

2017 Plan of Operations for the Centre for Environment and Climate Research (CEC)

Mission

CEC's mission is to initiate, support and conduct education and research on society's impact on the natural environment and on societal challenges and possible solutions concerning the environment, climate and sustainable development. CEC is to promote interdisciplinary research and education within climate and environmental issues, highlight and communicate research findings and serve as a link to key stakeholders within its area of operations. CEC activities are therefore of an interdisciplinary nature, based on cooperation across departmental and faculty boundaries, and characterised by collaboration with community stakeholders. CEC activities are based on research at the faculty's departments, while CEC adds further value to the departments' research.

Vision

As an innovative and vibrant forum of interdisciplinary research, education and interaction between research and society, the Centre for Environmental and Climate Research is to be a driving force for sustainable local, regional and global development in the field of the environment and climate. The centre brings added value and leverage for subject-specific research at Lund University, is a springboard for new generations of researchers and professionals trained in interdisciplinary approaches and makes evidence-based knowledge that contributes to solutions in the field of environmental and climate research available. The overall result is a deeper scientific understanding of and ability to manage the conditions for sustainable development.

Strategy

To solve many of today's major challenges that pose a threat to sustainable development – for instance, the loss of biodiversity, over-exploitation of natural resources and climate change – requires the decisions that affect our future to be supported by knowledge from many different scientific disciplines. Basic research at Lund University creates scientific understanding of natural processes and systems and how they are affected by humans as well as an understanding of the socioeconomic driving forces behind society's environmental problems. Based on disciplinary research, CEC's strategy is to support and conduct interdisciplinary research and education in dialogue with wider society, to help achieve the objectives of sustainable development. CEC accomplishes this by being a *coordinator* for strategic environmental and climate research and infrastructure investments, a *research agent* that, in close collaboration with different departments, stimulates and conducts integrated environmental and climate research, a dynamic and creative *meeting place* for researchers who want to tackle current and future research and societal challenges, a *hub* for talent management by training future professionals in the field, and a *knowledge bank* for innovative communication of research results to society.

CEC supports, develops and conducts interdisciplinary environmental and climate research by

- supporting, developing, coordinating and conducting research in the fields of the environment and climate, including strategic research areas and strong research environments,
- creating an internationally prominent interdisciplinary environment which, in close collaboration with existing departments, stimulates research across disciplines, particularly with regard to research in biodiversity, ecosystem services and climate,
- stimulating and supporting the use of ICOS Sweden, ACTRIS and MAX IV in environmental and climate research.

CEC supports, develops and conducts first-, second- and third-cycle education in the field of environmental and climate studies to form interdisciplinary trained professionals by

- conducting cross-disciplinary bachelor and master education in environmental science and environmental health science, as well as in strategic climate work,
- conducting interdisciplinary post graduate education in environmental science,
- supporting post graduate education in the field of the environment and climate by offering two interdisciplinary graduate schools.

CEC highlights research results and creates dialogue with societal stakeholders in areas of the environment and climate by

- creating, developing, and engaging in dialogue between societal stakeholders and researchers to stimulate the development of environmental and climate research, and to ensure that the results can be used,
- making environmental, climate and sustainability research at Lund University known to wider society,
- actively attending relevant social arenas and policy contexts in order to communicate knowledge based research, provide expert advice and other decisional support.

CEC's operations are based on the activities within the departments which integrate through interdisciplinary research, education and external engagement. For this purpose, CEC is developed into a centre with the ability to initiate, coordinate and conduct interdisciplinary research and education initiatives, while maintaining strong collaboration with departments of different subjects. Therefore, CEC has staff who are specifically assigned to coordinate its initiatives and contribute with their special expertise, and teaching staff and researchers from a number of different departments at various faculties who are involved in the activities. CEC is responsible for Lund University's Sustainability Forum, Lund University's hub within Climate-KIC, the ICOS Sweden research infrastructure, and the university-wide strategic research areas of BECC and MERGE, and therefore takes wide responsibility for activities related to climate, energy and sustainability research wherever it is carried out at the University. CEC's bachelor, master and PhD programmes and graduate schools are based on a close collaboration with different departments and the research efforts coordinated by CEC.

Operations

Research

In accordance with the intentions of Lund University's research strategy for 2016–2021, CEC helps strengthen environmental and climate research at Lund University (LU) by initiating, coordinating, supporting and conducting research initiatives with a clear environmental or climate profile, often with researchers and doctoral students from several departments and faculties. Our activities are based on and take place in collaboration with various departments at different LU faculties. CEC complements the departments' research by developing interdisciplinary methods and processes which bring together existing research to respond to issues of relevance to society. CEC offers an administrative base for research investments, including platforms for communication, graduate schools and other similar activities.

A central part of our activities is coordinating the strategic research areas of *Biodiversity in a Changing Climate (BECC)* and *Modelling the Regional and Global Earth system (MERGE)*. Furthermore, CEC coordinates the research infrastructure called *Integrated Carbon Observation System (ICOS Sweden)* and supports the development of *ACTRIS (Aerosol, Clouds, Trace gases InfraStructure)* and the use of the MAX IV for environmental research. CEC is actively working, in collaboration with research groups and departments, to create opportunities for the development of more such projects, especially those that deal with the causes of and solutions to environmental issues, and projects that promote multi- and interdisciplinary activities.

CEC develops interdisciplinary expertise and research to strengthen environmental and climate research at Lund University. Among other things, CEC develops methods of evidence-based evaluation, system models and eco-financial modelling. This makes CEC an important actor in relation to society's need for decision support and for future research collaborations on a national and international level.

CEC serves as a meeting place for interdisciplinary research by inviting visiting researchers and offering fixed-term salary funding for researchers from other LU departments to develop interdisciplinary research and synthesis within the area of climate and the environment. CEC creates forums for meetings between researchers from different disciplines, in order to stimulate creativity and interaction with the aim of supporting the emergence of new research projects and the development of ongoing investments at both CEC and the departments.

CEC Fellows is a virtual collegial body of researchers in the field of, or with an interest in, environmental and climate research, who meet regularly and discuss opportunities to develop research activities, both at CEC and at their home departments. CEC Fellows facilitates dissemination of information concerning research opportunities and initiatives between different research groups at Lund University.

In 2017, CEC shall:

- develop research and administrative expertise in order to initiate, lead and support interdisciplinary research efforts,
- continue the development of the strategic research areas of **BECC** and **MERGE** as interdisciplinary platforms for research on climate, biodiversity and ecosystem services,
- coordinate the research infrastructure of **ICOS Sweden**,
- in consultation with the research groups concerned, and within the scope of CEC Fellows, identify themes for strategic research development and produce applications on the basis of these themes. The strong links to BECC, MERGE, ICOS Sweden, ACTRIS and MAX IV are important starting points,
- develop as an interdisciplinary meeting place, by continuing the development of CEC Fellows, engage visiting researchers and initiate interdisciplinary research projects, as well as give researchers at LU the opportunity to work on CEC premises on a part-time basis,
- stimulate research across subject boundaries at LU by organising workshops and seminars in close cooperation with BECC, MERGE and other research projects,
- reinforce the use of the research infrastructures ICOS Sweden, (ESFRI) ACTRIS, MAX IV and later ESS, for environmental research by providing information about the opportunities available and taking initiatives for new research,
- strengthen the link between CEC's research and education, primarily within BECC and MERGE.

Education

CEC conducts undergraduate and post graduate education with the aim to train professionals in the field of the environment and climate, who can take on advanced assignments within higher education, industry and society, and, in the case of our research studies, PhD graduates able to conduct high-quality environmental research. Our education leads to expertise of a high international standard about the causes and consequences of environmental degradation within the subject area of the student, as well as knowledge of societal strategies to counteract these environmental problems.

CEC offers undergraduate and post graduate programmes in the subject of environmental science. This subject includes scientific knowledge of anthropogenic environmental problems based on a fundamental understanding of natural processes. The subject is thus based in natural science, but has an interdisciplinary breadth as it involves measures and strategies to prevent and solve environmental problems. CEC also offers two interdisciplinary graduate schools, which contribute with structured platforms for doctoral students in various research subjects, who deal with issues related to

biodiversity, ecosystem services and climate (ClimBEco) or bio-economics (GRS-ATBE). Both the environmental science programmes and the graduate schools are based on close collaboration with the departments at the Faculty of Science as well as other faculties at Lund University.

Bachelor and Master programmes

CEC offers Bachelor's and Master's programmes in environmental science which lead to science and interdisciplinary degrees. CEC is responsible for an undergraduate program with approximately 250 full-time equivalent students. The courses are conducted in-house or run by other departments, especially at the Faculty of Science, but also within departments at the Faculty of Social Sciences, the Faculty of Medicine, the School of Economics and Management, the Faculty of Engineering and the International Institute for Industrial Environmental Economics.

In 2017, CEC shall:

- strengthen the academic responsibility for undergraduate education in environmental science by developing the ways in which teaching staff and supervisors from other departments, as well as visiting lecturers, are associated with CEC's operations in the long term,
- investigate the overall educational structure of the study programmes in environmental science so that our undergraduate education becomes financially and qualitatively sustainable in the long term,
- strengthen the link between undergraduate education, postgraduate education, and research within CEC's research fields, including our strategic research areas, by increasing the doctoral students' opportunities to teach,
- develop the conditions for degree projects, both those that are directly linked to research projects and those that are carried out in collaboration with actors outside the University,
- initiate the development of an international Master's programme related to the strategic research areas, through the allocation of new resources,
- strengthen the dialogue with students with regard to evaluation and planning of teaching.

Post graduate education and graduate schools

Doctoral students are admitted to the subject of environmental science, but are based at "host departments" at the Faculty of Science which provide them with a physical workspace. CEC is responsible for the study programme while the host department is responsible for issues concerning doctoral studentships and research work. Major emphasis is placed on ensuring the programme's interdisciplinary character through development of the research studies programme as well as through joint courses and seminars. CEC develops courses to suit doctoral students in environmental science, but which are also relevant to doctoral students in other subjects with an interest in interdisciplinary courses.

ClimBEco is an interdisciplinary graduate school on climate, biodiversity and ecosystem services, linked to the strategic research areas of BECC and MERGE, as well as to the Faculty of Science at LU. The graduate school offers a structured platform for doctoral students in ecology, geosciences, political science, environmental economics and related disciplines mainly at LU and the University of Gothenburg. Courses within *ClimBEco* are designed to develop interdisciplinary training and synthesis, as well as to provide a more in-depth intradisciplinary understanding. *ClimBEco*'s annually recurring meetings stimulate research exchange between doctoral students, supervisors and invited guests, thus creating an opportunity to establish networks which can contribute to the school's interdisciplinary content and progressive spirit. The graduate school also offers a mentoring programme focusing on career planning within and outside higher education, networking and professional personal development.

CEC also runs the *GRS-ATBE* graduate school which focuses on bio-based economics. It is an interdisciplinary graduate school to promote the transition to a bio-economy. Its overall objective is to develop the participants' ability to adopt a systems approach to identify and evaluate the technical, financial, social and ecological challenges and opportunities of the transition to a bio-based economy,

and stimulate them to spearhead innovative trans/interdisciplinary research for a sustainable bio-economy. GRS-ATBE serves as a common platform at Lund University and enables researchers and doctoral students from around LU and non-academic stakeholders to meet.

In 2017, CEC shall:

- systematically work to encourage interdisciplinary approaches within the **PhD programme** in environmental science,
- systematically work to strengthen the identity of the **PhD programme** in environmental science through the development of its common elements, including courses and informal meetings,
- strengthen collaboration between the **PhD programme** in environmental science and CEC's graduate schools when it comes to developing and conducting post graduate courses,
- work with an evaluation of the **PhD programme** in environmental science,
- run the **ClimBEco** graduate school and its mentoring programme to meet the need of post graduate education in the fields of climate, biodiversity and ecosystem services,
- strengthen **ClimBEco's** curriculum and interdisciplinary profile through the development of courses, annual meetings, workshops and seminars,
- launch the **GRS-ATBE** graduate school,
- develop more post graduate courses and organise workshops, seminars and meetings within **GRS-ATBE**,
- strengthen cooperation between **ClimBEco** and **GRS-ATBE**, as well as between **ClimBEco** and Geneco.

Dialogue with wider society

One of the main tasks of CEC is to create and develop interfaces and dialogue with societal stakeholders within CEC's area of activity, in order to make sure that environmental and climate research is relevant and used to promote the sustainable development of society through mutual knowledge transfer. CEC develops contacts with society systematically, through e.g. reference groups, targeted seminars, workshops, syntheses, and fact sheets. External communication also takes place via different websites and social media.

CEC's information and communication contribute to the strategic development of its operations by identifying issues of concern to societal actors. This could lead to the identification of new research issues and the start of new research initiatives. For this purpose, CEC also conducts monitoring within its areas of research. CEC's contact with stakeholders also contributes to the development of methods for making relevant research results accessible. Communication support is provided to ongoing research projects at CEC, including those which are coordinated by CEC, and to the recruitment of undergraduate and post graduate students and contacts with alumni.

Lund University's Sustainability Forum is a University-wide umbrella organisation which links and supports the University's climate, energy and sustainability research. The forum represents a bridge between society and academia in these fields, both as a support for researchers and research groups with regard to contact with end users, but also as a path into the University for external contacts in search of collaboration, research support and information. An important part of the work is to improve the internal communication between researchers in the area of sustainability in order to promote interdisciplinary development.

Climate-KIC (Knowledge & Innovation Community) is a European innovation cooperation for new climate solutions, with CEC in charge of Lund University's membership. Climate-KIC aims to be a catalyst for turning research and development into practical use in industry and society. It is about investments in innovations and entrepreneurs involving researchers and students at Lund University. At Lund University there are a number of different research areas of relevance to Climate-KIC (e.g. research on energy, traffic, land use, and sustainable cities).

In 2017, CEC shall:

- engage in continuous internal and external communication by producing and providing information materials in Swedish and English of relevance to CEC and the activities it comprises,
- support environmental science education, BECC, MERGE, ICOS Sweden, the Sustainability Forum, Climate-KIC and other relevant activities through coordination support, including websites, social media, end-user dialogues, syntheses and information material,
- systematically develop contacts with society through e.g. reference groups, targeted seminars, workshops, syntheses and fact sheets,
- run the University-wide **Sustainability Forum** by continuously compiling and updating information about sustainability-related research at LU and making it available through various channels, serve as a resource in communication between LU researchers, external partners of LU and the public, through participation in the organising of seminars/workshops and the production of different forms of information materials,
- administrate and facilitate LU's involvement in Climate-KIC, focusing on relevant activities and actors at LU,
- develop the presentation of CEC's major investments in Lund University's new research information system LUCRIS, and support CEC researchers' use of the system.

CEC as a workplace

In order to initiate, support and conduct education, research and collaboration in the field of the environment and climate, CEC strives to become a venue and workplace characterised by diversity and creativity in meetings between researchers, teaching staff and students in different disciplines as well as stakeholders from different sectors of society.

CEC is characterised by a relatively small staff, whereas the extent of the activities is significant. The number of students is large in relation to the number of permanently employed lecturers. CEC has its own premises but the activities take place partly on the premises of the Department of Biology. Many employees are formally affiliated with other departments. This requires good organisation and internal communication. Internal communication takes place via the website, through newsletters and at regular staff meetings. CEC also organises events aimed at strengthening internal communication, including seminars, CEC Fellows meetings and staff days.

In order to achieve effective work with regard to health, safety and environment (HSE), the centre coordinates its work as far as possible with the Department of Biology. When it comes to gender equality and equal opportunities issues, the work is supported by a special committee. A gender equality and equal opportunities plan is in place.

In 2017, CEC shall:

work actively to develop a positive working environment at CEC by

- developing the administrative organisation by clarifying CEC's common vision and adapting the formal organisation to best support this,
- inform about CEC's activities via websites and newsletters, staff meetings and at least one staff day. increasing internal understanding of the work conducted within the various parts of CEC,
- the continued development of the gender equality and equal opportunities committee's work, in accordance with new directives in this area,
- participating in the work of the HSE committee (together with the Department of Biology) and revising work environment plans concerning CEC's activities.