is on close cooperation between business education and the business community, integrating knowledge and best practice. The intended learning outcomes of MSIS are:

- to be able to analyse managerial problems and make strategic decisions related to innovations
- to be able to demonstrate analytical business skills
- to be able to apply conceptual tools to concrete business challenges
- to be able to utilise intercultural competences
- to be able to conduct an independent scientific research project, and report and present it professionally
- to be able to adopt a global, innovative, and sustainability-oriented mindset

The programme includes core studies, specialisation studies, minor studies and language studies, like all masters programmes at LBM.

Core studies (48 ECTS credits) include courses on strategic management, technology and innovation management, sustainability, corporate responsibility and business ethics. The obligatory courses include courses such as:

- **Empirical Strategy Research:** This is a research focused course, where the students gain a deep understanding of the state of the art, relevant theoretical perspectives and empirical research in strategic management. Each academic year four topics are discussed in depth, and in 2016-17 we focused on strategic investment in renewable energy, and the linkages between CSR and financial performance, among other topics. During the course, the students conduct an empirical study in teams of three or four students, and about 50 % of the students' group work topics are related to CSR, social and sustainable entrepreneurship, or climate change. Each year, LUT invests thousands of euros in databases such as CDP and CSR Hub in order to enable our students to access sustainability- related data for their coursework.
- **Introduction to Sustainability:** This course introduces students to different sustainability challenges that our world is facing as a consequence of human activity and natural causes. The idea is to learn and understand these sustainability challenges and their interconnectedness, and find out how we could move or transition towards a more sustainable world.

- **Sustainable Strategy and Business Ethics:** This course concentrates on the topical phenomena and concepts related to the creation and development of sustainable strategy, shared value creation and business ethics in organisations. The concepts will be investigated both from the viewpoints of academic research and practical relevance. Students will learn to discuss and synthesize the recent literature, examine the links of contemporary topics to previous research and assess the practical relevance of the issues through concrete examples.

Specialisation studies (42 ECTS credits) include the Master's thesis and seminar, and two obligatory courses:

- **Project Course on Sustainable Business:** The course is designed around an independent research project conducted for a chosen case company. Students are free to choose the case company from Finland or internationally, and they will receive help in this process if needed. The project involves theory-based work, data collection and analysis, and the creation of concrete solutions for different aspects of sustainable business for the case company. During the course, different frameworks and tools regarding sustainable business are introduced and utilized to analyse the case companies.
- **Contemporary Issues in Strategic Management and Innovation:** The course utilizes student-driven content creation in the form of online blogging and discussion. The specific content is based on current topics of strategic management and innovation, such as sustainable strategy, corporate responsibility, crowdsourcing, crowdfunding, open innovation, business model innovation, and business and innovation ecosystems.

The MSIS programme also offers students the opportunity for double degree studies with two partner universities in Russia.

In addition, students from the MSIS programme (or any other Master's programme), can choose to study a **sustainability minor** which includes courses also from the other two schools of LUT, (School of Engineering Science and School of Energy Systems). This provides a multidisciplinary view on how sustainability can be achieved in the interface of business and technology.

LUT SUSTAINABILITY MINOR (24 ECTS)

The three Schools of LUT (LBM, School of Engineering Science, and School of Energy Systems) offer a joint multi-disciplinary Sustainability minor (24 ECTS) that consists of courses from different schools and creates a comprehensive understanding to sustainability from different viewpoints, including courses, for example, about sustainable strategy and business ethics, bioenergy, and cleaner technologies and markets. The Sustainability Minor provides for students a multidisciplinary view on how sustainability can be achieved in the interface of business and technology.

SUSTAINABLE GLOBAL SOURCING (6 ECTS), MASTER'S PROGRAMME IN SUPPLY MANAGEMENT (MSM)

The course of "Sustainable Global Sourcing" is an excellent example of sustainability-related course outside the MSIS Programme. This course is a part of the curriculum on the Master's Programme in Supply Management (MSM). The MSM programme offers the course Sustainable Global Sourcing for the 1st year master's students. The aim of the course is to familiarize students with the strategic planning of global sourcing and the management of global supply networks and the execution of supply strategies in globally active firms. The core of the course is sustainability in global supply networks and the transparency of supply chains. Sustainability is the central theme throughout the course studies. Sustainability and responsible business practices are taught by utilizing real life cases. The students work in teams to solve case problems and also prepare a presentation for other teams to show what they have learned from the case. After taking the course, students are able to recognize the opportunities of sustainable business in global supply chains but also the risks and challenges of global sourcing, for example, in outsourcing and sub-contracting technology and production transfer contexts. The teaching methods vary from interactive lectures with company speakers, seminars and presentations of group assignments to written reports and independent reading assignments.

PRINCIPLE 4
- RESEARCH

We will engage in conceptual and empirical research that advances our understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value.

LUT has set ethical sustainability as the starting point for all its scientific activity regardless of the field. Research that follows good scientific practices is ethically sound and reliable, and its results are credible. The responsible conduct of research is also an important part of managing the quality of the university's scientific research. We follow the guidelines for the responsible conduct of research of the Finnish Advisory Board for Research Integrity.

At LBM we have defined three strategic key research topics in which we aim to achieve remarkable results by the extensive expertise of our faculty:

INNOVATION AND SUSTAINABLE VALUE CREATION

We study factors that enable the growth, renewal and internationalisation of businesses in an economically, ecologically and socially sustainable way. These factors lead to sustainable value creation. We see innovation as the key source of value creation. Research in the field has long-standing traditions at LUT, and it covers different innovations and innovation methods, including product and service innovations, business innovations, innovation systems and networks, and new ways to co-create and utilise knowledge. The research combines expertise in business and industrial engineering and management with research in clean energy and the circular economy.

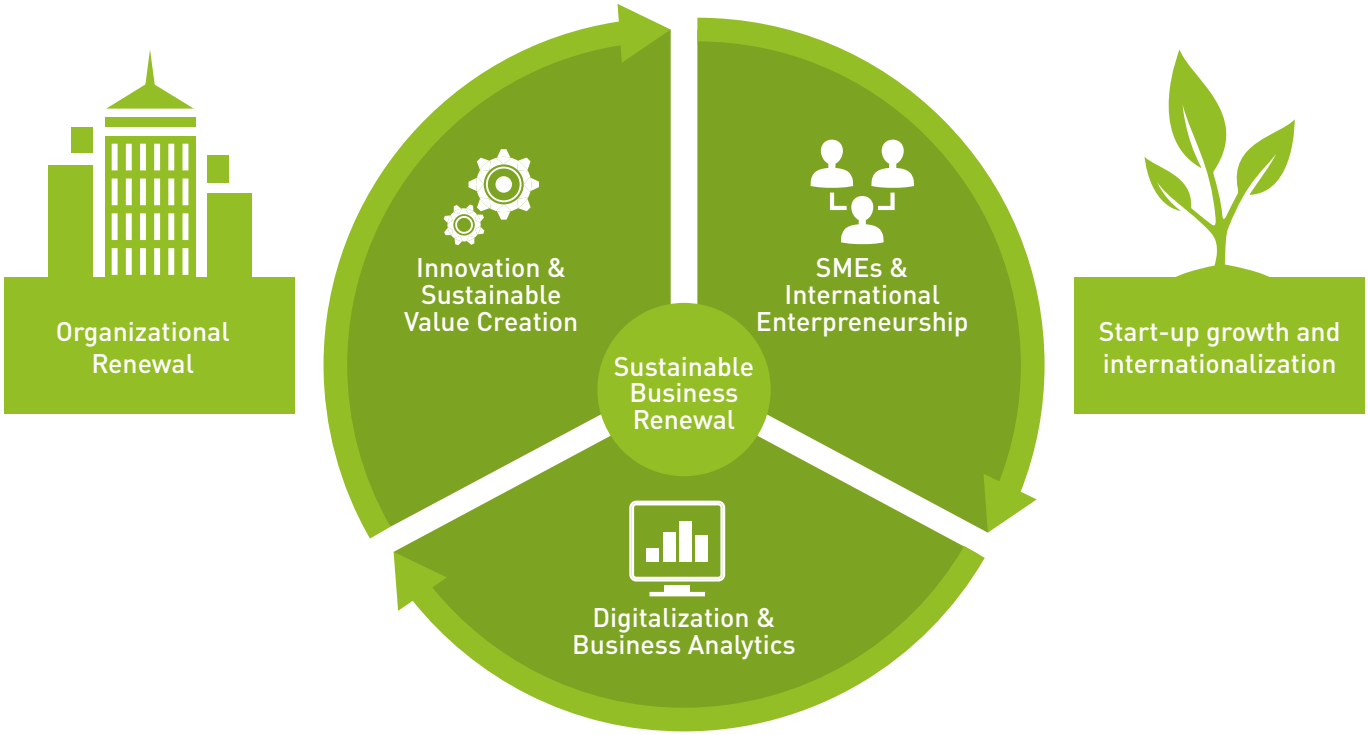
SMEs AND INTERNATIONAL ENTREPRENEURSHIP

Our research in this field focuses on international entrepreneurship, social entrepreneurship, entrepreneurship education, and different forms of ownership. Research into entrepreneurship and SMEs has been developed systematically at LUT for 15 years. We also specialise in research on the special characteristics of business in Russia. The research brings together experts in business and industrial engineering and management.

BUSINESS ANALYTICS AND DIGITALISATION

Significant changes in the digitalisation of business and human-centred software require highly developed theories for understanding and anticipating changes. Our research focuses on the technologies that these changes demand, as well as on the interaction of technology and humans, and on extensive systemic impacts. We study sustainable business related to digitalisation and the opportunities of new, entrepreneurial business, and we model the development of the profitability of business activities. Digital technologies and services develop in interaction and mutually affect each other. We study these issues from the perspectives of software development, behavioural research, usability, and service development. In addition, we research digital transformation from the viewpoint of strategy research in certain industries, media, and the public sector. In our research related to use of business analytics in digitalising business environments we employ especially intelligent systems, machine learning, simulation methods, and fuzzy logic in the development of analysis and decision-making methods that support business. We are Finland's leading expert in fuzzy logic and soft computing. Our activity is strongly cross-disciplinary and highlights the university's in-house collaboration in applied mathematics, technology and business. We typically apply the methods we develop to problems in our strategic focus areas and to business economics problems in general.

SUSTAINABLE BUSINESS RENEWAL



THE LBM SUSTAINABILITY SEMINAR

The LBM Sustainability seminar, led by Associate Professor Katrina Lintukangas, is an informal and open meeting for LBM researchers who share a common interest in examining corporate responsibility issues and sustainability in business. The seminar provides a forum where the researchers, professors, young scholars and doctoral students can discuss their research in a friendly and co-operative atmosphere. In the seminar, people can share their ideas or present research proposals, they can give information about on-going projects and highlight new findings in the field. It is also an outstanding opportunity for doctoral students and young scholars for networking around the common topic from several viewpoints.

The seminar is arranged three to four times per year. In the seminar visiting scholars are often invited to give presentations and share their ideas and comments regarding the research papers of LBM researchers. For example, in 2016 Professor Ajay Kohli from Georgia Institute of Technology (USA) and Associate Professor Nancy Bocken from Delft University of Technology (the Netherlands) participated our seminar. In 2017, Professor Zhaohui Wu from Oregon State University (USA) gave a key-note speech and participated in the workshop of the seminar. The ultimate target of the seminar is to aggregate the sustainability research of LBM to meet the strategic objectives of LUT.

WHO ARE WE ?

LBM RESEARCHERS FROM THE FIELD OF SUSTAINABILITY

Our faculty explores sustainability and responsibility from various research perspectives in different research fields. We have several researchers and research teams working on the issue and they publish their research findings and contributions in top journals. Here are some highlights of the research profiles of some of our faculty members:

PAAVO RITALA – PROFESSOR

Professor of Strategy and Innovation, whose teaching focuses on contemporary issues in strategy and innovation, as well as sustainable strategy and business ethics. He has published widely on these topics, including recent contributions to business model innovations in a sustainability context, as well as other aspects of sustainable value creation and strategizing. He is also closely involved with business practice through company-funded research projects, executive and professional education programmes, and also acts in speaker and advisory roles.

KAISU PUUMALAINEN – PROFESSOR

Professor of Technology Research, quantitative methods. Her teaching focuses on the application of quantitative methods in strategy research. She has published extensively on the topics of innovation, sustainability, entrepreneurship, and international business. Her recent research projects have focused on corporate social responsibility, social entrepreneurship, and sustainable entrepreneurship opportunities.

SATU PÄTÄRI – PROFESSOR

Professor of Strategy Research, and Sustainable Value Creation. Her main research interests include analysing and explaining the sources of sustained competitive advantage at firm level and increasing understanding of new business opportunities and their value-creation potential. This includes, for example, studying firms' sustainability and CR practices and the link between CR and corporate performance. In an ongoing Academy of Finland funded research project, the aim is to orchestrate research into end-user driven systemic development and promote the growth of a sustainable and diversified forest-based bio-economy.

ASTA SALMI – PROFESSOR

Professor of International Business: Strategic management of networks. Her research focuses on the dynamics of international business networks, cross-sectoral collaboration, environmental issues in business networks, and sustainability in supply chains. She is Senior Associate Editor of Journal of Purchasing and Supply Management, and she has published in academic journals, such as the Academy of Management Review, Journal of Management Studies, International Business Review, and Industrial Marketing Management.

PASI SYRJÄ – PROFESSOR

Professor in accounting whose primary areas of research interests are financial and management accounting in SMEs, social value creation, social entrepreneurship and sustainable business models. He has published c. 20 articles in academic journals and has run three external funded research projects with the total budget of c. 1.5 million Euros.

ANNI-KAISA KÄHKÖNEN – ASSOCIATE PROFESSOR

Associate Professor of Supply Management. Her current areas of interest include value creation and sustainability in supply management, and sustainable supply chains. She has studied also strategic supply management from the viewpoint of supply strategies and supplier relationships. She has published several journal articles, for example, in the journals such as Supply Chain Management: An International Journal, the Journal of Cleaner Production, and the Journal of Purchasing and Supply Management. She has also made a lot of company collaboration in research projects of supply management.

KATRINA LINTUKANGAS – ASSOCIATE PROFESSOR

Academic Director of Master of Supply Management Programme (MSM). She has strong experience in educating sustainable supply management to master's and bachelor's students. Her research focuses on sustainable global sourcing and supply management, supplier relationship management and supply chains. She has published several articles in scientific journals, such as the Journal of Cleaner Production, Journal of Purchasing and Supply Management, the International Journal of Production Economics and Supply Chain Management: An International Journal. She has been project manager in three externally funded research projects examining sustainability, responsible purchasing, risks in supply chains and supply management capability in Finnish companies.

HELENA SJÖGRÉN – ASSOCIATE PROFESSOR

Associate Professor whose primary areas of research interests are sustainable business models, social impact reporting and accounting, social value creation, social entrepreneurship and management accounting in SMEs. She has published c. 20 articles in academic journals.

ANNI TUPPURA – ASSOCIATE PROFESSOR

Associate Professor of Strategy Research. Her research focuses on sustainability and responsibility issues in business in general, and specifically in the context of forest based business. Currently, she is interested in the possible conflicts related to sustainable business and society, and the economic geography of sustainability.

MAIJA HUJALA – POST-DOCTORAL RESEARCHER

Her research interests are related to sustainable energy transition and include, for example, citizens or communities that both consume and produce energy, and the public acceptance of wind power and other renewable energy technologies. She is experienced in interdisciplinary research. One of her recent publications is "The emergence and diffusion of grassroots energy innovations: Building and interdisciplinary approach", published in the Journal of Cleaner Production.

WHAT DO WE DO?

LBM RESEARCH PROJECTS FROM THE FIELD OF SUSTAINABILITY

LBM has long traditions in company collaboration and collaborative research projects help to ensure the practical relevance of LBM research among corporate stakeholders. We have extensive numbers of research projects yearly and below are few examples of research projects exploring sustainability from different perspectives:

SUSTAINABLE AND INNOVATIVE SUPPLY MANAGEMENT AS A SOURCE OF COMPETITIVE ADVANTAGE (VINKKI)

The research team led by Professor Jukka Hallikas and Associate Professors Anni-Kaisa Kähkönen and Katrina Lintukangas focused on sustainable supply management and innovativeness in supply management. The increasing requirements for ensuring sustainability create a growing need to develop innovativeness both in supply management and supply markets. By developing new innovations suppliers are able to answer constantly changing demand. Sustainability can be seen as a driver for innovation whilst innovativeness is key for achieving competitive advantage. Therefore, the project combined the perspectives of sustainability and innovation and explored the issues from the viewpoint of supply management. Nine companies and public organizations were the main partners in the project.

The results show that sustainable supply management influences a company's overall sustainability and today the focus of sustainability cannot be limited just to an organizational-level view, but the entire supply chain or network must be considered and secured. The results show that organizations are only as sustainable as their supply chains and networks. We also found that a sustainability-related risk management capability is an internal dynamic capability of a company that integrates its capabilities to effectively manage existing and potential sustainability-related risks from suppliers to satisfy stakeholders' expectations. A national survey was conducted in this project to form an understanding of the state of sustainable supply management and the risks and practices related to sustainable supply management in the Finnish manufacturing companies. Thus, the project provided new information not only for the project companies but also for other Finnish companies and public organizations.

BOOSTING THE INTERNATIONALIZATION OF CLEANTECH SMEs (BICS)

The research team headed by Professor Sami Saarenketo analysed the international growth of Finnish SMEs in the cleantech sector. The project has sought to accelerate the internationalization and growth of cleantech SMEs by developing new value propositions, business models and strategies that help enhance the achievement of growth targets. In addition to the six official partner companies, the research conducted in the project also takes into account a national level perspective more broadly by listening to the views and experiences of cleantech SMEs in general, including the member companies of Finpro and Cleantech Finland.

The results gained so far highlight several interesting implications. One of these is the importance of being able to perceive entrepreneurial opportunities arising from national, regional and global regulative changes and the importance of being agile in seizing the arising opportunities in order to internationalize. For instance, due to regulatory changes several of the studied companies have had to find ways to achieve rapid entry to foreign markets they have very little knowledge of – a phenomenon not clearly explained by prevalent scientific theories. In addition, their international growth strategies have often been tightly intertwined with the strategies of national institutional network partners, suggesting a phenomenon of internationalization borne of the local entrepreneurial and institutional ecosystem. These results further emphasize the role of supporting organizations and funding in successful entrepreneurial internationalization. Finally, the dynamics of business model change and seizing of international opportunities, another area where the extant scientific research is scarce have been illustrated, with the results suggesting that a defined business model frames the opportunities for internationalization and growth among SMEs.


6

ORCHESTRATING A SUSTAINABLE USER-DRIVEN BIO-ECONOMY: POLICY, TRANSFORMATION AND BENEFITS (ORBIT)

A competitive bio-economy needs to encompass both tangible components associated with bio-resources, but also intangible components in terms of the ability to produce and process knowledge to ensure adaptation in the changing global economic context and sustainability challenges. From this perspective, there is a need to identify sustainable business strategies and practices of bio-economy networks in Finland and globally, and throughout this, enhance the renewal of the smart, sustainable business to create sustainability leadership and to secure competitiveness as well as consumer acceptance in international markets. These issues have been the key focus of the project led by Professors Kaisu Puumalainen and Satu Pätäri, funded by the Academy of Finland.

The purpose of this project is to orchestrate research into end-user driven systemic development and promote the growth of a sustainable and diversified forest-based bio-economy. With the share of the forest sector as high as 50 % in national bio-economy output in Finland, our core focus is on the forest-based bio-economy. However, with sectoral boundaries blurring in the bio-economy via policy drivers and substitution effects in the markets, new forms of competition and co-operation emerge between established and new business actors from, e.g., forest, chemical, food, biotechnical and construction sectors. Thus, our research is highly relevant to the interlinkages across a range of renewable and non-renewable resource-based activities in society, contributing to making Finland's position a world leader in the sustainable bio-economy. The result is a game-changing bio-economy strategy, which outlines how the traditional bulk-producing forest sector will expand increasingly to consumer markets with high value-added biomaterial-based products.

HIGH-SPEED HERMETIC TURBO GENERATOR CONCEPT TO CONVERT THE WASTE HEAT, BIOMASS, AND MUNICIPAL WASTE STREAMS INTO ELECTRICAL ENERGY (HERGE)

HERGE is a collaborative project between different schools of LUT and the research team of LBM is led by Associate Professors Mikko Pynnönen and Mika Immonen. The targets of the research project are based on the fact that electricity consumption is increasing worldwide due to the constant offset from other power sources towards electricity. At the same time, societies produce considerable amounts of different types of energy flows as waste which are widely under-utilized at present. Increasing amounts of solar and wind energy call for new solutions to enable uninterrupted power distribution. The need to exploit waste energy flows and to compensate for the volatility of the wind and solar power, drives the emergence of efficient technology which can be used on a grand scale - the hermetic turbo generator (HERGE) for instance. HERGE increases capacity and flexibility of combined heat and power (CHP) plants where energy is wasted as a results of demand changes. The innovation is intertwined with compact and integrated high-speed generator technology which can be connected to any existing process utilizing steam power. The technology itself has the following three novel characteristics – 1) HERGE is a plug- and play solution, 2) HERGE does not require additional water recycling and 3) HERGE is an oil-free solution based on water or magnetic bearings.

The goal of LBM's research was to analyse the product architecture and the business ecosystem in order to support further an innovation strategy and to recognise ecosystem entry choices. The research related to commercialization and focused on the search of for application areas, customer value, product concepts, suppliers related to product and the market potential for innovation. The business development goal of the project was engaged into recognition of the competitive position of potential start-up firms and the requisite complementary product technologies and services.

ORGANIC CO-CREATIVE MILL AND ECOSYSTEM

The research project led by Professor Pasi Syrjä and Associate Professor Helena Sjögrén focuses on business model development and innovation for frugal circumstances in India. The purpose of the research project is to analyse with the field study method how sustainable business models are implemented in the case companies and how a consortium of LUT and Finnish and Indian firms can develop frugal innovations through a sustainable business model for resource scarce markets.

Besides the practical innovations, the business consortium is developing a sustainable business model in order to create shared value in local communities. The consortium aims to have a social impact in local communities through business action, therefore the principles of shared value are of key strategic importance for the consortium in the innovation and business model developing processes. By implementing the principles of shared value, the consortium tries to decrease the possibility of project failure. The proposition of creating shared value is expected to help the consortium to operate in markets where social sensitivity is high. For the consortium, a shared value proposition means that different value components (e.g. economic, social and/or other components) are inseparable, meaning that economic value cannot be created without social value and vice versa. On the other hand, a business model integrated with a shared value proposition may provide a competitive advantage for the consortium and therefore increase generated total economic value more than can be achieved through traditional main-stream business models. Additionally, the research project will investigate how case companies will implement the sustainable business model in their business operations.

PRINCIPLES 5 AND 6
- PARTNERSHIP AND DIALOGUE

We will interact with managers of business corporations to extend our knowledge of their challenges in meeting social and environmental responsibilities and to explore jointly effective approaches to meeting these challenges.

We will facilitate and support dialog and debate among educators, students, business, government, consumers, media, civil society organisations and other interested groups and stakeholders on critical issues related to global social responsibility and sustainability.

COLLABORATION WITH COMPANIES: TEACHING

LBM has long traditions in company collaboration. Our curriculums include a wide range of elements that support corporate learning experience. Some of our courses include field projects involving empirical company data and in some courses we use company representatives in designing, outlining, and evaluating student assignments. Corporate learning is also fostered through analysis of existing real-life companies based on public information available on the Internet, academic articles and company reports, and in many of our courses we utilize case-based learning. We also have long traditions of using corporate representatives as guest lecturers in our courses.

In Finland, the Master's thesis is an important bridge between university studies and business life. The Master's thesis, accounting for 30 ETCS, is a large-scale independent project, in which students apply theoretical knowledge to analyse contemporary business issues and challenges. Most of our theses have an empirical part and are expected to produce actionable managerial recommendations and/or relevant business implications. During the course of the thesis work, most students collect data in one or many companies. Master's theses are usually commissioned by companies. In these cases, the company representatives are closely involved in setting the research questions, guiding the research the process and sometimes also evaluating the final thesis. Master's thesis project is a very common way to recruit talented university students before graduation. We have acknowledged an obvious trend of the increasing number of thesis related to sustainability and responsibility. For example, in the Master's programme of Supply Management (MSM), 35 % from the Master's thesis made in 2016 focused on sustainability (from the viewpoint of supply management or supply chain management).

LBM students have also an option to include a voluntary internship (national or international) in their degree, worth a maximum of 12 ECTS, of which 2-6 ECTS are acceptable for a Master's degree core studies; two weeks of internship correspond to one credit. LBM has actively emphasized the importance of internships as a key opportunity to gain real-life corporate experience.

COLLABORATION WITH COMPANIES: RESEARCH

Collaborative research projects in particular are a major source of corporate linkage, and help to ensure the practical relevance of LBM research among corporate stakeholders. Research projects involve addressing major issues that the participating companies, broader industries, and society at large are dealing with, and include cooperating, data collection, and workshops with project firms, their customers and network partners, as well as benchmark companies from other industries. In Principle 4 'Research', different examples of project collaboration were described.

COLLABORATION WITH COMPANIES: MANAGEMENT AND DEVELOPMENT OF LBM

Corporate collaboration is also taken as a part of the management of LUT and LBM. LUT has a Corporate Advisory Board that supports the academic mission and societal impact of the university by bearing a consultative role in close contact with the university administration. LUT Advisory Board consists of external stakeholders with experience and competences on the LUT strategic focus areas. The chair of the advisory board is a Professor of Practice of LUT. Some of the board members have extensive knowledge and are highly experienced managers in the field sustainability and corporate responsibility. We have, for example, former Vice President on Corporate Responsibility of Finnish company Nokia and several company managers from energy companies dealing with sustainable and responsible business.

FOSTERING THE DIALOGUE WITH COMPANIES – LBM STRATEGY SEMINAR "Renew or Die – Strategy Seminar on Sustainable Business Renewal"

LBM has organized a Strategy Seminar on Sustainable Business Renewal on April 2017. The seminar was targeted for companies, researchers, students, and other stakeholders interested to develop themselves and their businesses in the sustainable business.

LBM STRATEGY SEMINAR – WHAT WE OFFERED FOR COMPANIES?
The world is changing. Sustainable business requires the improvement of economic, environmental and social well-being. Companies and organisations are key actors in this development. Successful companies of the future must be able to identify business opportunities, the need for investments and expertise, and essential collaborative networks in this new world. Join the pioneers and solve the challenges of sustainable business renewal together with us. You will acquire tools to help your company survive changes and come out on top.

Indeed, many joined us and we offered an inspiring seminar for 120 participants.

LBM STRATEGY SEMINAR – HOW?
The seminar was targeted for companies, researchers and other stakeholder interested in sustainability. The seminar programme included an academic key-note speech by Associate Professor Nancy Bocken from Delft University of Technology, Netherlands, and several company speeches from different kinds of companies struggling with the challenges of sustainability but who also have exploited the opportunities offered by it. The seminar was concluded by the panel discussion of "Strategic sustainability and sustainable strategy – How should companies adopt changes and ensure long term vitality" in which different company representatives and academic participants discussed and shared their insights about the issue. The interaction between LBM researchers and companies was also boosted with poster presentations of LBM research projects.

REFLECTION: COLLABORATION WITH COMPANIES

It can be concluded that, the societal interaction and impact of LUT are mainly implemented through close collaboration with companies. We create solutions for society and industries. The basis lies on a strong entrepreneurship ecosystem and a process for the commercialisation of innovations. The university's own investment company and accelerator Green Campus Innovations Ltd. supports the commercialisation of our research results. We are entrepreneurial, and our aim is for entrepreneurship to be a cross-cutting theme in all university activities by the year 2020, and for us to be the first Finnish university to meet the OECD criteria for an entrepreneurial university.

FUTURE OBJECTIVES

Lappeenranta University of Technology has set targets and objectives for its actions from the viewpoint of sustainability and responsibility. At LBM we follow these targets and our future objectives are the following:

- A total of 75 % of the publications in the LUT research database will involve sustainable development by 2020.
- A total of 100 % of LUT's new students will undergo an orientation related to environmental issues. A Green Campus briefing is included in the freshman orientation.
- Transparent criteria for courses meeting the definition of sustainable development will be developed and adopted to support curriculum.
- In autumn 2018, a target will be set for the relative share of courses meeting the definition of sustainable development.
- LUT's graduates at the Bachelor's, Master's and doctoral levels will assess that their sustainable development expertise has increased.
- The share of Master's theses dealing with sustainable development is monitored.
- The at LBM, the Master's Programme in Strategy, Innovation and Sustainability (MSIS) will be developed towards more sustainability-focused curriculum.
- We will increase the number of our research projects around the theme of sustainability.
- We will increase the amount of publications in the top journals, especially related to sustainability and responsibility.

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