



Annual report 2018

CENTRE FOR ENVIRONMENTAL AND CLIMATE RESEARCH, CEC



Vision

As an innovative and vibrant forum of inter-disciplinary research, education and interaction between research and society, the Centre for Environmental and Climate Research is to be an engine for sustainable local, regional and global development in the field of the environment and climate.

The centre brings added value and leverage to subject-specific research at Lund University, is a springboard for new generations of researchers and professionals trained in interdisciplinary approaches and generates evidence-based knowledge that contributes to solutions in the field of environmental and climate research. The overall result is an increased scientific understanding and ability to manage the conditions for sustainable development.



CEC is in an expansive phase and the number of doctoral students, postdoctoral fellows and administrative staff increased during 2018. In 2019, CEC will continue recruiting doctoral students, postdoctoral fellows, researchers and administrative staff. This is both due to increased external funding and the fact that CEC has been assigned the administrative responsibility for activities like the University's new graduate school Agenda 2030. The number of employees at CEC is expected to increase by 30 percent during 2019.

Turnover,
million SEK

70.3

Staff, including staff posted
at another institution

94

Staff employed
at CEC

58

VISITING ADDRESS
The Ecology building,
Sölvegatan 37 in Lund

WEB
www.cec.lu.se

Innovative and vibrant

Since the adoption of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals, there has been a significant change in how nations, authorities and business engage in sustainable development. This has not least affected our University, research funders and prospective students, in that the grand challenge to identify and implement research-based solutions to real-world sustainability problems is increasingly appreciated. Thus, to be relevant in this changing world, we need to strengthen the sustainability dimension in our research, education and dialogue.

According to our vision, CEC should contribute to sustainable development by being an innovative and vibrant forum of interdisciplinary research, education and interaction between research and society. The past year has provided proof of concept that we are on our way to live up to our vision. Researchers at CEC have attracted prestigious grants in the sustainability area, allowing us to expand our role as coordinator of cross-disciplinary environmental and climate research. We are providing important infrastructure through ICOS – now certified for standardised data production. Our close interaction with stakeholders results in synthesis work informing decisions of importance for sustainability. By hosting the new research school on Agenda 2030, we will complement existing research schools at CEC

to provide an even richer environment. Our alumni conference demonstrated how vast number of students who participated in our basic study programmes are now making an impact in society. And much more.

During the next year or two, we look forward to an organisational review by the faculty and coming evaluations of our research and education. We do this with great confidence, as the high quality input by all our employees and collaborators has resulted in an academic environment worth developing further, to strengthen science-policy-society interfaces for a sustainable development.

Henrik Smith
Director



”To be relevant in this changing world, we need to strengthen the sustainability dimension in our research, education and dialogue.”

The past year

...some of the things CEC was engaged in during 2018

Intensified irrigation threatens agricultural productivity

In early January, Kristin Rath was the first at CEC this year to defend a thesis. Her thesis is called Soil salinity as a driver of microbial community structure and functioning and describes how salinisation of soils is a problem restricting agricultural productivity.

CEC researchers in dialogue in Brussels

In March, researchers from CEC and AgriFood were invited by the European Commission to participate in a Civil Dialogue Group meeting in Brussels. On the agenda was the European Commission's first draft to reform the Common Agricultural Policy. The background to the invitation to participate was the report Impacts of Direct Payments – Lessons for CAP Post-2020 from a quantitative analysis, about impacts of CAP on competitiveness and the environment.

Research initiative in Simrishamn

Also in March, CEC and the Simrishamn Municipality received funding to start a new research and innovation environment at the Marine Centre in Simrishamn. The aim is to study and solve environmental problems and societal challenges linked to the sea, water and coastal areas of the Hanö Bay region.

Sustainability Week with global challenges on the agenda

In April, researchers, students, entrepreneurs, politicians, officials and volunteers gathered for a Sustainability Week in Lund. The week, with more than 50 activities,

is coordinated by the Lund University Sustainability Forum. CEC took the initiative for several events, for example a well-attended seminar about climate adaptation in the green dense city and a debate about food, power and the environment.

Plastic waste prevention

In May, Climate-KIC's latest Flagship programme, eCircular, was launched. eCircular aims to use innovative digital tools to increase the recycling of plastic materials and to reduce plastic waste.

Degree projects highlight food and waste reduction

During spring 2018, 73 students wrote a degree project in Environmental science or Environmental and health protection at CEC. The degree projects highlight issues related to a sustainable future; topics included food and waste reduction, plastic recycling and a circular economy.

The waste and recycling company Sysav distributes scholarships for excellent degree projects in its field. This year, CEC students in Environmental science received all three of these scholarships.

A climate policy council in Lund

In June, Lund Municipality launched a climate policy council in which CEC is represented by Markku Rummukainen, Johanna Alkan Olsson and Roger Hildingsson. Markku Rummukainen is also a representative in Sweden's national climate policy council.



Fieldwork studying bumblebees

Some of our colleagues at CEC spent the hot and dry summer 2018 doing fieldwork, for example studying bumblebees. Researchers from the COST-project collected pollen from bumblebees and surveyed flower resources at 19 different farms in Skåne.

Science festival in Lund

During Lund Culture Night in September, the Faculty of Science hosts a science festival for the whole family. CEC contributed with an insect hotel workshop and a workshop about how to cope with being uncertain. Reference group meeting on bioenergy and land use
The strategic research areas BECC and MERGE meet stakeholders in a reference group to discuss the state of knowledge related to BECC's and MERGE's research areas. In September, the reference group met to discuss bioenergy, land use and policy instruments related to Sweden's climate, forest and agricultural policy.

Climathon on plastics' climate impact

In October it was time for Climathon, a 24-hour hackathon for climate solutions taking place in more than 100 cities all around the world. Climathon in Lund was organised by Climate-KIC, in collaboration with the City of Lund and others, and focused on finding solutions to limit the climate impact of plastics.

20th anniversary for education in Environmental Science

It's been 20 years since the first students in Environmental Science started their studies at what was later to become CEC. To mark the anniversary, CEC invited current and former students and CEC employees, to meet, exchange experiences and inspire each other at a well-attended jubilee event with seminars and engaged discussions.

Biodiversity in production landscapes

In November, the Formas project COST and the strategic research area BECC organised a seminar at the Royal Swedish Academy of Agriculture and Forestry (KSLA), to discuss how best to combine environmental considerations in normal agriculture and forestry with protected areas to conserve biodiversity.

Researchers' Grand Prix

Later in November, CEC's Lina Herbertsson represented Lund University in the final of Researchers Grand Prix, where researchers from Swedish universities challenge each other to make the best oral presentation of their research.

Increased research funding

Towards the end of the year, CEC received positive responses on major research applications from, for example, the European Research Council and Formas, enabling the organisation to continue to develop and recruit both researchers and administrative staff during 2019.



Great student engagement in Environmental Science

MYS is the Environmental Science study council run by students, for students. Its main purpose is to ensure the quality of the education and arrange social activities for environmental science students.



“In 2018 we had a much appreciated evening of inspiration where CEC alumni told students about their current work and career steps. It was also very fun to be part of CEC’s 20th anniversary, where many from MYS participated and were inspired by the lecturers. In addition to this, MYS, other study councils and the students’ union have contributed to the implementation of the requirement for anonymous exams at the entire faculty.

In 2019, we look forward to being part of the department’s and University’s sustainability work. We also look forward to organising more social activities to strengthen the links between environmental science students.

The best thing about being active in MYS is to meet other students and understand more about how the students’ union and the department work and how to influence our education.”

Hanna Eriksson, president

Sara Winterfeldt, vice president MYS



CEC offers both Bachelor’s and Master’s programmes. The programmes combine basic knowledge about environmental problems with a specialisation in an area of individual choice.

BACHELOR’S PROGRAMMES

- Environmental Science
- Environment and Health Science

MASTER’S PROGRAMMES

- Master in Applied Climate Change Strategies
- Master of Science: Environmental Health
- Master of Science: Environmental Science

”Fantastic to meet old friends and share my journey”

Interview with CEC Alumna Mirjam Luc, Project Manager Sustainable Materials, IKEA of Sweden. Mirjam studied Environmental Science in Lund 2000-2005.



What are your tasks at IKEA?

I support our purchasing organisations and product development teams with material issues. It can be anything from how they can get the material approved, risk assessment of the material based on different aspects, which requirements we should develop, and how we should communicate it externally to our customers.

What is the biggest challenge at your job?

We have high pressure with our movement of Circular IKEA. There is a lot happening on many fronts, it can sometimes be hard to focus and see where I provide most benefit.

What was the best thing about your education?

All the amazing people I got to know, so inspiring to see what enthusiasts there are!

You joined the 20th anniversary, how was it?

It was fantastic to meet old friends again, but also to share my journey and hopefully inspire others.

Environmental Science 20 years

The first study programme in Environmental Science started in Lund in 1998. 2018 was the year for celebrating 20 successful and eventful years, with more than 1000 graduates. In October, CEC arranged a big jubilee for current and former students and employees, focusing on present and future Environmental Science.

We have also started an Alumni Network, for anyone who is or has been involved in CEC's activities through studies or work. By joining CEC Alumni, you can broaden your professional network and interact with people with a similar educational background and work experience.

[Join CEC Alumni on LinkedIn](#) →



Environmental Science Graduate Studies

CEC offer a PhD programme in Environmental science, aiming to develop scientific expertise and interdisciplinary research. Research in Environmental science concerns problems arising from anthropogenic impact on the environment, including studies of climate change. The subject deals with studies of human impact on natural processes and the actions and strategies that can be taken to prevent, deter or counteract local, regional and global environmental problems. Studies of how environmental problems affect the sustainable use of the environment are also part of the subject.

THESES 2018

Kristin Rath

[Soil salinity as a driver of microbial community structure and functioning](#) →

Lelde Krumina

[Adsorption, desorption, and redox reactions at iron oxide nanoparticle surfaces](#) →

Ana Soares

[Riverine sources of bioreactive macroelements and their impact on bacterioplankton metabolism in a recipient boreal estuary](#) →

Jasmine Livingston

[Climate Science for Policy? The knowledge politics of the IPCC after Copenhagen](#) →



Climate science and climate politics

It is important to make science relevant for policy makers, CEC's Jasmine Livingston argues in her thesis. She has studied what takes place both on and behind the public stage, covering nine years of work by the UN Intergovernmental Panel on Climate Change, IPCC.

“Researchers, including researchers writing for the IPCC, are raising their voices more and more, telling policy makers that climate change is an urgent problem. Climate change will affect ecosystems and societies all over the world. It is a problem which requires drastic and immediate changes to our way of life and the structures on which societies are built”, says Jasmine Livingston.

In her work, Jasmine has observed a change in how the IPCC has approached its production of reports during the last few years. Science can be made more relevant for policy makers when it answers direct questions from them, such as the special report on global warming of 1.5 degrees. Policy makers of the world requested this report from the IPCC as part of the climate agreement in Paris.



Graduate Schools

- **BIOECONOMY Graduate Research School**
- **ClimBEco Graduate Research School**
- **Agenda 2030 Graduate School**

BIOECONOMY Graduate Research School

BIOECONOMY Graduate Research School (GRS) is a transdisciplinary graduate research school with the overall aim of developing the competences necessary for participating PhD students to:

- adopt a systems approach in order to identify and assess the full range of technological, economic, social and ecological challenges and opportunities in transition to a circular bioeconomy.
- lead the way in innovative inter/trans-disciplinary research and education for a sustainable bioeconomy in the international arena.

[Read more about the BIOECONOMY Graduate Research School](#) →

ClimBEco

ClimBEco stands for Climate, Biodiversity and Ecosystem services in a changing world. It is a two-year graduate research school that promotes young scientists to engage in interdisciplinary research.

[Read more about ClimBEco](#) →

New Graduate School focusing on Agenda 2030

Lund University decided to start a graduate school focusing on societal challenges and Agenda 2030, the first of its kind in Sweden. The Sustainability Forum and Centre for Environmental and Climate Research have been tasked with administrating the graduate school. The work with the graduate school started in 2018 and the first doctoral students will start in autumn 2019.



At least 12 doctoral students from all faculties will be financed through the graduate school. All doctoral students will be enrolled on a specific research studies programme, and simultaneously take part in the university-wide interdisciplinary research studies courses, developed on the basis of the issues defined by the global goals.

There will also be several activities linked to the graduate school in order to be part of the global sustainability agenda and to advance the research front on issues concerning Agenda 2030, for example seminars, conferences, study trips and collaboration with various societal stakeholders.

[Read more about Lund University Agenda 2030 Graduate School](#) →

Field study of biodiversity

The COST project studies whether there is any difference in the biodiversity found at organic and conventional farms.



Some of our researchers at the CEC spent the beautiful and warm summer 2018 doing fieldwork. Romain Carrié and others from the COST project collected pollen from bumblebees and surveyed flower resources at 19 different farms in Skåne.

“From earlier fieldwork, we know there is a difference in both number and biodiversity of bumblebees found at organic and conventional farms. Now we wanted to know if this difference is due to variations in the diversity of flowering plants from which the bumblebees collect pollen” says Romain Carrié.

“We have been counting the number of bumblebees, the number of queens and workers, studied their growth and the pollen they have been collecting” Romain continues.

The fieldwork was performed from mid-June and throughout July.

“The late part of the season when pollinators are active is important for their reproduction. It is critical that there is enough pollen during July and August because this is when bumblebees produce new queens” explains Romain.

This was an unusually warm and dry summer in Sweden, which could affect the results from the fieldwork.

“We fear that bumblebees at all farms have had difficulties finding food this summer, but it would be interesting if we could find any difference in resilience to drought, such as the drought we had in 2018” says Romain.

COST

The COST project studies cost-effective support to organic farming to sustain biodiversity and ecosystem services.

[Read more about COST](#) →

Ecological and economic interactions between farming and smallholder forestry

Research and society in close cooperation: that is the basis for Farm2Forest, a research project aiming to guide Swedish and European agricultural and forestry policymaking, combining economic and ecological data and models.

Researchers engaged in the project Farm2Forest study the effects of future agricultural policy reform on biodiversity and ecosystem services in mixed farming-forestry landscapes.

“Agriculture and forestry are two sectors that are often considered separately. In fact, they are closely connected. Both from an ecological and an economic perspective, there is much to gain by considering these activities together”, says Yann Clough from Farm2Forest.

“We are currently identifying scenarios that reflect changes in societal demands and the Swedish and European policy context. For example, it is still unclear how much raw material can be mobilised from agriculture and forestry for the production of food and bioenergy. A lot depends on available policy instruments and if and how producers adapt to the increased demand for biomass”, Yann continues.

The Farm2Forest project brings together researchers from different fields, as well as representatives from agriculture and forestry to investigate future scenarios and to identify policy instruments that would make agriculture and forestry both ecologically sustainable and economically viable. A starting point is the changes underway within the EU with regard to agricultural subsidies, Brexit and discussions on the reform of the Common Agricultural Policy beyond 2020.

“We will develop an ecological-economic model for how agriculture and smallholder forestry in forest districts are affected by various policy instruments, and how this in turn affects the economy and the environment. In addition, workshops will be held with various stakeholders to make sure we address the right questions”, says Yann.



Farm2Forest

Farm2Forest links scenarios, economic and ecological modelling of biodiversity and ecosystem services to understand how future agricultural policy will affect marginal farming regions in Sweden.

[Read more about Farm2Forest](#) →

Standardised greenhouse gas measurement

Greenhouse gas measuring stations in Norunda and Hyltemossa have been certified for standardised data production. Data that helps to reveal carbon emissions and sinks, essential to predict climate change and mitigate its consequences.

Regional greenhouse gas measurements are critical to understand the development of climate change. After more than five years, ecosystem stations in Norunda and Hyltemossa are now joining a total of 32 certified measurement stations in the European network called ICOS.

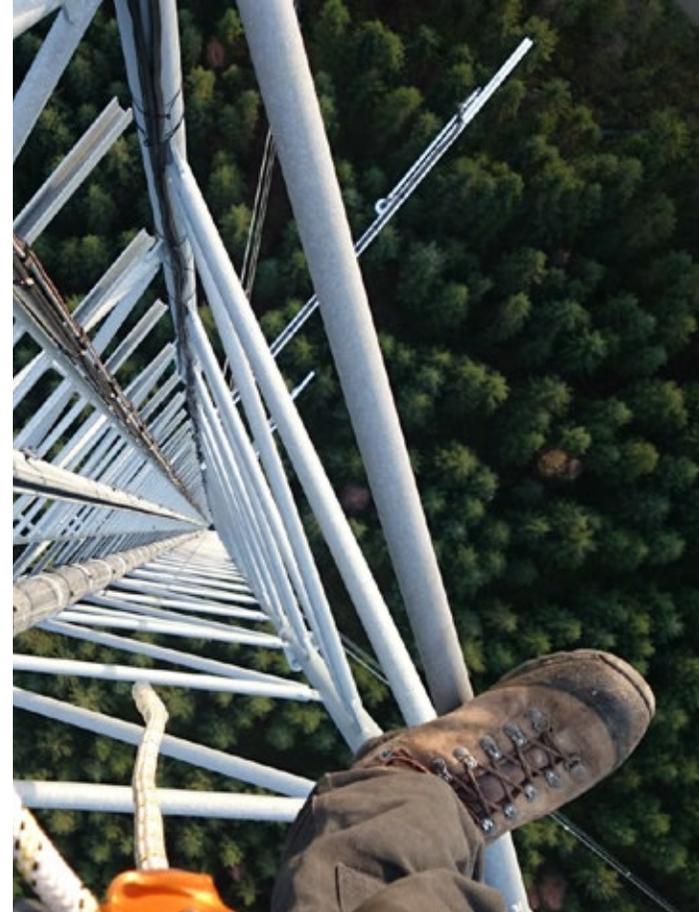
Stations in the ICOS network measure greenhouse gases to produce science-based information for both the scientific community and for decision-makers. ICOS Sweden covers six ecosystem stations, three atmospheric stations and one marine station, from Abisko in the north to Skåne in the south. Two of these atmospheric and ecosystem stations, Norunda and Hyltemossa, are maintained by CEC and Lund University.

“Standardisation of measuring methods is critical for the data being put to use, to enable data comparison between different ecosystems and climate regions. The

certification means that the stations have been controlled to fulfil all necessary requirements,” says Maj-Lena Linderson, Coordinating Director at ICOS Sweden.

Natural carbon fluxes affect the amount of greenhouse gases in the atmosphere as much as human emissions and may themselves be altered by climate change. In the long term, it is important to be able to distinguish between natural and fossil fuel emissions to be able to efficiently direct mitigation and adaptation efforts.

“The greenhouse gas information gathered from all over Europe is essential for national governments to improve their mitigation activities, and also for inter-governmental organisations to make informed decisions when they seek ways to fulfil the requirements set by international agreements,” says Werner Kutsch, Director General at ICOS.



Measuring stations Norunda and Hyltemossa

Greenhouse gas measuring stations in Norunda and Hyltemossa carry out assignments for ICOS Sweden, a research infrastructure to monitor and understand the exchange of greenhouse gases between the Earth's surface and the atmosphere. ICOS Sweden is part of a European network called ICOS. The measuring stations in Norunda and Hyltemossa are units at CEC.

Well-managed forests can limit climate change

Growing forests can limit climate change by absorbing carbon dioxide from the atmosphere, storing the carbon in their biomass as they grow. How much carbon a forest stores varies between tree species, the forest's age, weather conditions and how the forest is managed.

Young growing forests store a lot of carbon; as the forest gets older, its carbon sequestration capacity decreases. When trees are felled or burn down, there is a major release of carbon dioxide and it can take several years before this carbon loss is recovered.

“We cannot say that the carbon sequestration of newly planted trees is a ‘profit’ until the carbon emissions from previous felling have been compensated for by the new trees. How long that takes under various conditions is one of the things we study”, says Natascha Kljun.

Natascha Kljun and her colleagues measure the flow of greenhouse gases between the vegetation and the atmosphere, using instruments placed on tall masts. Researchers obtain data not only on greenhouse gases, but also on humidity, temperature, solar radiation and wind. There are now almost 600 such masts around the world, located in different climate zones and in different types of vegetation such as forests, grasslands, agricultural land, marshes and savannah.

“You have to take measurements for many years to obtain data which is representative of different conditions, and also to observe the effect of extreme weather events or climate change. The oldest towers have been in place since the early nineties, and they have provided very valuable data”, says Natascha Kljun.

The tower managed by CEC in Norunda was one of the first towers established for greenhouse gas measurements. The forest in Norunda is now almost 100 years old and will soon be felled.

“As we have collected measurements from this forest for many years, this will be an excellent opportunity to study in detail what happens when old trees are felled and new trees are planted”, says Natascha.

The resulting values are not only to be used to advise on forest management in Sweden, but also in regional and global ecosystem models to improve the understanding of climate change on a global level.

”This will be an excellent opportunity to study in detail what happens when old trees are felled and new trees are planted.”



Human and nature in symbiosis

BECC, Biodiversity and Ecosystem Services in a Changing Climate, is one of Lund University's and CEC's strategic research areas, in which social sciences, economics and natural science combine research on issues related to ecosystem services and biodiversity in a changing climate. Research within this area shows how human beings depend on nature, and how our exploitation of nature can become more sustainable.

“Many believe it's necessary to attach an economic value to all ecosystem services to be able to apply the concept but, primarily, it's about weighing different values against one another and making sustainable priorities”, says Cecilia Akselsson, leader of BECC's ecosystem services theme.

BECC's research is unique in its approach of linking knowledge about ecosystem services and biodiversity not only to basic natural science research but also to political and economic instruments. The researchers' collaboration with representatives from, for example, agriculture and forestry, increases the chances of being better equipped for a future with a changed climate.

Johan Ekroos, leader of the biodiversity theme within BECC, stresses that without biodiversity there are no ecosystems. Diversity is a prerequisite for the optimal function of nature's machinery. This is also something

that can benefit our modern agriculture and forestry industries which, at the same time, are under enormous pressure to ensure a good profit.

Knowledge of nature's carbon cycle is an important part of the work to mitigate climate change. Researchers are increasingly seeing that land use has a major impact on the amount of carbon that is either stored in soils or released into the air.

“An important climate policy goal is to recycle the carbon back into nature's ecosystems where it can be stored securely over a long period of time. Soil can be a source of carbon emissions or carbon sequestration, depending on how we use it, but there is still a major knowledge gap in terms of how carbon is exchanged in different ecosystems”, says Edith Hammer, leader of the BECC theme on nature's carbon cycle and climate change.



BECC – Biodiversity and Ecosystem Services in a Changing Climate

The strategic research area BECC encompasses more than 170 senior researchers and 60 PhD students from 10 departments at Lund University and the University of Gothenburg.

[Read more about BECC](#) →

Climate models including vegetation

MERGE, Modelling the Regional and Global Earth system, is another of Lund University's and CEC's strategic research areas. More than one hundred researchers from five Swedish universities and the Swedish Meteorological and Hydrological Institute (SMHI) are developing methods to study interactions between climate change and the biosphere.



MERGE – Modelling the Regional and Global Earth system

The strategic research area MERGE is a collaboration between Lund University, University of Gothenburg, Rosby Centre/SMHI, Linnaeus University, Chalmers University of Technology and the Royal Institute of Technology. MERGE involves more than 130 researchers.

[Read more about MERGE](#) →

“We are trying to improve the understanding of the role of vegetation in the climate system”, says Paul Miller, coordinator of MERGE.

In recent years, physical climate models have been developed into so-called Earth System Models (ESMs), including detailed representations of how the global carbon cycle and climate interact, as well as how ecosystems are affected by and interact with climate. Carbon dioxide and methane are the two gases in the atmosphere that contribute most to global warming, along with nitrous oxide and ground-level ozone, and their levels are influenced by the state of terrestrial ecosystems.

“Our model called EC-Earth is unique in that it also takes the carbon cycle, VOCs, detailed vegetation dynamics and land use into account – aspects that have a major impact on the climate”, says Paul.

Birgitta Svenningsson, deputy coordinator of MERGE, is conducting research on how cloud formation is affected by particles in the air.

“In order to understand the particles' impact on the climate, we are looking at everything from single water droplets to how air masses move between our field stations”, says Birgitta, explaining:

“Air pollutants such as soot particles may have a major impact on cloud formation locally. However, emissions of organic compounds from plants are even more significant globally.”

MERGE-researchers' results, combining data from local studies with advanced ESMs, will be used in the IPCC's 6th assessment report on the climate, to be published in 2022.

CEC Fellows

CEC Fellows is an interdisciplinary meeting place for environmental and climate research across the science landscape of Lund University. The aim is to act as a forum for the exchange of ideas and knowledge to promote and enable new interdisciplinary research initiatives and to develop research activities, both at CEC and at the researchers' home departments. CEC Fellows facilitates the dissemination of information concerning research opportunities and initiatives between different research groups at Lund University.

During 2018, researchers engaged in CEC Fellows received positive responses on research applications from Region Skåne, the European Research Council and Formas, among others, enabling the organisation to continue to develop during 2019.

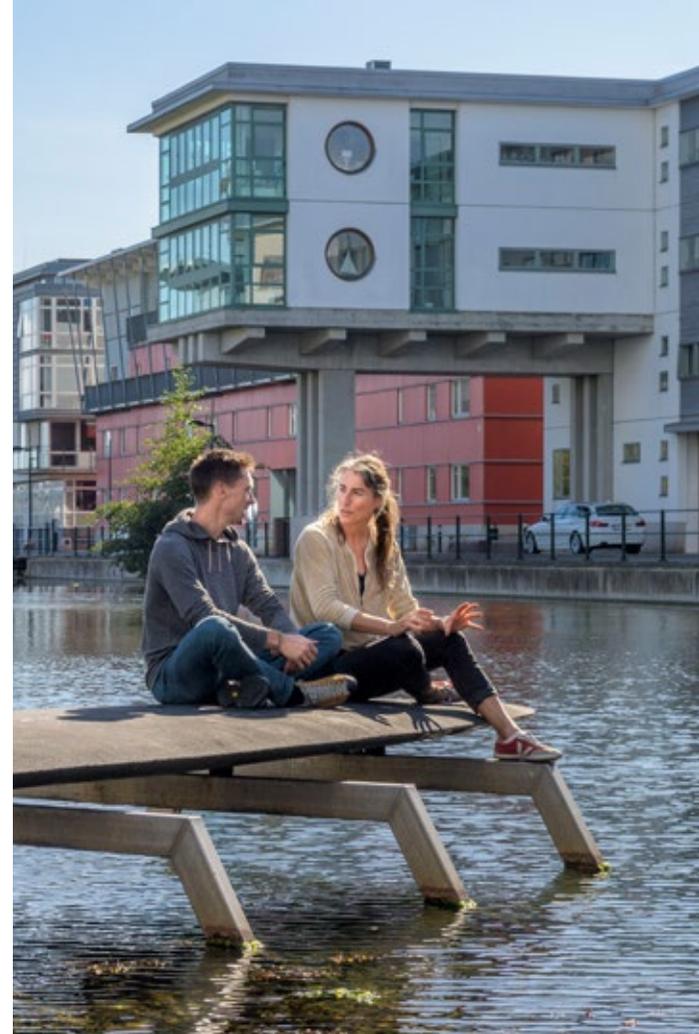
Lund University, together with the Simrishamn Municipality, received funding from Region Skåne to start a new research and innovation environment at the Marine Centre in Simrishamn, with the aim to study and solve environmental problems and societal challenges linked to the sea, water and coastal areas of Skåne and southern Sweden.

"It is of great importance for the future development of Skåne and southern Sweden that the surrounding coasts and sea are healthy", says Maria Hansson, one of the initiators of the new research and innovation environment in Simrishamn.

Yann Clough, who is responsible for CEC's research development, has received an ERC Consolidator Grant from the European Research Council for a project on the worrying decline of pollinating insects.

"It is CEC's combination of deep knowledge and interdisciplinary experience now giving dividends," says Yann.

Several new research projects related to CEC also received funding from Formas, among others Henrik Smith's two projects Landscape perspectives for efficient conservation of biodiversity and ecosystem services in farmland and Constraints on the expansion of organic farming in Sweden, Natascha Kljun's project Climate costs of boreal forest clear-cutting – a multiscale experiment (CORE) and another project with Yann Clough as research leader called Production potential of agricultural biomass and policy instruments to promote a fossil-free society while meeting food production and environmental objectives.



CEC Fellows is a network of researchers in the field of, or with an interest in, environmental and climate research. The group consists of over 130 professors, senior lecturers, researchers and postdocs. The purpose of CEC Fellows is to create a long-term arena for interaction among the participating scientists and for development of new research ideas and configurations.

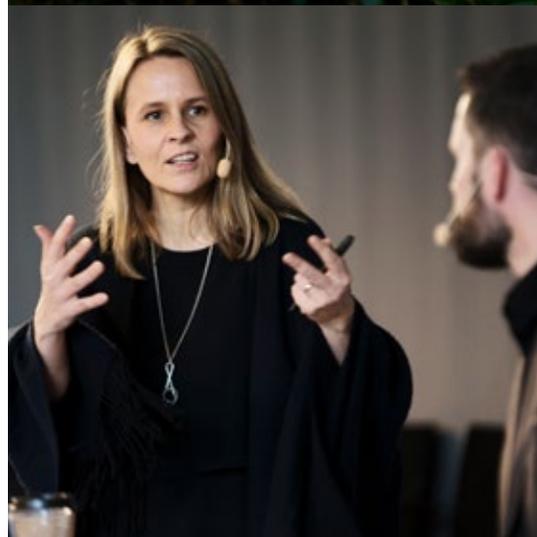
Lund University Sustainability Forum

The Lund University Sustainability Forum forms a bridge between society and academia in the sustainability areas. The Sustainability Forum supports researchers and research groups at Lund University concerning communication and dialogue, and provides a channel for stakeholders seeking collaboration, research support and information from LU. CEC is hosting the Sustainability Forum.

During 2018, the Sustainability Forum contributed to the new university-wide sustainability strategy. The purpose of the strategy is to clarify that Lund University must integrate sustainability aspects in all its education, research, collaboration, business development and governance. It should also take into account the UN's global sustainability goals and Agenda 2030 for the implementation of the goals. In 2019, a decision will be made on strategy and continuation.

Sustainability Week in Lund has become a recurring tradition and is arranged by the Sustainability Forum together with the City of Lund. During the week, people with different backgrounds and interests meet and discuss sustainability issues. The event engages researchers, students, regions, municipalities, other authorities, associations, companies and others.

[Read more about the Lund University Sustainability Forum](#) →



Climate-KIC

Climate-KIC brings together universities, companies, cities and other stakeholders in Europe with the common goal of finding innovative mitigation and adaptation solutions to climate challenges. Climate-KIC supports innovation projects and startups initiated by partners that have relevance for climate change mitigation or adaptation. Lund University has been a partner since 2015.



Climathon 2018 – the winning team

In 2018 Lund University became part of the core team for Climate-KIC's latest Flagship programme, eCircular, aiming to crack down on plastic waste and radically reduce the use of plastic materials. The project aims to explore and use innovative digital tools to improve plastics waste prevention. This can, for example, include blockchain solutions for improved market transparency, data analytics for simulation and forecast applications, and cyber physical systems for improved reuse and remanufacturing business models.

Reducing plastic waste was also the theme of this year's Climathon in Lund, an annual 24 hour hackathon to find new innovative climate solutions. 54 participants gathered in Lund, making it one of the largest among the 113 Climathons held simultaneous all around the world. The winning team, Pow(d)erfull, presented a solution for reducing shampoo bottles. Every year 552 million shampoo bottles are thrown away in the US alone. The solution also includes large savings in transports to stores and great marketing and visibility opportunities for existing brands.

During the summer, Climate-KIC hosted a summer school for climate innovation and entrepreneurship.

[Read more about Climate-KIC](#) →

CEC in media

Researchers at the CEC often feature in media commenting on recent research or events related to the CEC field of knowledge. Some examples from 2018:

Lina Herbertsson was interviewed by many media outlets about how pollinating insects affect the strawberry crop.

“Strawberry plants whose flowers are visited by a large number of pollinating insects of many different types have strawberries that grow faster, have a more regular shape, weigh more and keep longer than the strawberry plants that are only pollinated by a few insects or the same type of insects”, she said.

[See for example an article in the Swedish outlet Extrakt](#) →

Anna Persson appeared in several media outlets commenting on a study showing that meadows and unmown grassy spaces can support butterflies in cities.

“It is the very well-tended, closely-mown parks that lose the most species. This indicates that there is great value in taking an innovative approach to how to care for green areas in the city and perhaps dare to have meadows with more indigenous plants”, she said.

[See for example an article published by the Swedish television news](#) →

Markku Rummukainen has appeared a lot in the media during 2018, for example commenting on the World Meteorological Organisation having measured record-high levels of carbon dioxide in the atmosphere during 2017.

“We cannot avoid climate change as it is already underway, and the emissions are continuing, but it is possible to slow it down and prevent the effects from increasing further. This in turn presumes that emissions quickly begin to drop”, he said.

[See for example an article in the Swedish outlet NyTeknik](#) →



Future perspectives for environmental science

The biodiversity crisis, the urgency to take measures to avert extreme climate change, and the challenge of tackling droughts and forest fires have been a matter of public attention during 2018. At the same time, Agenda 2030 and its sustainable development goals, and the new Swedish national and regional strategies on climate and food are also changing the policy context. Not surprisingly, this has had significant impact on the landscape for environmental science in the past year.

Researchers at CEC have been successful in securing multiple large grants, leveraging the wide network of researchers of multiple disciplines, excellent contacts with stakeholders, as well as the in-house experience and expertise in key scientific disciplines and policy-relevant research.

The years to come will bring increasing expectations from science and society, also translated in the volume and types of funding. This will be both in terms of increasingly transdisciplinary research directly targeted towards helping societal actors solve the big global challenges, but also in developing the fundamental science

basis and enabling disruptive innovations. An important part of this will involve synthesising the existing, rapidly expanding knowledge in ways useful for decision-makers. Striving for more holistic approaches to environmental research, away from cherry-picking SDGs, will demand both broad and novel collaborative initiatives, both within Sweden, and internationally, going beyond comfort zones to generate innovative research perspectives and support transformative change.

CEC is expanding its organisation and preparing to take on these challenges.



”Striving for more holistic approaches to environmental research, ... will demand both broad and novel collaborative initiatives”

Board 2019

Henrik Smith, CEC and Department of Biology (Chair)

Caroline Isaksson, Department of Biology

Kim Nicholas, LUCSUS

Erik Swietlicki, Division of Nuclear Physics, LTH

Sofi Elmroth, Department of Chemistry

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Yvonne Persson, CEC

Torbjörn Brorson, IIIIEE

Paul Miller, Department of Physical Geography and Ecosystem Science

Helena Filipsson, Department of Geology

Maria Åkesson, Student representative

Timothy Williams, Student representative

Management group 2019

Henrik Smith, Director, Coordinator BECC, Director Sustainability Forum

Katarina Hedlund, Deputy Director with responsibility for undergraduate education

Yann Clough, Assistant Director with responsibility for research development

Karin Hofvendahl, Administrative manager

Maria Hansson, Assistant Director of the PhD programme

Anna Ekberg, Coordinator Sustainability Forum and CEC research schools

Hanna Holm, Communications manager

Erik Swietlicki, Infrastructure strategies

Paul Miller, Coordinator MERGE

Per Persson

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Hanna Holm and Jenny Hansson at CEC

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