2024 Plan of Operations for the Centre for Environmental and Climate Science (CEC)

Mission

The Centre for Environmental and Climate Science (CEC) is to contribute to sustainable local, regional and global development by being an innovative agent for research, education and external engagement in the field of environmental and climate science, with a broad interdisciplinary profile. CEC's activities generate evidence-based knowledge that contributes to sustainable solutions in the field of environmental and climate science and provides added value and leverage for disciplinary research at the Faculty of Science's departments and for relevant organisations throughout the University. CEC is to be a springboard for new generations of researchers with an interdisciplinary education and alumni with a background in environmental science. CEC is responsible for the development of the field of environmental science.

CEC's mission includes being:

- a *research actor* that, in close collaboration with other departments, encourages and conducts environmental and climate research with a broad and interdisciplinary profile
- a *coordinator* for strategic development of environmental and climate-related research and infrastructure
- a dynamic and creative *meeting place* for researchers who want to tackle current and upcoming environmental and climate challenges that require a broad approach
- a *hub for talent management* through training of future professional actors in the area of environmental and climate science, and
- a *knowledge bank* and forum for active collaboration between academia and wider society.

The activities and staff within computational biology and biological physics (CBBP) have been included in CEC's mission since January 2023, and in April 2023 CEC assumed responsibility for the third-cycle (doctoral education) subject theoretical physics with a specialisation in computational biology. In January 2024, CEC will also take over course responsibility for three Master's courses in computational science.

Activities

CEC's mission is to initiate, support and conduct education and research concerning sustainable solutions in the areas of environment, health, climate and sustainable development. CEC is to advance interdisciplinary research and education in climate and environmental issues, highlight and communicate research results and act as a link to important stakeholders in its area of activity. CEC also conducts research and education in computational science, with an emphasis on applications in biology and medicine. CEC's activities are marked by an interdisciplinary approach and are based on collaboration across department and faculty boundaries, and on

external engagement. Strategic communication and external monitoring are integrated as tools at different levels in order to achieve CEC's goals and visions.

CEC is the host of the university-wide strategic research areas BECC and MERGE, the profile area Nature-based future solutions, Lund University's Sustainability Forum, the thematic collaboration initiative LU Land, the ICOS Sweden research infrastructure and the Agenda 2030, ClimBEco and Bioeconomy graduate schools. Through these, CEC takes an interdisciplinary responsibility for activities related to an area that encompasses the environment, climate and sustainability, regardless of where they are conducted at the University. CEC serves as a catalyst for interdisciplinary research development and for interdisciplinary teaching through CEC's first and second-cycle (undergraduate education) courses and programmes.

Challenges in 2024

The overall challenge for CEC in 2024 is to conduct ongoing activities in a satisfactory way while we participate in the CIG[1] process with the aim of creating conditions for long-term organisational development. This entails a risk assessment of the financial consequences for the organisation. One complexity regarding CIG is to manage both a potential relocation and the possible formation of a department and safeguard all of CEC's activities. In addition, we must ensure in parallel that the integration of CBBP works successfully, not least when we switch to a joint budget.

A large proportion of CEC's research employees are postdocs and researchers, which often means short and insecure employment. Here, there is a need to develop a strategy for finding career paths and long-term continuity for researchers employed for an indefinite term.

In 2024, there will also be a change in leadership at CEC, in the form of a new director and deputy director, as well as a new director of studies for first and second-cycle education (undergraduate education, Swedish abbreviation, GU) and third-cycle education (doctoral education, Swedish abbreviation, FU). The retirement situation within GU entails recruitment of a lecturer to replace an expected retirement at the end of 2023. Two new study administrators who started in 2023 will be fully integrated into the GU organisation in 2024.

Computational biology's interaction with and recruitment from first and second-cycle education is at a complicated stage in which the connection with the Bachelor's and Master's programmes in physics is weakened, while the role in the new Master's programmes in computational science needs to be developed.

As the expected strengthening of CEC's external engagement activities through faculty funding has not been realised, and LU Land's funding via the Vice-Chancellor has finished, there is a challenge relating to finding forms and resources for future external engagement activities, so that CEC can fulfil its mission.

[1] The CIG process: work on the coordination of a joint department – CEC, INES and Geology

Overall, these changes entail challenges, but also future opportunities. The following points sum up the most important operational plans to meet these challenges in 2024.

Research:

- Conduct research development during the ongoing reorganisation/relocation
- Develop a strategy for researchers employed for an indefinite term, regarding career paths and opportunities for collaboration and development

First and second-cycle education (GU):

- Implementing generational renewal and organisational change opens up opportunities to drive development of education
- Co-planning in the CIG process for more efficient GU administration and collaboration between study programmes
- The role of computational biology in different GU programmes needs to be adapted and developed

Third-cycle education (FU):

- Develop the new FU subject in computational science
- Develop FU within CEC, which now includes both computational science and environmental science
- Develop ClimBEco during the new direct government funding period 2024-2028, in cooperation with CEC's graduate schools and FU

External engagement:

- Strengthen resources for broad external engagement activities
- Ensure the activities of the collaboration initiative LU Land

The CIG process:

- Carry out a risk analysis of the financial consequences for the organisation resulting from the plans for a new location and organisation for CEC's activities in accordance with the faculty's policy decision STYR 2023/2855.

CEC's 10-year goals and 2024 Plan of Operations

CEC's 2024 Plan of Operations is based on its 10-year goals. These are presented in four main areas: 1. Interdisciplinary research actor 2. Educator of future professional actors, 3. Collaboration with external stakeholders, 4. Attractive workplace and creative science environment. Goals for each main area with a 5 to 10-year perspective and focus areas for 2024 are listed below. If conditions change, activities may be deleted, modified or added.

1. Interdisciplinary research actor

CEC's 5 to 10-year goals as an interdisciplinary research actor:

- A leading international interdisciplinary area encompassing climate, environment and computational science has been consolidated, based on CEC's education, research and external engagement

- Long-term funding of research activities has been secured, with new teaching positions at both CEC and collaborating departments

- New research and external engagement platforms as well as national and international research projects have been developed that focus on future issues of climate and environmentally sustainable societal development, and innovative computational science methods have also been developed. Through this, CEC will be an attractive collaborative partner for future research projects within and outside LU.

- CEC works in an integrated and structured way on transdisciplinary research and innovation in the environmental and sustainability field, and contributes to the strategic work of the SRAs and profile areas.

- CEC's leading role in infrastructure within the environmental field has been strengthened, through secured funding and utilisation of ICOS Sweden and other networks within the EU, increased use of the major research facilities in Lund for environmental research, and secured resources for access to computational power for modelling

CEC's 1 to 2-year goals as an interdisciplinary research actor:

- Drive vision-related work and strategic planning in order to strengthen excellence, relevance and societal impact within CEC's research profile during integration with computational science, the CIG process, the profile area Nature-based future solutions and the SRAs BECC and MERGE

- Researchers at CEC and in CEC's networks can obtain knowledge and support for relevant funding opportunities for research (including Horizon Europe), external monitoring for synthesis and strategic initiatives

- Actively participate at the faculty in the development of the computational science field and a computational science centre

- Identify added value and initiate new research projects at the interface between environmental science and computational science

- Act as a faculty and department-bridging organisation within research with the support of LU's overall SRA strategy and the individual strategies for BECC, MERGE and the profile area Nature-based future solutions

- Further develop cooperation between research, communication and external engagement to obtain increased understanding of research results at public authorities and in the private sector

- Continued proactive work on operation and funding of ICOS stations, support of related activities, and utilisation of important infrastructure for excellent and societally-relevant research

2. Educator of future professional actors

CEC's 5 to 10-year goals as an educator:

- Continued development of international Master's programmes with a focus on strengthening courses and programmes in computational science and CEC's natural science-oriented Master's in environmental science

- Development of course content including eligibility criteria for all programmes and courses with a focus on strengthening the main thread of the programmes and to ensure future student recruitment

- Recruit more teaching staff for the environmental science teaching team with a special focus on broadly applied interdisciplinary expertise, capacity to educate environmental scientists in the latest methods for the evaluation of environmental problems and innovation, and for the development of solutions to environmental problems

- Develop forms of collaboration, e.g. as "funktionsansvariga", with other departments to strengthen and develop courses and programmes in environmental science and computational science

- Develop third-cycle courses and programmes in environmental science and computational science to be interdisciplinary, involve research excellence and have a high degree of external engagement so that the future actors can contribute research skills and knowledge, and be instrumental in innovation and societal development

- CEC's graduate schools are established as leaders within their respective areas, have secured long-term funding and are attractive for applicants from other programmes

CEC's 1 to 2-year goals as an educator:

- Increased efficiency of administrative support for teaching staff and students within GU and FU
- Develop communication with the students using better integration of different means of communication (internet – Canvas – live meetings)
- Concretise the link between GU and CEC's i) work on external engagement ii) research development
- Continue work on integration of computational science in environmental science courses and the Master's programme in computational science
- Creation of an advisory group to ensure that present challenges in sustainable development and the development of new computational methods are in line with the content of a course or programme
- Publish a vacancy announcement for new doctoral student support with planned employment in the period autumn 2024 to spring 2025
- Work on integration of joint third-cycle courses in computational science and environmental science
- Work on CEC's range of third-cycle courses within both the CIG process and with the faculty's graduate schools

3. Collaboration with external stakeholders

CEC's 5 to 10-year goals for collaboration with external stakeholders:

- CEC has strong networks that are instrumental in external engagement and well-integrated in all relevant parts of CEC's organisation and contribute broadly to activities at the faculty and Lund University. This involves strategic external monitoring and policy analysis, as well as development of an evidential basis for sustainable societal development
- CEC has strong professional capacity to support external engagement by having integrated expertise in CEC's different activities for collaboration, cooperation and communication and through hosting collaboration initiatives including LU Land and the Sustainability Forum

CEC's 1 to 2-year goals for collaboration with external stakeholders:

- Work to strengthen funding and to create synergies between stakeholder organisations including the Sustainability Forum, Nature-based future solutions, BECC and MERGE, so that CEC can fulfil the external engagement remit assigned by the faculty

- Ensure LU Land's operations and develop collaboration with the Marine Centre

4. Attractive workplace and creative science environment

CEC's 5 to 10-year goals for an attractive workplace and creative science environment:

- In the dynamic and changing academic environment, it is clear to all staff members how the activities contribute to CEC's vision and strategy

CEC's 1 to 2-year goals for an attractive workplace and creative science environment:

- Increased cooperation within the faculty has led to strong and secured expertise in administrative support

- All activities are conducted in co-located and appropriate premises

- CEC is a workplace characterised by a good work environment including equal treatment of all staff and students, a workplace in which all staff are, and feel, involved and respected

- CEC has a continuous flow of visiting research fellows and is a natural meeting place for researchers and students

- Strategic and operational external engagement and communication efforts aimed at key actors in society and other relevant target groups provide considerable visibility, create opportunities for CEC's research and education to develop and are integrated tools for achieving the organisation's goals