Sustainability report

2023 | Environmental unit, SLU

2024-11-08

SLU conducts education, research and environmental monitoring and assessment in collaboration with society at large. Through our focus on the interaction between humans, animals and ecosystems and the responsible use of natural resources, we contribute to sustainable societal development and good living conditions on our planet.

Mission statement

Sustainability report 2023
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SLU's vice-chancellor Maria Knutson Wedel. Photo: Jenny Svennås-Gillner, SLU

Greetings from vice-chancellor

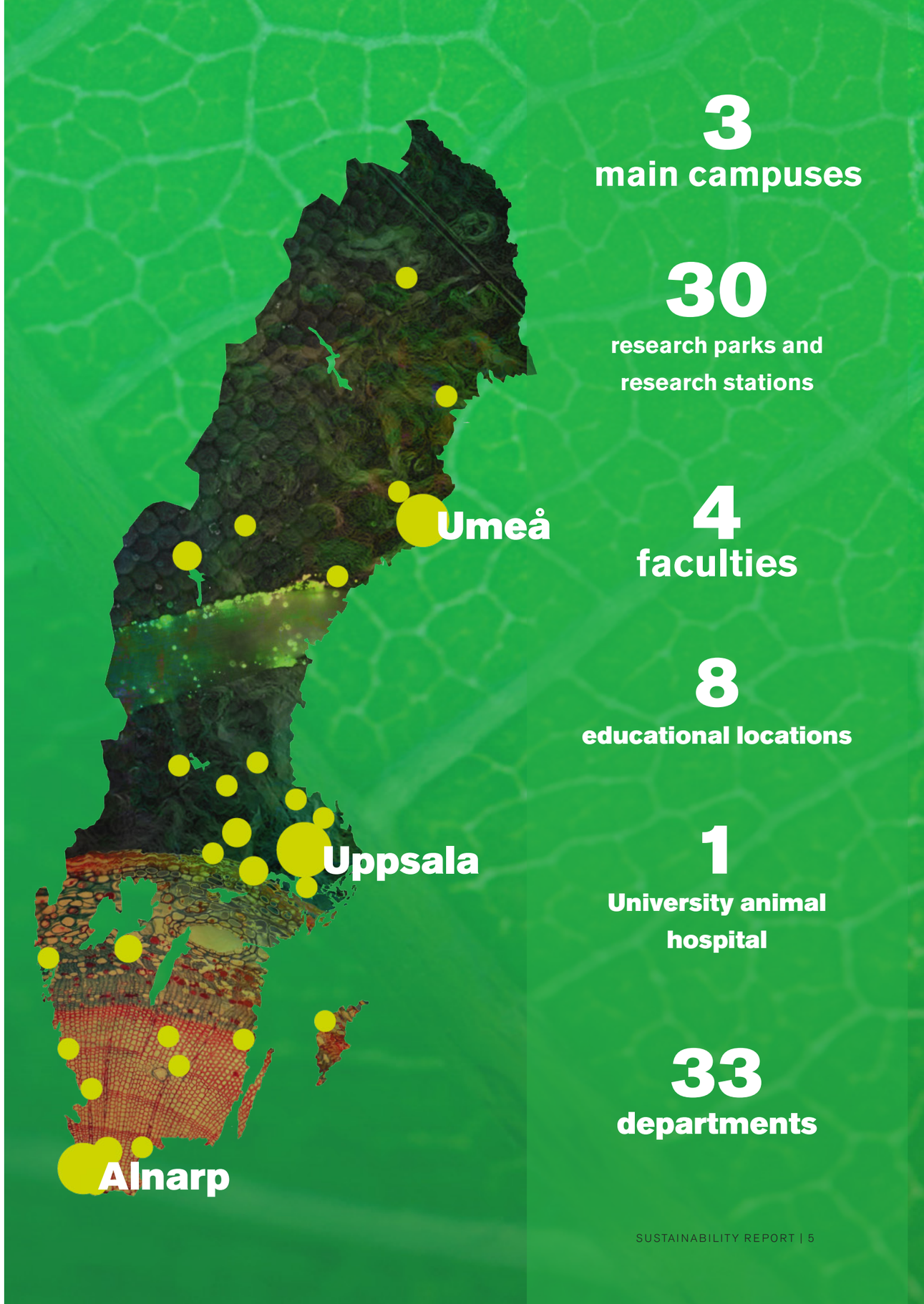
Today, I read that scientists estimate that the world is facing a climate change of plus three degrees Celsius. We are already living in an era of change, an era that the author Amitav Ghosh calls *catastrophozoic*. Yet, there is hope that we can have an impact on the situation through our activities – both directly and indirectly. For many of us at SLU, the higher probability of extreme weather we face today is deeply embedded in our work. We can make a difference!

At SLU, we took several important steps in 2023 to meet the UN's Sustainable Development Goals (SDGs). By identifying the next steps for sustainability in our strategy, we challenge ourselves to create and teach about new knowledge to meet challenges linked to society's resilience to stresses arising from climate change, pandemics and conflicts. Minimising the environmental footprint of our own activities is also an important element.

To succeed, we need to shift perspectives and collaborate on knowledge and innovation relating to ecosystems, life cycles, digital development, food chains and much more. With this in mind, it is encouraging to see that the activities of 2023 exhibit a diversity that helps SLU to live up to its responsibilities, while helping us progress towards our vision of SLU playing a key role in the development of sustainable living, grounded in science and education. Much is happening in all three of our focus areas – *SLU's next steps for sustainable development, SLU in the digital society* and *One SLU.*

When I look at SLU from the perspective of the SDGs, I do so with pride in everything that we, as a university, have achieved over the years. Much work remains to be done to achieve the SDGs by 2030, but I am hopeful that, with joint efforts and both local and global collaboration, we can move towards a more sustainable future.

Maria Knutson Wedel
Vice-chancellor, Swedish University of Agricultural Sciences



SLU in numbers

4207
full year students

3223
full year employees

190
professors

47
educational programmes

575
doctoral students

Students at the Faculty of Forest Sciences.
Photo: Malin Grönborg

Chair Jens Mårtensson (right) and deputy chair Einar Nordgren (left).
Photo: Agnes Bondesson, SLU

Greetings from Sluss

Through the seven student unions and the umbrella organisation Sluss (collaborative body for the student unions at SLU), students at SLU have good opportunities to influence decisions made at the university. Over the years, the student unions have played an active role in reflecting student interests and the wishes that the land-based sector has for the future. Their wide-ranging activities strengthen student development, foster cross-disciplinary cooperation and create new paths for future career opportunities.

Student union activities open doors to new contacts within and between different degree programmes. These networks become valuable resources for the students, SLU and Sweden in promoting a sustainable society. With a focus on both current and future students, the student unions work actively to promote on-campus student housing, ensure that examinations were conducted in a legally compliant manner, and to help give all new students a good start to their studies through joint kick-off weeks.

Thanks to collaborations with academia and industry, the student unions have created exciting new prospects that will maintain Sweden's competitive power in the green sector. The collaborations and results are particularly important, as what we do today has a major impact many years ahead. During their studies, students gain knowledge and experience while establishing networks. They can then use these tools in their endeavours to solve future challenges through joint efforts with academia and industry.

Jens Mårtensson and Einar Nordgren
Chair and deputy chair for Sluss – Collaborative body for the student unions at SLU

About SLU

SLU is an internationally renowned university specialising in research, education and environmental monitoring and assessment in the sciences for sustainable living. Its main campuses are in Alnarp, Umeå and Uppsala, but activities are also conducted at research stations, research parks and educational locations throughout Sweden. SLU brings people together who have different perspectives, but share a common goal – to create the best conditions for a sustainable, thriving and better world.

Research

Research at SLU is characterised by excellence, with research in the natural sciences dominating in scope, but the humanities and social sciences making up a growing proportion. Much of the research benefits from an interdisciplinary approach. Strong basic research is combined with more applied studies to solve concrete problems, locally and globally. SLU is at the very top of international rankings in several areas, including forestry, ecology, agriculture, veterinary medicine, and animal and dairy science. The research infrastructure is extensive and very diverse in nature, ranging from databases to advanced analytical instruments, biotrons, greenhouses, parks, forests, farms, animal stables and a research vessel.

Environmental monitoring and assessment

SLU is the only university in Sweden with a mandate from the Government to conduct environmental monitoring and assessment. This means that SLU provides managing authorities, companies, municipalities and the public with knowledge and data to achieve the SDGs. SLU's environmental monitoring and assessment collects information on the environment, analyses its current state and any developments, and produces data for the conservation and sustainable use of natural resources. All types of natural, cultivated and built environments are monitored within the environmental monitoring and assessment. The results are openly available and contribute to the follow-up of Swedish environmental objectives, EU reports and international conventions.

Education

SLU offers some fifty degree programmes in the natural sciences, social sciences, engineering and humanities, and educates students who are in demand on the labour market. Many of SLU's students get jobs right after graduation. SLU has several uniqe programmes that are only available through SLU, and offers a large number of international Master's programmes. More than 60 per cent of the Master's students come from countries other than Sweden, with some fifty different countries represented.

The environmental work at SLU is a long-term process based on continuous improvement and is carried out in accordance with the environmental management standards ISO 14001:2015 and EMAS. This means that environmental issues are dealt with in a structured manner and that the environmental performance of the organisation is monitored. Both the University Administration and each individual faculty has its own environmental management team, with environmental coordinators and representatives.

SLU and the 2030 Agenda

SLU contributes to the 2030 Agenda by providing knowledge and capacity to achieve the SDGs. The research, education and environmental monitoring and assessment are all part of the university's endeavour to promote sustainable development.

In addition to the research, education and environmental monitoring and assessment, the SDGs also permeate the rest of the university's activities and are included in both the strategy and policy documents.

- SLU's strategy for 2021–2025 emphasises sustainable development in the mission statement and vision, and gives it additional weight through the focus area 'SLU's next steps for sustainable development', which includes environmental, social and economic sustainability.
- SLU has had a policy in place for its global contribution to the 2030 Agenda since 2019.
- SLU's vision is to be a climate-neutral university by 2027.
- SLU has overarching environmental objectives in respect of energy use, business travel, purchasing, education and environmental assessment.
- SLU works continuously with gender equality issues, including through the focus areas 'Equal career paths' and 'Equal education'.
- SLU contributes to the SDGs through collaboration with researchers, universities and other actors both locally and globally, resulting in new knowledge, increased capacity and interplay between research, policy and practice.

Campus Ultuna in Uppsala. Photo: Jenny Svennås-Gillner, SLU

About the report

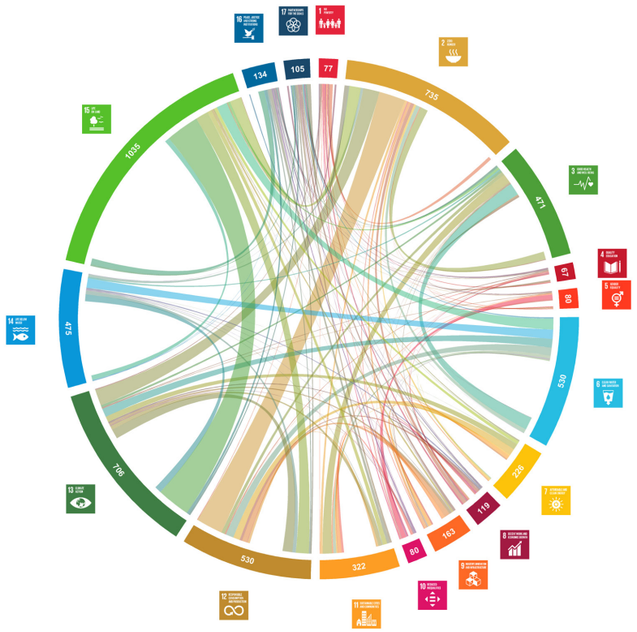


Illustration showing the number of publications related to the SDGs in the outer circle. The lines show synergies between the different SDGs. Visualisation: Ylva Toljander

This report highlights some of the projects and activities that SLU worked with in 2023. The examples listed under each goal are complex and often relate to several of the SDGs, not just the goal they are reported under. More information about what is happening at the university and how SLU contributes to the SDGs can be found on the website www.slu.se.

The activities and projects reported have been identified together with faculties, departments and collaborative centres. Some of the texts are taken from SLU's Annual Report 2023, SLU's Environmental Report 2023 and SLU's website. Some of the goals in the report are described in more detail, while others are described more briefly. Greater focus is placed on the university's stronger areas.

Publication data in the report is based on research articles published between 2019 and 2023. The link to the 2030 Agenda is primarily made by the SLU University Library through broad search strategies in Web of Science for each SDG. The results of the searches were reviewed manually to confirm the link to each goal and target. The mapping is supplemented annually through searches in other sources, as well as by SLU researchers who have the opportunity to propose relevant SDGs for their publications.

The 'Highly Cited' indicator measures the proportion of each goal's publications that are among the ten per cent most cited in the world. The indicator is field-normalised, i.e. the publications analysed are compared with other publications with similar conditions, such as the same subject area, the same year of publication and the same document type.

An Eye for Science

The photo exhibition 'An Eye for Science' was created to explore and showcase the breadth of SLU's activities. The exhibition presents eleven images, each with a fascinating story. Together, these images capture elements of SLU's multifaceted work. In 2023, the exhibition was showcased at several major events, including various visits and meetings linked to Sweden's Presidency of the Council of the EU.

Study visit by EU's rural and agricultural ministers at Lövsta agricultural research facility in Uppsala. Photo: Jenny Svennås-Gillner, SLU

Lövsta - Swedish Livestock Research Center

The Swedish Livestock Research Centre outside Uppsala is Northern Europe's most modern facility for research and education on livestock. The research centre has housing solutions suitable for both research and education on dairy cattle, pigs and poultry. The housing solutions represent technology at the forefront of development and enable quality-assured research to be carried out in animal welfare, behaviour and health, animal environment and care, building function, and sustainable and climate-smart food production.

Lövsta research facility from above. Photo: Pereric Öberg, Aerobilder

Publications: 77

Highly cited: 9%

Smallholder farmers in Zimbabwe have harvested edible insects, a sustainable protein source that can reduce both poverty and hunger. Photo: Robert Musundire

SDG 1, 'No Poverty', focuses on ending poverty in all its forms and giving all people the opportunity to live a secure life. Today, more than a billion people live in poverty, many of them children. SLU is working to reduce poverty through both national and international research. A strong focus on collaboration with partners enables SLU to contribute with a great deal of knowledge in this area, often closely linked to SDG 2 – Zero Hunger, and SDG 5 – Gender Equality.

Research

Intercropping yields give positive results on Zambian smallholder farms

Sustainable intensification practices adapted to smallholder farmers are needed to meet the challenges of future climate change and declining crop yields in Southern Africa. Maize-legume intercropping may be crucial in this endeavour. Results indicate that such cropping systems can improve food and nutrition security and increase gross farm income.

Production and trade of edible insects in Zimbabwe

The production of edible insects has developed into a thriving industry that not only contributes to food security and increases incomes, but also improves the prospects for future generations. By linking research to policy and practice, one of the projects in the AgriFoSe2030 programme (see SDG 17), in collaboration with Chinhoyi University, Zimbabwe, has improved the prospects for a stable income for many people.

African swine fever

SLU and the Swedish Veterinary Agency (SVA) have been working for many years to reduce the risk of African swine fever being spread in Uganda and elsewhere. Small-scale pig production is common in Uganda, and African swine fever is spread through human activities along the smallholder value chain. The spread of the disease affects production and thereby also the income of producers and other stakeholders. In collaboration with SVA, researchers at SLU have identified costs, culture and traditions as factors that hamper measures to reduce the spread of the disease and create a more stable production.

Pathways to youth livelihoods in Southern Africa

Efforts to stimulate rural development in the Global South often focus on transforming the lives of individuals to escape poverty. A study in Malawi and Lesotho exploring the experiences of young people found that their life trajectories often go in circles. They may have to drop out of school because they cannot afford the fees, resulting in them having to start again later in life. Life paths that do not move forward were

also identified in the working world, marriage and agriculture. To create better conditions for young people, the underlying structural issues that perpetuate poverty need to be addressed. These include corruption, poor working conditions, undemocratic governance and gender inequality.

Education

Master of Science in Agriculture Programme - Rural development

SLU offers students the opportunity to earn a Master of Science in Agriculture with focus on rural development. The role of rural areas in society and the interaction between urban and rural areas are key features of the programme, while students learn about international rural development and governance.

Sustainable forestry and land-use management in the tropics

This Master's course addresses challenges related to sustainable forestry in subtropical and tropical areas. The course covers topics such as ecology and forest management, and provides students with tools to evaluate sustainable forestry based on social, economic and biophysical conditions. A central theme is agroforestry, an important resource for people's access to income, fuel, food and timber in many parts of the world.

Smallholder farms in low- and middle-income countries are strongly affected by climate changes. Photo: Malin Planting, SLU

Several research projects at SLU are about improving animal welfare and increasing yields for more sustainable agriculture. Photo: Jenny Svennås-Gillner, SLU

Access to sufficient and nutritious food is a human right. By working towards sustainable agriculture and functioning food systems, more people can have secure access to nutritious food. This is one of the goals in which SLU is strongest, and extensive research is being conducted in agriculture and food systems, both in Sweden and globally.

Research

Pest control for more sustainable crop production

This project is studying a concept called 'push-pull'. This method aims to reduce pest pressure in crops by both repelling (pushing) and attracting (pulling) the pests away from the crops. In many cases, maize is grown together with some type of legume, which pushes pests away, while a trap crop outside the maize fields attracts the pests. The aim is to increase farmers' profitability and reduce negative impacts on biodiversity.

Sustainable fish feed made from grass protein

This project focuses on finding ways to convert biomass to produce sustainable energy products and protein feed. The project is a Swedish-Danish collaboration. SLU is contributing by investigating the use of green protein from grass and clover as feed for fish, and by evaluating whether the residual product, the fibre cake, can be used as feed for other animals.

Climate-resilient oats can tackle future climate change

Higher temperatures and changing precipitation patterns are expected to reduce both future oat production and the nutrient content of oats. In this project, researchers are investigating how oat yields can be maintained despite drought. The aim is to contribute to future breeding and modification of oats to develop varieties that can be grown sustainably and withstand the expected stresses of climate change.

Agriculture in a more extreme climate

The extreme weather of recent years, which includes droughts and heavy rainfall, has clearly demonstrated the importance of soil structure. The project examines how different farming practices affect the soil's ability to regulate water as well as the barriers and opportunities farmers face in adopting practices that benefit soil health. It also assesses the impact of changing land use.

How does livestock management affect soil carbon sequestration, species composition and grazing production?
This project investigates how livestock management in the African dry forest habitat of Miombo affects the grazing production, species composition and carbon sequestration capacity of the soil. The Miombo woodland offers resources such as pasture, fruit, firewood and timber, but is under increasing pressure from livestock and other sources. The project aims to develop ways to utilise the area for livestock while improving livelihoods, ecosystem services and socioeconomic change in a sustainable way.

Collaboration and innovation on sustainable food systems
The Mistra Food Futures research programme is led by SLU in close collaboration with RISE (Research Institutes of Sweden), Stockholm Resilience Center and the Beijer Institute at the Royal Swedish Academy of Sciences. It is a platform based on current research that promotes collaboration and innovation. Many different studies are carried out within the programme, including one presenting a framework called the Food System Sustainability House, which aims to guide the transition to more sustainable food systems.

Environmental monitoring and assessment
SLU inventories and monitors the environment in the agricultural landscape and contributes to creating an overall picture of the environmental quality of the landscape, inter alia through the national monitoring programme NILS (National Inventory of Landscapes in Sweden). The programme monitors biotopes, land use, natural values and the structure of the landscape in all habitat types across the country. Regional environmental monitoring, which maps grasslands, wetlands and small biotopes on arable land, is also part of the environmental monitoring programme for agricultural landscapes. The results are used for monitoring environmental objectives and for monitoring EU's agricultural policy.

Education
SLU has several programmes at both undergraduate and Master's level that link to SDG 2 – Zero Hunger. Agriculture is a broad field that encompasses many different aspects, which is reflected in the programmes. The programmes offered are unique to Sweden and are needed to develop sustainable food production and increase food security.

Master of Science in Agriculture Programmes
SLU educates agronomists, experts in agriculture, in five different specialisations. Agronomists play a key role in solving important societal challenges related to food and food production. Society is dependent on ensuring the long-term sustainability of its food supply, which is dependent on factors such as good animal welfare, biodiversity, access to renewable energy and a functioning rural environment. Agronomists are trained in the fields of economics, food, crop production, animals or rural development, providing them with the expertise needed to contribute to sustainable solutions.

Agricultural and Rural Management Programme
The Agriculture and Rural Management Programme focuses on sustainable agriculture and food production. Agricultural managers usually work in a supervisory position in agricultural enterprises. Sustainable food production is important for society, and a broad range of skills is needed to develop solutions. The Agricultural and Rural Management Programme provides broad knowledge for the agricultural enterprises of both today and tomorrow. The programme provides a well-rounded education that encompasses business administration, crop and animal production and related disciplines.

Sustainable Food Systems
This is an international Master's programme focusing on sustainable food systems in Sweden and globally. The programme is multifaceted and provides broad knowledge of food systems, from raw materials to primary production, processing, distribution and consumption.

SLU Future Food is a platform at SLU that develops research and collaboration for ecologically, economically and socially sustainable food systems. SLU Future Food stimulates interdisciplinary research to meet the challenges of tomorrow and contribute to the work of achieving the SDGs.

In SLU Grogrund, academia, society and industry collaborate to develop expertise in plant breeding. The aim is to ensure access to robust plant varieties and promote sustainable and competitive agricultural and horticultural production throughout Sweden. SLU Grogrund is led by SLU and is a result of the national food strategy.

Researchers study quinoa plants with the aim to increase the resilience for drought. The research project is part of a Swedish-Bolivian collaboration. Foto: Jenny Svennås-Gillner, SLU

3 GOOD HEALTH AND WELL-BEING

Ensure healthy lives and promote well-being for all at all ages

Publications: 471

Highly cited: 17%

Antimicrobial resistance is sometimes called the silent pandemic. Researchers at SLU work to prevent resistance both in Sweden and globally. Photo: Patrik Söderman

Good health and well-being is a fundamental prerequisite for people to thrive. Great progress has been made in recent decades to reduce the spread of infection and disease. Taking preventive action, improving health care and researching new diseases not only improve people's health, but also foster societal development. SLU works to ensure the well-being of its staff and students and also conducts education and research to improve both animal and human health.

Health and well-being at SLU

To promote a healthy lifestyle, SLU has cycle-friendly campuses with safe cycle paths of good quality. There are good exercise facilities for students and staff near the main campuses. In addition, the student unions organise physical activities regularly throughout the year. SLU works closely with occupational health services and student healthcare clinics to ensure that both staff and students receive help when needed. SLU also works strategically to promote employee well-being based on an established wellness policy.

Research

SLU conducts research that contributes to increased knowledge within SDG 3, such as medical research on zoonoses, food safety and lifestyle diseases, as well as research on the healing effect of nature and animals on people's mental and physical health.

COVID-19

During the pandemic, researchers at SLU contributed to the development of methodology for analysing COVID-19 in samples from wastewater treatment plants. Analysing wastewater makes it possible to detect and monitor the spread of infection and mutations without having to interact directly with patients. A research team from SLU has been monitoring the COVID-19 rate in Uppsala since August 2020, with the results forming the basis for possible community action. The work continues to contribute to national surveillance of COVID-19.

Urine from cows used in the fight against malaria

Research is underway at SLU to combat malaria by controlling the mosquitoes that spread the malaria parasite. One study showed that traps baited with the scent of cow urine were highly attractive to different types of mosquitoes. The results indicate that malaria transmission could be reduced by 60 per cent using this method, thereby reducing the number of deaths caused by the disease.

Cancer in dogs and humans – are there common risk factors?

Dogs and humans live in close proximity and are often exposed to the same environmental pollutants, some of which have been linked to cancer. In addition, several tumour diseases affect both dogs and humans. This project is investigating whether the incidence of cancer in dogs and humans co-varies geographically, and whether cases can be linked to exposure to environmental pollutants. The aim is to obtain information on risk factors for cancer in both dogs and humans, with the hope of reducing the number of cancer cases in the future.

Improving animal and human health in Ethiopia

A large proportion of the Ethiopian population relies on livestock for food and income. Unfortunately, many animals die due to infectious diseases, which affects food security. Diarrhoeal diseases are considered one of the major problems and can be caused by a variety of microorganisms. A research team at SLU is working to identify which microorganisms are present in livestock with diarrhoea in order to develop specific treatment methods. They are also investigating whether these microorganisms can infect humans.

Antibiotic resistance – a challenge for urban animal production

Poultry is an important source of livelihood and food for poor people, but keeping and consuming poultry in urban environments can pose risks to public health. Poultry can carry antibiotic-resistant bacteria that infect humans, without showing any symptoms themselves. Such infections occur either directly from animals to humans or via food. The overall aim of the project is to improve public health by reducing the spread of antibiotic-resistant infections in urban animal production systems in low- and middle-income countries.

Utbildning

Veterinary Medicine Programme

Every year, a large number of students graduate from SLU's Veterinary Medicine programme. They specialise in areas such as animal health, food safety and infection control. Sweden is a driving force within the EU on issues relating to infection control, antibiotic use, food safety and optimised food production, where veterinary expertise plays a key role.

Outdoor Environments for Health and Well-Being

The Master's programme Outdoor Environments for Health and Well-Being focuses on wellness and nature as a healing space. The cornerstones of the programme are environmental psychology and landscape architecture, and students gain basic knowledge in urban planning and the design of outdoor environments for healthcare, schools, housing and public spaces.

SLU Future One Health works with various actors on the interplay between animal health, human health and ecosystem health. This involves several different areas, including food production, infectious diseases, antimicrobial resistance, ecosystems and environmental indicators, as well as the link between human and animal health.

4 QUALITY EDUCATION

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Publications: 67

Highly cited: 7%

The students at SLU gain important knowledge for the future. Photo: Jenny Svennås-Gillner, SLU

Education for all is a human right. Education creates opportunities for all individuals to contribute to sustainable societal development, including prosperity, health and gender equality. SLU is a university offering unique educational opportunities. With its focus on agriculture, forestry, animals, rural areas and horticulture, people come to SLU to expand their knowledge. SLU offers a low student-teacher ratio, campuses that strike a balance between modern and traditional, and programmes based on the latest research.

SLU at the top of the International Student Barometer

In the International Student Barometer, SLU is ranked number one in Sweden when it comes to teaching quality and teachers. SLU's campus environments receive the highest marks globally among the participating universities. The survey is based on votes from over 120,000 students worldwide. SLU is also ranked top 3 in several categories, both in Europe and globally.

SciFest, a science festival for children

SciFest is a science festival for children and young people with a wide range of activities that offer interactive learning through touch, smell, sight and hearing. SciFest includes the humanities, social sciences, natural sciences and medicine, and is a successful collaboration between SLU and Uppsala University aimed at increasing young people's interest in science.

SLU Youth Institute increases interest in global issues among young people

SLU Youth Institute is a collaboration with the World Food Prize Foundation in the USA. Its aim is to increase young people's interest in food security. Each year, several hundred Swedish upper secondary school pupils write an essay on a topic of their choosing linked to SDG 2 – Zero Hunger. Through the programme, young people gain a better understanding of the complex issues surrounding global food security.

Environmental objectives for education

One of SLU's environmental objectives addresses the importance of integrating sustainability aspects into degree programmes. Sustainable development and education for sustainable development are complex concepts involving local, global, scientific and political aspects. All students participating in any of SLU's degree programmes should have a solid foundation for handling sustainability perspectives. One of the targets is to integrate sustainable development into all programmes by 2025. All programmes at SLU have sustainability aspects as part of their general profile.

In the training on incorporating sustainable development in teaching (UHU), SLU provides support to university teachers in integrating sustainability perspectives into their courses. 44 people took part in this in 2023. This means that just over 500 course leaders have been admitted to the ESD programme and 480 have completed it since its launch in 2015. SLU's basic course in teaching in higher education, which is taken by most of our doctoral students, also includes a module on ESD.

Education

In 2023, SLU offered around 50 programmes at the undergraduate and Master's level. These programmes were supplemented with a large number of freestanding courses in both Swedish and English. SLU also offers a wide range of doctoral courses, many in collaboration with international partners.

Foundation semester and foundation year

SLU offers a forestry foundation year, which consists of practice-based upper secondary school courses and practical training to qualify for the Forest Management programme. This offers an opportunity for students who are interested in studying the Forest Management programme but do not yet meet the forestry-related entry requirements. SLU also offers a foundation semester aimed at applicants who are missing a few natural science subjects from upper secondary school. This gives prospective students the opportunity to study the subjects required for admission to some of SLU's programmes.

Exchange studies

Studying abroad is a great way for students to broaden their subject knowledge, develop their language skills and make new contacts in another culture. SLU is partnered with over 100 universities around the world through various partnership programmes.

SLU students can also choose to do their degree project via an Erasmus or Nordplus exchange, provided that the project is linked to one of SLU's partner universities. Students can also carry out fieldwork and data collection for their degree project in low- or middle-income countries using Erasmus+ grants. Another possibility is to apply for an Erasmus+ grant for a placement abroad.

Principles for Responsible Management Education

Principles for Responsible Management Education (PRME) is a UN initiative to create a platform for training future business leaders who can and want to work with sustainable development. At SLU, this takes place in programmes and courses in business economics.

SLU works continuously to ensure that all students are well. Photo: Jenny Svennås-Gillner, SLU

5 GENDER EQUALITY

Achieve gender equality and empower all women and girls

Publications: 80

Highly cited: 8%

SLU works continously on gender-equality issues to ensure a good environment for both students and employees. Photo: Julio Gonzalez, SLU

Achieving gender equality and empowering girls and women in both education and the labour market are fundamental elements of a sustainable society. This SDG relates to the fair distribution of power, influence and resources. In many of SLU's programmes, the majority of students are women. There has been a change in recent years, with a higher proportion of women applying for and completing their programmes. SLU is also working to increase the number of women employed in the more male-dominated sectors and to achieve the goal of more female professors.

Gender equality work at SLU

During the year, gender equality work was conducted in line with SLU's gender equality plan, focusing on two main areas: *equal career paths* and *equal education*. To highlight how economic governance affects conditions within the organisation, SLU has integrated a gender equality perspective into the regular budget process. The departments have analysed the budget from a gender equality perspective and identified possible measures to improve equal representation and gender balance. Integrating gender equality into the budget process lays the foundation for more informed decisions, and the work is continuously being developed as part of SLU's gender equality strategy.

The work on gender equality and equal opportunities in education aims to increase knowledge and awareness among both students and staff. Training material on equal opportunities for students was developed in 2023. The intention is for teachers to use this material at the beginning of a semester or course. In addition, introductory videos on equal opportunities, aimed at both students and staff, have been developed in collaboration between SLU faculties.

Research

Gender equality builds resilience to climate change in West Africa

This project focuses on low-income households in rural areas. This group is among the most vulnerable to climate change. Cocoa farming is an important source of livelihood for over two million households in West Africa. In countries such as Liberia, Ghana and Côte d'Ivoire, cocoa is traditionally seen as a 'male' crop, with women often excluded from both agricultural decision-making and economic benefits. The project explores how gender equality and climate resilience are interlinked.

70% female students

56% female employees

51% female reseachers and teaching staff

33% female professors

Gender-related opportunities and challenges in urban agriculture in Rwanda

How and why do women and men engage in peri-urban and urban agriculture in Kigali, Rwanda? The research focuses on the gender and age-related opportunities and challenges they face, and how this affects their empowerment. The study also examined what policy and practical measures are needed to develop peri-urban agriculture. The aim is to contribute to more equitable and sustainable urban environments in which everyone has the opportunity to participate in agriculture.

New ideas for a gender-equal forestry sector

Using interviews and focus groups with leaders, teachers and students, the project studied the problematic elements of masculine culture. The study shows that we need to look at what happens in environments that are 'hidden' from teachers and management if we want to understand why and how discrimination is able to continue. The starting point has been to gain a better understanding of what gender equality means for different groups.

Education

Gender competence for the forestry sector

This course provides students and professionals with a basic understanding of gender in the forestry sector. The course provides participants with analytical tools to work with issues related to gender, inclusion and equality.

Course for girls increases interest in forestry

The course "Girls and Forests" was organised during the summer of 2023 with the aim of increasing interest in forestry and nature issues among girls. The course paved the way for more women in the forest sector. Participants learned about forests in general and what it is like to work within forestry. The course was an initiative of the Faculty of Forest Sciences and given through a collaboration between the different forestry programmes at SLU.

Introductory course for doctoral students

At the start of their studies, all doctoral students are offered a digital introductory course that includes information about SLU's gender equality and equal opportunities work. Doctoral students are also offered workshops and seminars on equal opportunities and gender equality organised at various levels within SLU.

Internal training includes gender equality perspective

An internal training in competence-based recruitment has been carried out that includes gender equality and norm-critical perspectives. The training is aimed at everyone involved in a recruitment process, such as managers, researchers and administrators. More than 40 people involved in the recruitment process participated in the training in 2023.

Researchers at SLU examines water samples to ensure sustainable water management. Photo: Jenny Svennås-Gillner, SLU

Water is a basic need for all life on earth and is crucial for human health, global food production and energy supply. SLU is conducting research to ensure good water supply and develop technologies to purify water from contaminants such as toxins and pharmaceutical residues. There is also a strong focus on biodiversity in freshwater environments and how they are affected by acidification and eutrophication.

Alternative solutions for irrigation

In Alnarp, SLU has initiated an irrigation project in collaboration with Akademiska Hus and Lomma Municipality. The project is looking at alternative solutions to avoid using drinking water for irrigation. A drip irrigation system is now being built for the new apple breeding programme on about 8 hectares.

Research

The impact of microplastics in lakes and rivers

Microplastics in lakes and rivers can affect the growth and survival of organisms and negatively impact biodiversity and ecosystem processes. The aim of the project is to increase the understanding of how different types of microplastics in water bodies move, providing decision-makers with a foundation for effective management, policies and control strategies to reduce the impact of microplastics in freshwater.

Treated wastewater as a sustainable resource

The project focuses on the potential and sustainability of using domestic wastewater, and in particular on the risks of environmental impacts from hazardous pollutants in wastewater. The project examines differences in the reuse of municipal wastewater and sludge globally and in Sweden. It provides new solutions and strategies to prevent risks from hazardous pollutants, such as toxic metals and microplastics, that might otherwise hinder the use of wastewater as a resource.

New treatment techniques to clean soil and drinking water

Two projects at SLU aim to develop new technologies to clean up soil and drinking water contaminated by per- and polyfluoroalkyl substances (PFAS). The projects will form the basis for developing new methods that can address challenges in drinking water supply, both in Sweden and globally.

Environmental monitoring and assessment

SLU monitors the environmental status of Sweden's freshwater environments. The work focuses on climate change, acidification, eutrophication, biodiversity, fish and fishing, pollutants harmful to the environment and human health, and the physical impact that power sources, such as hydropower and wind power, have on the environment. Through analyses and measurements, the researchers strive to understand complex interactions and contribute to the knowledge base for sustainable management of water resources. SLU's experts contribute to the monitoring of Swedish environmental objectives, reporting under the EU Water Framework Directive and to international cooperations for monitoring the diversity of the Arctic's freshwater environments.

Education

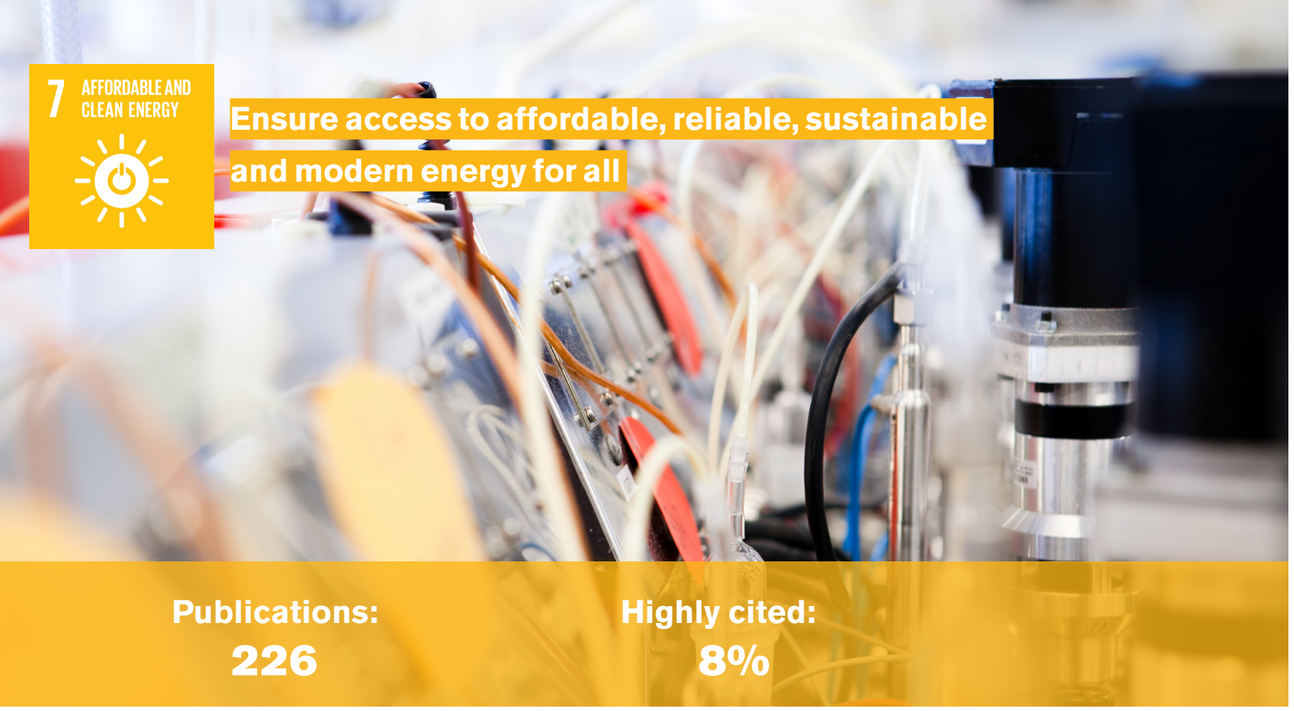
Master's Programme in Environmental and Water Engineering

SLU offers a Master's Programme in Environmental and Water Engineering in partnership with Uppsala University. The programme focuses on assessing the consequences of how land, air and water resources are used. The rapid material development, both in Sweden and globally, has created significant environmental pressures, requiring new techniques to understand and reduce these impacts. The programme provides students insight into the relationship between technical processes, societal functions and environmental impact.

SLU conducts research and environmental analyses in lakes and water courses, which contributes to improving biodiversity and preserving important ecosystem services. Photo: Jenny Svennås -Gillner, SLU

7 AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy for all



Publications: 226

Highly cited: 8%

Biogas is a renewable source for both fuel, heating and electricity production. Research is underway at SLU to develop biogas production. Photo: Jenny Svennås-Gillner, SLU

With an ever-increasing demand for energy, there is great pressure to develop renewable energy sources and clean fuels. A large proportion of the world's emissions currently come from fossil fuels, but renewable energy sources are on the rise. SLU is working to develop and improve the efficiency of renewable energy sources to contribute to SDG 7. Together with agriculture, forestry will play a key role in breaking today's dependence on fossil fuels and building the society of the future. SLU is researching how these resources can be used efficiently and sustainably to produce fuels, electricity, heating and more.

Environmental objectives for energy use

Based on the entire property portfolio it manages, SLU will produce fossil-free electricity, primarily solar energy, equivalent to at least half of its consumption, and heat equivalent to at least 95 per cent of its consumption by 2027. Based on the entire property portfolio managed by the university, fossil-free electricity equivalent to almost half of consumption and heat equivalent to 99 per cent of consumption were already being produced in 2023.

Research

New oilseed crop as a renewable energy source

Researchers at SLU are developing a native wild plant, field cress, into a robust oilseed crop that thrives in the Nordic climate. The project is an important step in developing a completely new, bio-based value chain for renewable fuels and protein in Sweden. By improving the field cress through modern plant breeding, fine-tuning cultivation techniques and designing a sustainable value chain to realise its potential, the project will lead to positive impacts for several sectors, such as agriculture, energy and transport.

Animal feed and biogas from green leaves

Increased biogas production is at risk of having to compete for biomass with food and feed production. In the Green2Feed project, the green biomass is split into different fractions, some of which can be used as feed and the rest as raw material for biogas production. This combined production allows for a lower ecological footprint compared to the products being replaced.

Improved biogas production benefits sustainable energy

Biogas production helps tackle climate change while contributing to improved waste management, sustainable energy and recycling of nutrients to arable land. Various microorganisms are involved in the production of biogas from organic matter. Microorganisms that work to break down acids are particularly important. When these organisms do not function properly, they cause instability and reduced yields in biogas processes. The project is working to understand and improve these processes.

Invasive bush becomes biofuel

SteamBioAfrica is an EU Horizon 2020 project that aims to convert invasive bush in Southern Africa into clean biofuel, water and biochemicals using steam. The goal is to create a safe, affordable energy source and to generate jobs in this new value chain in Namibia, Botswana and South Africa. The project addresses several regional challenges, including climate change, inefficient resource utilisation, unsustainable coal production, air pollution, unemployment and poverty. Research teams from SLU and other European and African institutions are involved.

Education

Master's Programme in Energy Systems Engineering

SLU offers a Master's Programme in Energy Systems Engineering in partnership with Uppsala University. The programme focuses on new, sustainable solutions in the energy sector from a national and global perspective. The programme provides students with the skills to be at the forefront of future sustainable energy solutions, which is needed to help the world transition from fossil fuels to renewable alternatives.

Can field cress be a part of the transition to renewable energy sources? Photo: Jenny Svennås-Gillner, SLU

8 DECENT WORK AND ECONOMIC GROWTH

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

At SLU, efforts are made to ensure that all staff have good and fair working conditions. Photo: Jenny Svennås-Gillner, SLU

Today, more than half of the world's labour force works in precarious conditions. Decent working conditions are essential to promote sustainable economic growth. Creating the right conditions ensures that working conditions are fair and safe for everyone, which benefits society as a whole. SLU works to ensure that all employees are satisfied and feel safe in their work environment. SLU defines a safe work environment as one that fosters the physical and mental well-being of employees while providing a stimulating and socially positive workplace.

The work environment at SLU

SLU works at all levels of the university to ensure a good work environment. This is done through the joint efforts of the employer, staff and students. At SLU, the work environment organisation is structured in three levels: the central level with the work environment committee, the regional level with the regional work environment committees, and the local level with the local collaboration groups. In order to meet the need for occupational health and safety knowledge and to increase cooperation between the employer and the safety organisation, two courses on systematic work environment management are given each year. The courses are usually well attended by both managers and safety representatives.

Trade unions

At SLU, there are three trade unions to which all employees can turn in matters concerning the work environment and working conditions. The trade unions provide support for staff in negotiations or conflicts of interest with the employer.

Research

Migration and environmental management

Migration to rural areas is both an opportunity and a challenge for Sweden's regions in relation to the creation of employment and jobs in the land-based sector. The project aims to develop knowledge on how migration is part of sustainable rural development and gain a better understanding of how it can contribute to developing rural areas in a sustainable way.

Improving labour conditions in the Thai fishing industry

The Thai fishing industry has been reformed in recent years through several EU, civil society and private sector initiatives. The reform process seeks to address the negative spiral that exists between sustainability and labour conditions: as fish catches decline, boats are forced further and further out to sea. This leads to increased costs that can be reduced by hiring vulnerable workers from poorer countries. Researchers at SLU have shed light on the process and it has resulted in a combination of formally binding laws and the development of supply chain standards in a complex governance process for sustainable fisheries.

Sustainable business models promote security in the production system

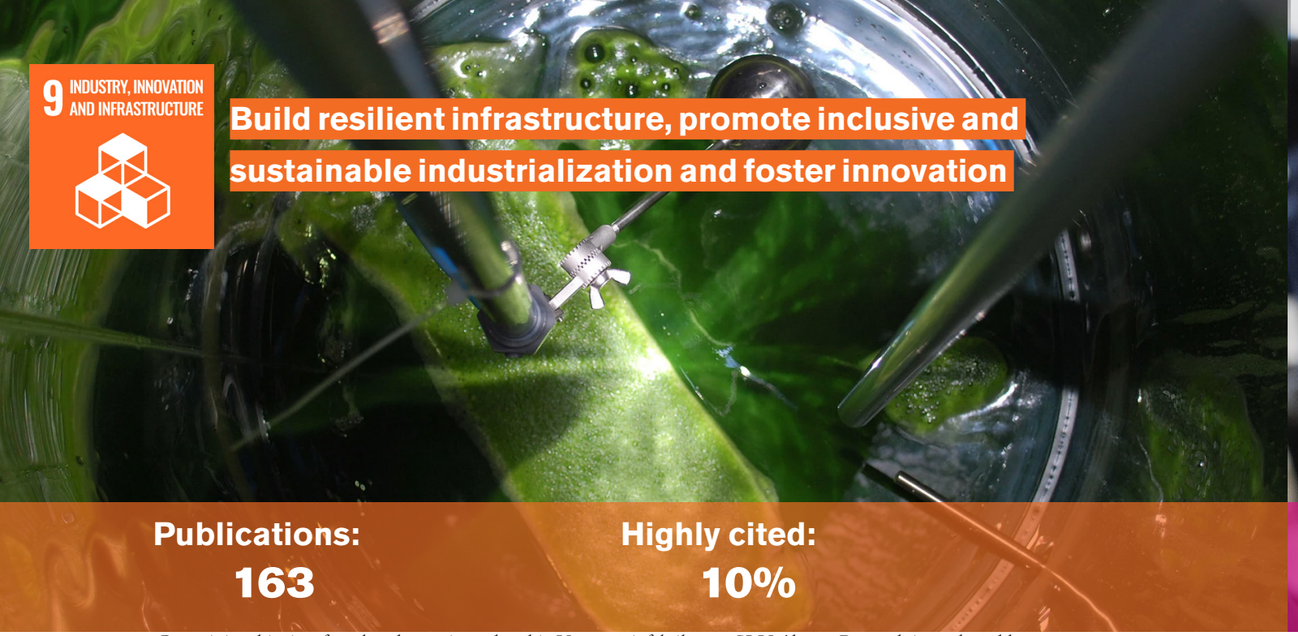
Value chains of Non Timber Forest Products (NTFPs) can contribute to food security and income while promoting both carbon sequestration and forest conservation. The project involves inventorying and studying how groups of individuals are organised to exploit these resources. The goal is to develop sustainable business models and ways of working to create security in the production system for individuals and groups of individuals in Kenya.

Education

Economics programme – sustainable development

Understanding the links between economic issues and the environment is becoming increasingly important in society. SLU's economics programme with specialisation in sustainable development increases students' knowledge of natural resources from an economic perspective. After completing the programme, students are equipped to work as economists with specialist knowledge of the environment and the green sector.

In the fishing industry, efforts are being made to improve working conditions, a focus that researchers at SLU are exploring in collaboration with international partners. Photo: Alin Kadfak, SLU



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Publications: 163

Highly cited: 10%

Green juice, this time from beet leaves, is produced in Växtproteinfabriken at SLU Alnarp. Research is conducted here on plant protein from green biomass. Photo: Sara Kyrö Wissler, SLU

Innovation, technology and a functioning infrastructure are needed to find solutions to economic, social and environmental challenges. They also help to boost economic growth and job creation. Research, environmentally friendly technology and innovation are all important components of sustainable development. At SLU, questions regarding innovation are primarily managed through SLU Holding.

SLU Holding supports innovation

SLU Holding AB is a state-owned company managed by SLU. Its role is to help ensure that knowledge and research results from SLU are utilised and benefit society. This is done by initiating, developing, supporting, investing in or otherwise utilising knowledge-intensive innovations. Since the establishment of SLU Holding, investments have been made in almost sixty research-based projects or companies with growth potential. SLU Holding owned shares in over thirty different project companies at the end of 2023, and over a hundred innovation projects were initiated during the year.

To increase interest in innovation and develop an entrepreneurial culture among SLU students, SLU Holding runs various projects. The concept has developed successfully during the year, with the influx of student ideas almost doubling to 150 by 2023.

SLU Holding and SLU are collaborating with property owner Akademiska Hus on the Green Innovation Park concept. It is a meeting point and platform for innovation and collaboration, where students, researchers, companies and organisations meet to exchange ideas and experiences centred on the aim of creating a sustainable future.

Växtproteinfabriken

Växtproteinfabriken conducts research to utilise the resources of so-called green mass, for example from sugar beet leaves and beetroot pulp. Växtproteinfabriken started as an initiative between SLU researchers, SLU Holding and industry. The aim is to scale up technologies and test the business potential of plant proteins and other nutrients from unutilised green mass.

Eko Grönovation

Based on research from SLU, a unique automated vertical indoor cultivation system has been developed in collaboration with SLU Holding. Through Grönovation's technology, optimal growing conditions can be created for seeds to germinate and seedlings to grow with no use of pesticides. The vertical cultivation system provides larger cultivation spaces than traditional solutions.

Sanitation360

Sanitation360 is an innovation company founded by researchers from SLU that uses new technology to recover urine to use as fertiliser for agriculture. The goal is to reduce nutrient leakage into nature through simple technology that can be implemented even in areas without advanced treatment plants. The urine is dried, stored and then used as fertiliser, reducing the use of artificial fertilisers and dependence on the import of such products.

10 REDUCED INEQUALITIES

Reduce inequality within and among countries

Publications: 80

Highly cited: 11%

Several research projects, in Sweden and globally, concern SDG 10 – To reduce inequality within and between countries. Photo: Mikael Wallerstedt

SDG 10 focuses on working towards a society in which no one is marginalised. Its foundation is the fair distribution of resources and influence in society. SLU works proactively to combat discrimination and in other ways promote equal rights and opportunities for everyone at the university. Research relevant to SDG 10 is also conducted.

Equal opportunities work at SLU

In 2022, SLU decided on an action plan for broadening recruitment and participation in undergraduate and Master's programmes. In 2023, work was carried out to firmly anchor the action plan and generate background data to monitor the development of the prioritised target groups for SLU's work to broaden recruitment. Together with six other higher education institutions, SLU organised a digital conference called 'The Breadth of broadened recruitment', with a focus on a gender equality perspective. The conference was geared towards all staff with an interest in broadened recruitment and broadened participation.

Equal opportunities work is carried out by various functions within the university, with the faculties' equal opportunities committees playing a particularly important role. The committees have worked actively to provide further training for staff and managers to support systematic equal opportunities work. SLU has web-based training courses for staff and managers that focus on guidelines for harassment and prevention. The training courses are given to all newly hired staff.

Research

Governing climate resilient futures

How can new, fair and inclusive conflict resolution mechanisms related to forests and water resources be designed to build resilience to climate change? The project breaks new ground by understanding resilience as an outcome of sustainability processes rather than a state or endpoint. Among other things, it explores the causes of conflict and conflict resolution in environmental governance and generates co-learning methodologies to address poverty and development challenges. The project is developing case studies in Kenya, Nepal and Nicaragua.

Make cities and human settlements inclusive, safe, resilient and sustainable

Publications: 322

Highly cited: 14%

Swedish and Kenyan students on a field visit to Nairobi Dam during the Master's course "Act local, think global". Photo: Emily Wade, SLU

The increasing influx of people into towns and cities is creating major challenges and placing new demands on environmentally, economically and socially sustainable urban development. Sustainable urban development involves everything from sustainable construction, planning and infrastructure, to green areas, waste management and essential services. SLU has a broad range of expertise linked to sustainable urban development that touches on several of the above areas.

The *Creating Green Cities* conference

To meet today's environmental and climate challenges, cities and regions must be managed and developed within planetary boundaries. Within the framework of Sweden's Presidency of the Council of the EU, the Swedish National Board of Housing, Building and Planning and the SLU think tank Movium organised the Creating Green Cities conference, in partnership with the authorities of the Sustainable Cities Council (Rådet för hållbara städer). The conference was based on the Urban Agenda for the EU and other European policies and initiatives that strive towards greener cities. The results from the conference will be used in developing sustainable cities, where aesthetics, empathy and engagement are key factors, along with inclusive processes and good dialogue between stakeholders, among others.

Green Flag Award

SLU's campus in Uppsala has been the recipient of the Green Flag Award for its green spaces for six consecutive years. Kunskapsparken, which is located on the campus, has received particularly high marks and is a place for both research and recreation. The Green Flag Award seeks to recognise and reward well-managed parks and green spaces, setting a standard for the care and maintenance of recreational areas.

Research

Improving quality of life for older people

The aim of the OUT-FIT research project is to improve the quality of life of older people living in specialised nursing homes through increased access to outdoor environments, outdoor recreation and outdoor rehabilitation. A collaboration between the National Board of Health and Welfare and the OUT-FIT project has resulted in data for monitoring and development.

Collaboration takes greenhouses to new heights

Urban farming is increasingly discussed in the development of green and sustainable cities. With limited space and competition for land, researchers are looking at ways to grow crops in rooftop greenhouses. In addition to the obvious benefit of fresh and locally produced food, rooftop greenhouses contribute to optimised land use and energy efficiency. A newly launched interdisciplinary research collaboration, with a view to increasing the number rooftop greenhouses, is currently underway at SLU.

Unequal distribution of urban green spaces

A study of urban green spaces in four Nordic cities found that, although most residents live close to green spaces (with over 90 per cent within 300 metres), access to different types of green spaces varies considerably between and within cities. Not least between different groups based on age, education, income and immigration status. The findings emphasise the need to focus on an equitable distribution of green spaces to address inequalities between different sociodemographic and socioeconomic groups.

Developing green spaces in peri-urban areas

The aim of this project is to find ways to overcome barriers in urban planning that hinder the emergence and preservation of high-quality green spaces. The research focuses on ways to achieve biodiversity, climate change and human health objectives in urban environments, and provides recommendations for the governance and management of green spaces that can promote multifunctionality.

Environmental monitoring and assessment

SLU works with environmental monitoring and assessment to develop the built environment and aims to support efforts to achieve both the Swedish environmental quality objective of a good built environment and European environmental objectives that focus on the urban and peri-urban environment. Current projects focus on green areas, densification, children's outdoor environments and other areas.

One of SLU's four future platforms is **SLU Urban Futures**, which is the hub for issues related to the urban environment and acts as a link between SLU and various actors, including industry, academia and other organisations. One example is the think tank Movium, which focuses on urban development issues. Movium develops ideas and produces, compiles and disseminates information and knowledge.

Within SDG 11, Sustainable Cities, efforts include the development of green spaces and outdoor environments for children. Photo: Anders Rasmusson, SLU

Landscape architecture programmes at SLU

The two landscape architecture programmes at SLU lay a solid foundation for students to work on the development of inclusive, safe, resilient and sustainable urban environments. Broad knowledge and the ability to communicate, develop collaborative solutions and recognise contexts are required to create sustainable cities and rural areas.

Landscape architects plan, design and manage shared environments to mitigate climate change, reduce biodiversity loss and address social challenges. With a broad understanding of people's relationship with their surroundings and an ability to see the big picture and processes of change, landscape architects play a key role among those working with the physical environment.

Act local, think global

The Act Local, Think Global Master's course connects to the big global issues by exploring places with local landscape prerequisites to address global challenges. The course is a collaboration between Kenyan and Swedish students to increase knowledge and contribute to the development of two sites, one in each country. The work is carried out in Nyhamnen in Malmö and the Nairobi Dam in Nairobi. Both sites face challenges related to water management, but in distinct social, political and climatological contexts.

The landscape architecture programmes at SLU include both social science and natural science. Photo: Mårten Svensson

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable consumption and production patterns

Publications: 530

Highly cited: 18%

Digital tools facilitate sustainable forestry where both the natural values of the forest and the supply chain from forest to industry are taken into account. Photo: Jenny Svennås-Gillner, SLU

Humans have long had access to an abundance of natural resources, but have not used them responsibly and now consume far beyond the planet's capacity. Transitioning to sustainable consumption and production of goods is a necessity to reduce the negative impact on climate, environment and human health. SLU is working on these issues through research, education and internal environmental work.

Environmental objectives for purchasing

SLU's environmental objectives for purchasing mean, among other things, that the procurement of goods and services must be carried out with a clear climate awareness, that environmental requirements must be set in procurements, and that the number of call-offs with environmental considerations must increase. For the purchase of food, there are specific requirements linked to the UN's global goals for sustainable food, production and consumption. The guidelines for food purchases also provide clear guidance on planning for reduced food waste and for the management of waste.

Waste

SLU has a procedure for the procurement and recycling of various types of products and waste. Reusing products can increase their lifespan, thereby reducing the number of purchases. In addition to the environmental benefits this creates, there are economic benefits as well. SLU also has a well-developed waste sorting system on all campuses.

Environmentally friendly take-back service for IT hardware

For just over three years, SLU has been working to recycle end-of-life IT hardware. In 2023, SLU sent in around a thousand units via the procured take-back service, of which a third could be reused. The remaining units could be recycled.

Research

Circular waste management using larvae

One treatment method for biodegradable waste that follows circular economy principles is fly larvae composting. The process produces two products: protein-rich larvae that can be used as a source of protein in animal feed, and a treatment residue, called frass, that can be used as an organic fertiliser. The aim of the project is to understand the potential of frass compost to supply plants with plant nutrients and other bioactive substances.

Preventing food waste

Food waste is a global problem. One third of all food produced is thrown away, which harms

the environment, costs money and raises ethical questions about food availability in a world where billions suffer from hunger. A study from SLU has investigated the sustainability effects of preventing food waste, in particular through the donation of surplus food and through reduced plate waste in school cafeterias. The results show that effective food waste management can yield both environmental and social benefits. However, deeper insights and long-term solutions are needed to address the root causes of food waste.

Loss of beef during primary production in Sweden

The food system is not sustainable, and research shows that there are three powerful tools to reverse the trend by 2050: global dietary shifts, reduced food waste and losses, and improved production methods. This research project aims to develop knowledge to reduce losses of beef during primary production in Sweden. The losses are extensive, strongly contributing to several environmental problems and causing economic losses for farmers.

Sustainable multi-storey construction using wooden frames

In the EU, the construction industry accounts for 35 per cent of greenhouse gas emissions. Sustainable processing of forest resources in the form of wood materials for housing construction, with a focus on multi-family buildings, has a low climate impact compared to the materials used by the construction industry today (concrete, glass and steel). However, there is a gap in the construction industry's knowledge about building multi-family buildings in wood. The project focuses on the market perspective, circular business models, the importance of policy drivers and the role of the end user.

Education

Industrial Wood Supply Management

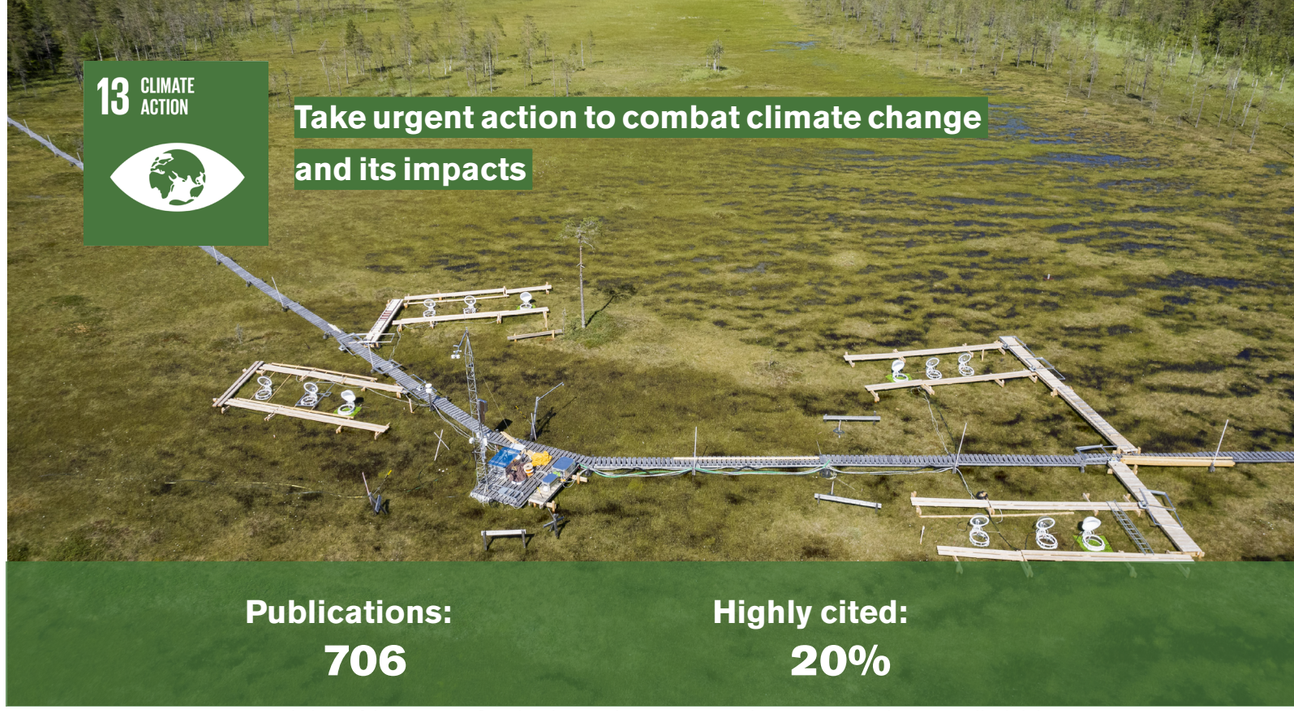
This Master's programme focuses on the supply chain from forest to industry. The forestry sector is rapidly evolving towards a wider range of more diverse products for new markets. With a range from wood to nanocellulose-based products, the management of raw material supply is becoming increasingly dynamic and demanding. The changing climate and market conditions require adaptability and collaboration along the entire supply chain.

Horticultural science

This is an international Master's programme that provides insight into how the cultivation and production of horticultural plants can contribute to a more sustainable society. The programme provides in-depth knowledge of the production chains of fruit, vegetables and berries, and of plants for both indoor and outdoor environments. Students study subjects such as cultivation techniques, microbiology, plant breeding, economics, value chains and product quality.

EPOK, the SLU Centre for Organic Food and Farming, works with knowledge transfer and communication. It also initiates and coordinates research and education on organic farming and organic food.

SLU Future Forests is a platform for interdisciplinary forest research, collaboration and research communication. The platform is a collaboration between SLU, Umeå University and Skogforsk (the Forestry Research Institute of Sweden). SLU Future Forests focuses on the importance of forests and forestry for the development of a bio-based economy as well as climate adaptation and the various ecosystem services provided by forests.



Aerial photo of the automatic flux chambers used to measure greenhouse gases at Hålmyran, Kulbäcksliden. Photo: Andreas Palmén

Climate change is a serious threat, with implications for ecosystems, food production, water resources and human security. The impacts are already visible today, and immediate action is needed. Education, innovation and compliance with climate agreements, such as the Paris Agreement, can help to mitigate the changes. SLU produces new knowledge, decision-making data and facts about the consequences of climate change and measures to reduce emissions, and trains students who can help develop climate work in society.

Climate-neutral university

SLU's vision is to be a climate-neutral university by 2027. The university has identified six focus areas to achieve this.

- All electricity purchased or consumed by SLU must come from fossil-free sources.
- All district heating/cooling purchased or consumed by SLU must come from fossil-free sources.
- All SLU-owned vehicles, machinery and tools must run on fossil-free fuel.
- Procurement of goods and services must be clearly characterised by climate awareness.
- Emissions from business travel must be reduced in accordance with the existing action plan and objectives.
- Climate compensation – a project is underway to investigate what SLU is doing and can do to sequester carbon dioxide.

SLU's greenhouse gas emissions

SLU's emissions of carbon dioxide equivalents (CO2e) according to the Greenhouse Gas Protocol are monitored annually. In 2023, SLU had total emissions of just over 13,000 tonnes of CO2e. Unique to SLU, compared to other universities and colleges, are animal stables, fertilisers, land holdings and forest holdings. The environmental impact of these activities is complex. Livestock farming has a positive impact on biodiversity, but also contributes to increased greenhouse gas emissions. The land holdings and forest holdings produce emissions, but also sequester carbon. Carbon sequestration calculations for the forests and other land owned by SLU indicate sequestration of approximately 12,000 tonnes of CO2e.

Higher education institutions' climate network

Higher education institutions' climate network is a national network coordinated by SLU that aims to strengthen climate-related cooperation between higher education institutions and to help them reduce their climate impact. The focus is on supporting the entire sector to work in line with the Paris Agreement. The work is conducted in focus groups made up of participants from different universities. In 2023, the *Learning for*

Sustainable Development and *Buildings and Energy* focus groups were launched.

Environmental objectives for business travel

By 2025, SLU will reduce fossil emissions from air travel by a total of 60 per cent per full-time equivalent compared to 2019. Examples of activities for achieving the objective are close cooperation with the procured travel agency regarding environmental impact and alternative travel routes and means of transport, continuous communication on travel guidelines and business travel targets with associated follow-up of statistics and investigating the possibility of climate compensation for the trips made. Since 2015, SLU has a climate fund as part of the work to achieve environmental objectives related to business travel. All air travel at SLU generates a fee that is deposited in the fund. Staff can then use the fund to apply for funding for climate-promoting projects within SLU.

Research

Preparing wheat to face rising temperatures

Durum wheat is affected by heat stress and rising temperatures. Thanks to research results from SLU and development partners, plant breeders around the world can improve the heat tolerance of their future wheat varieties. This will help prepare the crop to cope with a warmer climate, thereby securing the income of many farmers around the world.

Can cover crops help increase carbon sequestration?

Cover crops help to increase carbon sequestration in arable land, and it is important to get the best growth possible to maximise the benefits. However, it can be challenging to grow cover crops, and they can have negative side effects in form of increased nitrous oxide emissions, which counteract the carbon sequestration effect. So, how can the benefits of cover crops be optimised for carbon sequestration, climate benefits, reduced nitrogen leakage and increased nitrogen utilisation? This is the subject of a new SLU report based on data from field trials and previous research.

Effects of nutrient depletion in Arctic and alpine lakes

This project studies the effects of ongoing climate change and nutrient depletion through a combination of analyses of archived samples, lab experiments and gradient studies in the field. The project also investigates how communities of algae and phytoplankton are changing, and how these changes affect the flow of energy and nutrients in the ecosystems. The project contributes to new knowledge that can be used to improve assessment criteria for mountain waters.

Climate, habitat and animal production

Reindeer husbandry is based on the utilisation of natural pastures and is highly dependent on weather, making it vulnerable to climate change. Reindeer and reindeer husbandry are also affected by other activities on the same land, such as forestry, mining, wind power and hydropower. This project aims to understand the effects of climate disturbance and exploitation on reindeer husbandry, focusing on the productivity of reindeer herds, in order to better manage reindeer pastures and increase resilience.

Boreal biosphere-climate interactions

The boreal forest is an important component of the global carbon cycle, making it a key element in climate change mitigation. However, current estimates of the boreal forest as a carbon sink versus carbon source through sequestration and release of greenhouse gases remains uncertain. The same can be said for how this balance is affected by climate change and forestry. The project is based on extensive data from a large network of stations in different boreal environments. The data is being collected with the aim of gaining a better understanding of the exchange of greenhouse gases between the biosphere and the atmosphere.

Environmental monitoring and assessment

Climate change has major impacts on different ecosystems, making it necessary to identify the main risks and develop strategies for natural resource management and for adapting agriculture and forestry. SLU conducts extensive inventories and environmental monitoring to analyse how land use, mainly in agriculture and forestry, affects greenhouse gas emissions and removals. The results are used both to monitor the Swedish environmental objective for climate and Sweden's commitments under the UN Framework Convention on Climate Change, UNFCCC.

Climate reporting on emissions

The development of greenhouse gas emissions is monitored through data that countries report to the UN and the EU. SLU is responsible for calculating and reporting Sweden's greenhouse gas flows in the land use, land-use change and forestry (LULUCF) sector. The most important bases for reporting are the Swedish National Forest Inventory and the Swedish Forest Soil Inventory, both of which are carried out by SLU. Over time, total net removals in the LULUCF sector have been relatively stable. In recent years, net removals have decreased, partly due to reduced growth.

New peat maps can facilitate wetland restoration

To facilitate environmental work and the selection of wetlands to be restored, SLU work with the Swedish Forest Agency and the National Forest Data Lab to produce digital peat maps that provide a more complete picture of Swedish peatlands. The restoration of wetlands for the climate depends on restoring the right kind of wetlands. The new peat maps can help identify suitable sites for wetland restoration.

Municipalities and landowners get an overview of carbon in forests and soils

By using data and maps on carbon stocks and sinks in forests and soils, municipalities and landowners can create a basis for decision-making to develop strategies that reduce the climate impact of land use. Previously, this data was difficult to obtain and required processing by experts. But these maps and data are now available thanks to a collaboration between SLU and the National Forest Data Lab. The maps are largely based on information collected through the Swedish National Forest Inventory.

Education

Forester

Sustainable forest management is a key to managing climate change. Those who choose to study the Master's Programme in Forestry will gain a unique combination of skills during

SLU researchers are driving piles into the bog to anchor a flux mast for greenhouse gas measurements Photo: Andreas Palmén

their studies, where forestry science, biology and economics form a common foundation that is interwoven with issues relating to climate and sustainable development. Students gain knowledge of how forest ecosystems work and how forests can be managed sustainably. While the forest provides humans with renewable materials and fuel that reduce fossil greenhouse gas emissions, a balance must be found that takes into account the ecosystem services and natural values that the forest provides.

Master of Science in Agriculture Programmes

Global food production accounts for a large share of greenhouse gas emissions and is also severely affected by a changing climate. Solutions in agriculture are crucial for climate change mitigation. SLU's Master of Science in Agriculture Programmes incorporate issues of climate adaptation and emission reduction. Agriculture must reduce greenhouse gas emissions, while adapting production to a changing climate. During the programme, students gain broad knowledge in the various areas of agriculture that will enable them to reduce emissions and help solve future scenarios with challenges such as higher temperatures, more extreme weather and new pests and diseases.

Environmental communication and management

This Master's programme focuses on the management of environmental and sustainability-related issues. These are issues that require communication and collaboration between several different actors in society. Through communication, different, and often conflicting, sides can meet and discuss relevant issues. The programme is characterised by diversity, with students coming from different countries, speaking different languages and having different educational backgrounds.

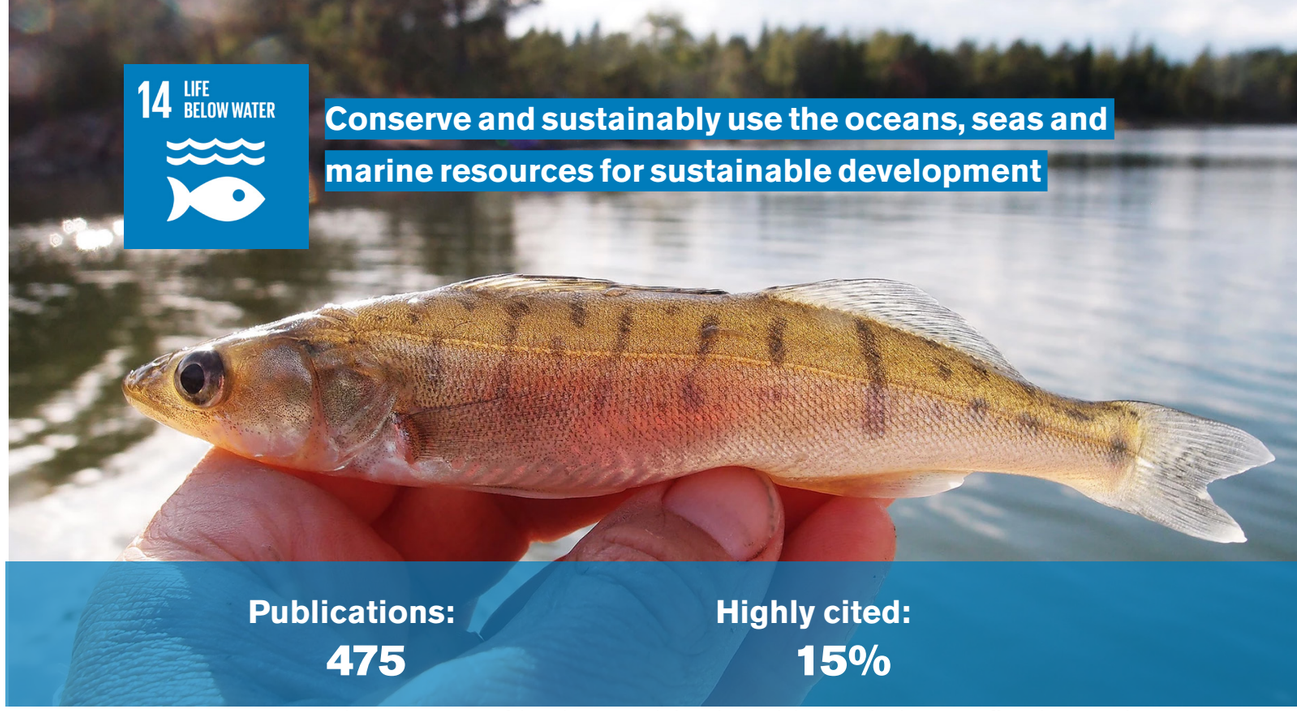
Open for the climate

Open for the Climate is an assignment from the Government to create open online education for climate action. Nine higher education institutions are collaborating to create a wide range of courses in partnership with relevant societal actors. The project is developing open online courses to support society's climate transition. All of the courses are open to everyone, have no specific entry requirements, and are completely free of charge.

How are food and environmental issues linked?

SLU has an open, free, online course, known as MOOC, which focuses on the question 'How are food and environmental issues actually linked?'. The course is open to anyone who wants to increase their knowledge of the climate impact of food, from raw material to consumer. No prior knowledge is required, and the course prioritises general basic knowledge about the climate impact of food.

Researchers at SLU measure concentrations and fluxes of greenhouse gases in the atmosphere. The university is part of ICOS (Integrated Carbon Observation System), a network of measurement stations across Europe. Foto: Andreas Palmén



SLU researchers ares monitoring fish stocks at sea and along the Swedish coasts. Thanks to joint efforts, the previously weak stocks of pike perch and pike in the Stockholm archipelago were able to recover. Photo: Ulf Bergström, SLU

The oceans cover 70 per cent of the Earth's surface and are critical to sustaining global systems and making the planet habitable. They are directly vital to the lives of over three billion people. The oceans are plagued by problems such as overfishing, acidification, toxins and pollution, including millions of tonnes of plastic. To preserve marine ecosystems and mitigate the effects of climate change, it is crucial to protect the oceans and use resources sustainably. SLU is Sweden's largest contributor to environmental monitoring and research on marine ecosystems, with a focus on fish and shellfish, and provides ongoing management advice to national and international authorities and decision-makers.

Research

Algae toxins and mussel farming

With ongoing climate change and the lingering effects of eutrophication, researchers have observed an increase in cyanobacterial blooms and filamentous algae growth in several locations. The project aims to understand the processes behind toxin production and how they relate to seasonal changes and environmental parameters. The aim is to identify means for monitoring and safe periods for harvesting mussels farmed on the southeast coast of Sweden.

Oceans in a changing climate - can coastal fish cope with the stress?

Cod is a keystone species in marine ecosystems. It shapes the conditions for a wide range of other marine species, while also being of great importance both economically and culturally. However, cod is facing a critical situation in both the Baltic Sea and the seas of the west coast of Sweden, with small populations and poor condition. Will the already weakened stocks be able to cope with further challenges and climate change? This three-year project is mapping how cod and other coastal fish react to climate stress.

The common murre and artificial intelligence

In partnership with Linköping University, Chalmers University of Technology and AI Sweden, SLU is conducting a research project using video cameras and artificial intelligence (AI) to monitor common murres. The researchers can measure the growth of the chicks, identify unusual events in the colony and monitor how common murres react to extreme weather. The results can be used to identify changes in the populations, and by extension the Baltic Sea ecosystem as the common murre is an indicator of what is happening below the surface.

Round goby – turning risk into resource

The round goby is increasingly common in Swedish waters. This invasive fish species can

Monitoring of marine ecosystems

The ocean is important for all life on Earth and is also where SLU's state-of-the-art research vessel, R/V Svea, operates. Svea spends almost two hundred and fifty days a year at sea, collecting important data that contribute to long-term studies crucial for assessing ocean health, understanding the effects of climate change, and documenting biodiversity, eutrophication, ocean acidification and oxygen conditions.

R/V Svea serves as a research platform for several organisations, including SMHI (Swedish Meteorological and Hydrological Institute) and Stockholm University. By engaging in extensive collaborations within the Swedish fleet, R/V Svea promotes the exchange of resources and expertise, and in doing so boosts technical and scientific advances in marine research.

Environmental monitoring and research conducted on board R/V Svea make it possible to detect changes in marine ecosystems and implement measures to protect them. SLU provides scientific advisory services to both national and international policymakers, management authorities, volunteer organisations and society, and contributes to the sustainable management and use of aquatic resources. This can include everything from local management of marine protected areas to global action to reduce overfishing and protect marine and coastal environments.

R/V Svea not only uses advanced technology to minimise environmental impact during research activities, but is also designed to meet rigorous environmental requirements. The vessel is powered by engines compatible with fossil-free fuels, has particulate filters to reduce emissions and has a customised waste management system, all of which combine to ensure that its expeditions are as environmentally responsible as possible.

58°16'N, 11°26'E

Lysekil is the home port of R/V Svea and the base for the vessel's expeditions in the North Sea, Skagerrak, Kattegat and the Baltic Sea.

6

scientific sonars and echo sounders reveal the diverse life and landscape below the surface.

30% to 2030

R/V Svea provides essential data to support the establishment and management of marine protected areas, contributing to the global initiative to conserve 30 per cent of the ocean by 2030.

The vessel R/V Svea contributes to the sustainable management and use of aquatic resources. Photo: Malin Andersson, Sjöfartsverket

both outcompete and consume native species, having significant negative consequences for the ecosystem. At the same time, it can become a new food resource for predatory fish, birds, and humans. This project seeks to develop knowledge about how the round goby affects fish communities and ecosystem services, whether it is possible to prevent the accidental spread of round goby, reduce their population size through effective fishing, and finally, whether native species can limit the invasion progression of round goby.

Environmental monitoring and assessment

SLU is conducting environmental monitoring and assessment in order to describe the state of the oceans and how humans affect fish, shellfish and ecosystems through fishing, eutrophication and other factors. SLU is responsible for marine environmental monitoring along the Swedish coasts and carries out annual fish monitoring activities at sea using the research vessel R/V Svea. The data collected is analysed and the results are used in the advice on the state of the seas and fish stocks that SLU provides to managing authorities. This includes advice to the European Commission on annual fishing quotas and reporting to the Marine Strategy Framework Directive and the Habitats Directive. SLU also analyses the transport of eutrophic substances to the sea and its sources. The results are used in the work on regional marine conventions in which SLU's experts participate.

Fiskbarometern: The status of Sweden's fsh and shellfish stocks

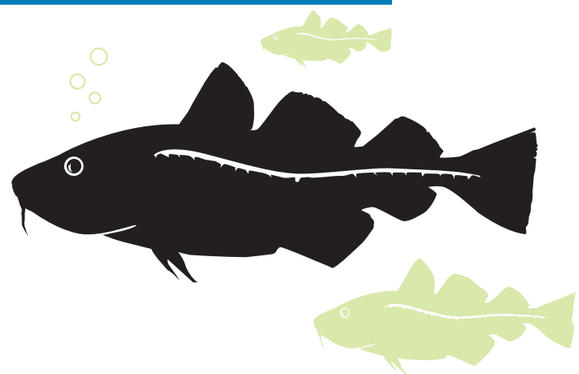
2023 saw the launch of Fiskbarometern – a brand new digital service that reports on the status and trends of fish and shellfish stocks in Swedish seas and freshwater. Decision-makers who manage commercial fisheries can use Fiskbarometern as a knowledge base. Fiskbarometern provides important knowledge about fish and shellfish stocks in waters along Sweden's coasts and in the five largest lakes. The information is based on the large amount of data that SLU Aqua collects and analyses every year.

Education

Marine biology and limnology

SLU offers a course package in marine biology and limnology at the Master's level. The course package consists of a course on sustainable management of natural resources in seas, lakes and watercourses and a course on sustainable fisheries and fish management. Combined with a final degree project, the courses represent one year of study at the Master's level.

SLU is one of two collaborative partners and knowledge guarantors for the Baltic Sea Science Centre, a knowledge centre about the Baltic Sea for both children and adults in Stockholm. The exhibition attracts around 500,000 visitors annually and showcases results from SLU's research and environmental monitoring and assessment.



Thanks to GPS collars, researchers at SLU can study how moose use the landscape and how climate change, weather, hunting and predators affect them. Photo: Susanna Bergström, SLU

Sustainable ecosystems and biodiversity are essential to meet human needs for food, energy, water and raw materials without harming nature. Ecosystems such as forests, wetlands and mountains not only provide habitats for millions of species, but also clean air and water. Land degradation and deforestation reduce habitats, increase greenhouse gas emissions and threaten both the climate and wildlife. Everyone must contribute if we are to ensure the survival of the planet and species. SDG 15 is one of SLU's strongest areas. Research, environmental monitoring and assessment as well as education are conducted in this area.

Research

Collaboration is mapping life on Earth

The Lifeplan project maps life on Earth and is a collaboration with researchers and other partners around the world. The idea is to use automated methods to observe species, and thus obtain data that is comparable between different places in the world. This will provide a picture of what species communities look like today and what processes they are shaped by, made possible by scientific advances in DNA sequencing and artificial intelligence. The project, coordinated by SLU, is surveying 200 sites around the world, collecting information on mammals, insects, birds, fungi and microorganisms. Many of the species encountered in the project are completely new to science, allowing researchers to gain a better understanding of the fabric of life.

New research explores the impacts of continuous cover forestry in Sweden

Gap cutting and selective logging are two forestry methods that involve leaving more trees standing during harvesting compared to traditional clear-cutting practices. Researchers at SLU are exploring how continuous cover forestry impacts species and ecosystem services by revisiting old experimental forests using clearcut-free methods and mapping suitable areas in Sweden for such forestry practices.

Invisible fences benefit both nature and livestock owners

Sweden's first trial of virtual fencing for cattle shows great potential for nature conservation. With the help of an app, livestock owners can determine the area in which their animals are allowed to roam, and avoid the problems associated with physical fences. This makes it easier to manage natural pastures while promoting biodiversity. The project is part of the *SustAinimal* knowledge centre in collaboration with RISE and the World Wildlife Fund (WWF).

Forest ecosystem restoration in Borneo

Thousands of hectares of rainforest in northern Borneo are recovering from logging and other disturbances. In the late 1990s, the Malaysian Sabah Foundation, in partnership with researchers

from SLU and IKEA, chose to begin restoring an 18,500-hectare area that had been subjected to both forest fires and logging. Research on the long-term development of restoration continues and has resulted in new knowledge about factors that affect the recovery of restored forest. Work is ongoing to develop knowledge on how biodiversity, carbon sequestration, water quality and economic values have evolved in the restored forest compared to surrounding plantations. This knowledge is valuable for decision-making in future forest restoration.

Traffic reduces the value of roadsides for pollinating insects

As meadows and natural pastures become increasingly rare, roadsides can have a major impact on biodiversity. Researchers are therefore investigating how well they function as habitats for pollinators and plants. So far, they have found that roadsides have the potential to conserve pollinators, but that it is important to prioritise nature conservation at the stretches of road where it is most beneficial. One question to investigate in the future is how roadsides contribute to the long-term survival of pollinators in the landscape.

Digital app promotes ecosystem services and biodiversity

Mistra Digital Forest is a research programme that uses digitalisation to promote sustainable development in forestry. It does so by developing methods, models and digital tools that contribute to a digital forest value chain and pave the way for a circular bioeconomy. One research project in the programme is investigating how biodiversity is linked to forest and landscape characteristics. In the future, the results can be used to produce maps of species composition in Swedish forests.

Digitalisation for sustainable forestry development

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Environmental monitoring and assessment

SLU's experts are looking for answers to how natural resources can be used in a sustainable way. There is a well-developed system for monitoring the state of Sweden's environments of direct relevance to SDG 15, which include forests, mountains and grasslands. There is a strong focus on the distribution of species, forest growth, the distribution of different habitats and their change over time, and the impact of land use on the various terrestrial systems. One example is the SLU Swedish National Forest Inventory, which has been responsible for Sweden's official statistics on the state of Sweden's forests and how they have changed since the 1920s. Another example is the SLU Swedish Species Information Centre – a national knowledge centre for species and habitats. It publishes the *Swedish Red List* and also operates *Artportalen*, a system for reporting and searching for species observations in Sweden.

Digital tools for measuring and inventorying mountains

A new method for monitoring environmental change has been developed by SLU researchers in the Alpine/Arctic Landscapes environmental monitoring and assessment programme. The method uses satellite images to collect information, with the aim of measuring and monitoring changes in the environment over time using new statistical models. Another project within the programme is investigating new ways to inventory plants in inaccessible environments, such as steep mountain slopes, using drones, which is more time efficient than traditional approaches.

Artportalen hits one hundred million records

Artportalen is Sweden's largest reporting system for species observations. In 2023, Artportalen hit a milestone of one hundred million records. Over the years, it has become an important tool for Swedish nature conservation and community planning. The system is a tool for professionals as well as non-profit and nature conservation organisations, and is a unique source of knowledge. The data in Artportalen are already

leading to targeted nature conservation efforts, and in the future they may help to identify trends to prevent environmental and climate problems.

What is the state of the moose in northern Sweden?

The state of the moose population in northern Sweden is being conducted between 2023 and 2027. SLU's calculations show that the moose population in the four northernmost counties has declined. Researchers at SLU are therefore investigating how the moose are doing by checking the age composition of the population, reproduction, size, weight, energy resources and stress hormones as a complement to previous studies on movement and food intake. The project is a collaboration with county administrative boards, Svenska Jägareförbundet and the major forestry companies in the counties. The studies are being carried out in a number of reference areas in which SLU already conducts moose research.

Education

Conservation and management of fish and wildlife

In this Master's programme students learn about the interplay between wildlife, fish and humans. More knowledge about ecology and ways to inventory animal populations and measure biodiversity is needed to conserve biodiversity. The programme attracts a mix of Swedish and international students.

EnvEuro

Students on the EnvEuro programme gain in-depth knowledge of the environment and sustainable use of natural resources, and study with an international perspective based on environmental planning, management, analysis, research and sustainable development. EnvEuro is a collaboration between four European universities that results in a double Master's degree. The EnvEuro programme attracts students from all over the world.

Agroecology

This international Master's programme provides in-depth knowledge of ecology in food production systems. The programme takes a holistic approach to the sustainability challenges of food production – how food is produced, refined and consumed. It provides a solid foundation for working in research or development in agriculture.

Environmental Economics and Management

This is an international Master's programme focusing on economics integrated with environmental challenges, natural resource management and sustainable development issues. Students choose to specialise in either business economics or national economics, and part of the programme is co-organised with Uppsala University.

Master's students on excursion in north of Sweden. Photo: Malin Grönborg

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

To promote peaceful and inclusive societies is the focus of SDG 16, and it is something that permeates both the daily work and many of SLU's research projects. Photo: Mikael Wallerstedt

Peaceful societies are an important part of sustainable development. All people are equal before the law, and should have equal access to justice and opportunities to exercise influence. The world's higher education institutions play a key role in promoting peaceful and inclusive societies. Open science is one way to contribute to the implementation of SDG 16, in particular target 16.10: *Ensure public access to information and protect fundamental freedoms*. SLU aims to ensure that scientific results and data are known and used in society and to make full use of the opportunities offered by digitalisation. In doing so, it contributes to open science by making research results available.

Open access publications

According to the Royal Library's annual follow-up, 89 per cent of SLU's research articles were published with open access in 2023. SLU is a leader in this respect, as the figure for Sweden is 77 per cent.

Environmental objective for environmental monitoring and assessment

To make an even greater contribution to society's environmental work, SLU has an overarching environmental objective that the data generated through SLU's environmental monitoring and assessment should be used more widely by the country's decision-makers, authorities, researchers and the general public. By the end of 2025, at least 90 per cent of all relevant activities will provide open data online. By the end of 2023, 65 per cent of the organisations participating in the work had met the requirements.

Research

Decolonising land use planning

This project seeks to understand what decolonisation could entail for the everyday practice of land use planning in Sami lands (Sápmi). The project builds on long-term partnerships with Sami reindeer herding communities in Sweden and Finland, and addresses both the content of land use planning and the process of decolonisation. The project has high relevance for all natural resource actors in Sápmi: national and regional authorities, various Sami actors, landowners, developers and local communities.

Climate transitions in contested forests

Putting people at the heart of the work, this project asks how just and sustainable climate transitions are possible in places where conflicts over forests are both complex and intractable. In three cases, conflicts over forest use linked to nature conservation, reindeer husbandry, mining and wind power are examined, as well as the question of who should be involved in decision-making. The aim is to find new methods for sustainable co-management of forests, i.e. solutions that involve the state, indigenous groups and the local communities concerned.

How can vulnerable communities be supported in the face of climate change?

This project explored how vulnerable citizens in rural Nepal and mountainous India seek to access and influence government support to address climate change. More specifically, it studied the role of democratic tools in enabling climate change mitigation and governance leading to more effective and equitable support. Among other things, the data collected by the project helps to identify which governance systems are best suited for creating effective measures to reduce climate risks. This knowledge can be used to develop better public support systems to mitigate climate change.

Education

Political Science – Sustainable Development Bachelor's programme

The Political Science – Sustainable Development Bachelor's programme provides insights into how political and economic factors can influence sustainability. The programme has a unique focus on sustainable development that includes political science, economics, sustainable development, law and statistics. The programme provides students with knowledge of the prerequisites for and importance of sustainable development from an environmental, economic and social perspective.

Agricultural, Food and Environmental Policy Analysis

This international Master's programme focuses on policy and economic analysis. The programme provides students with international experience in a global network and in-depth knowledge to understand and assess the socioeconomic and environmental implications of agricultural, food and environmental policies. The programme is run by SLU in collaboration with three other European universities and three partner universities in Europe, Africa and South America.

The Leadership for transformative change programme ran in 2023 and was aimed to train leaders who are capable of driving social, economic and environmental sustainability at systems level. Photo: Mikael Wallerstedt

Vice-chancellor Maria Knutson Wedel in recognition of SLU's long-standing collaboration with Vietnam. Photo: Agnes Bondesson, SLU

The world is more interconnected than ever, and the SDGs can only be achieved through global partnership and cooperation. Solidarity, financial resources and capacity building, with a focus on leaving no one behind, are required to realise the SDGs. SDG 17 serves as a toolbox for realising these goals. SLU contributes to the SDGs through collaborations with researchers, universities and other stakeholders around the world. This results in new knowledge, increased capacity and synergies between research, policy and practice. SLU's research is mentioned in many international policy documents, including by the UN Food and Agriculture Organisation (FAO) and the World Health Organization (WHO).

Bilateral collaborations

SLU participates in Sweden's extensive bilateral collaborations to increase national research capacity in Bolivia, Ethiopia, Cambodia, Mozambique, Rwanda and Tanzania, funded by Sida (Swedish International Development Cooperation Agency). Within the programmes, some sixty doctoral students are conducting research studies with the support of SLU.

RETURN

SLU is collaborating with the National University of Kyiv Mohyla Academy in Ukraine to map and assess environmental damage resulting from the Russian invasion. The focus is on restoring ecosystem services that are essential for citizens' food, energy and water supply.

Agri4D

In September, SLU partnered with SIANI (Swedish International Agricultural Network Initiative) and Sida to organise the digital conference Agri4D on the theme of building resilient food systems in uncertain times. The conference brought together researchers, policymakers and practitioners from fifty-eight countries. Links between conflict, climate change, health and food security were discussed. The need for a systems perspective through, for example, agroforestry and agroecology was emphasised, as was the need for interdisciplinary and multisectoral cooperation.

GCUA 2030

The Global Challenges University Alliance, GCUA 2030, is a global network of universities with a shared vision of contributing to sustainable global development. The network is led by SLU with co-funding from the Swedish Foundation for International Cooperation in Higher Education (STINT) during the period 2021–2023. GCUA 2030 offers doctoral students and young researchers learning and networking activities. During the year, five doctoral courses linked to the SDGs were held.

AgriFoSe2030

AgriFoSe2030 is a Sida-funded collaboration that aims to increase nutrition and food security in small-scale farming systems in Africa and Asia. It has contributed to increasing the long-term capacity of universities to engage with policymakers and practitioners to achieve research impact. In addition, specific collaborative projects have started to deliver concrete results for food security. Systematic use of the Theory of Change method has been a key to the success of the programme.

LEAP4FNSSA

The Long-term Europe-Africa Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture, LEAP4FNSSA, is an EU-funded collaboration that promotes synergies in research and innovation on food security and sustainable agriculture in Africa SLU leads the knowledge management of the project and has developed a comprehensive database of research and innovation initiatives on food security and sustainable agriculture in Africa. The database is open to all and includes current initiatives.

Drylands transform and Restore4more

Since 2020, researchers from SLU have been leading Drylands Transform, which studies the links between soil health, pasture management and people's quality of life in arid border areas between Kenya, Uganda, Ethiopia and South Sudan. The project is being carried out jointly by nine universities and international organisations. Future strategies are being discussed with herders, who are sometimes forced to move their animals to a new location for water and grazing. The results and collaboration will be further developed in a new project, *Restore4More.*

SLU Global is a unit of the Vice-Chancellor's Office that promotes, supports and reflects SLU's global development activities. The work is guided by SLU's strategy and the Policy for SLU's Global Contribution to the 2030 Agenda. It is carried out in close collaboration with the activities of all faculties and university management.

SCIENCE AND EDUCATION **FOR SUSTAINABLE LIFE**

SLU, Sveriges lantbruksuniversitet, har verksamhet över hela Sverige. Huvudorter är Alnarp, Uppsala och Umeå.
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