Sustainable Production Systems

Climate-KIC PhD Summer School

August 29 - September 9, 2016

Carbon neutral value chains based on the circular economy and the bio-economy are the future foundation of Europe's industry. This PhD summer school aims to educate change agents ready to accelerate the transition to economically viable circular models, decoupling economic growth from unsustainable resource use and greenhouse gas emissions to create a carbon neutral economy.

The summer school will be hosted by The Challenge Lab at Chalmers University of Technology in Gothenburg together with Climate KIC's Sustainable Production System-theme (SPS). The SPS theme works to catalyse the transition to a carbon neutral economy by seed-funding high-impact climate solutions, facilitating innovative cross-industry co-operation and supporting technological as well as unique business model innovation in regional clusters and value chains.

This summer school is organised in cooperation with:

Climate-KIC is supported by the EIT, a body of the European Union

Aim of the Summer School

The imminent threat of climate change starts being a powerful motor for innovation. As 21% of global emissions originate from industrial production, sustainable production systems must be at the core of our quest to tackle climate change.

In this two-week intensive programme, we will provide you with the tools to become successful innovators in the areas of the 'circular economy' and the 'bio-economy', two areas with the common objective to decrease resource dependence and waste. The summer school will focus on: 1) Identifying alternative feedstock substituting raw materials through secondary materials and/or renewable and less carbon intensive resources, and 2) Aiming at a zero waste systems through valorisation of by-product streams and re-use of waste in the value chains such as : Metals, Chemicals, and Plastics.

We will support, train and coach PhD students with different scientific specialisations to transfer their research knowledge into smart sustainable solutions, and work with real life cases provided by: Stena Recycling International AB, the West Sweden Chemical and Material Cluster in Stenungsund and the City of Gothenburg.

Our summer school offers a learning-by-experiencing approach to tackle these issues. Providing a broad range of in-depth theoretical knowledge, hands-on cases to apply the learning, inter-disciplinary thinking and cooperation, you will be able to boost your skills through the summer in Sweden.

Highlights and Excursions

Based in the city of Gothenburg, you will attend lectures, workshops and discussions; meet and discuss with world renowned experts, work with companies, and come up with solutions to drive our carbon neutral future. And enjoy leisure activities showcasing the core green sights of Gothenburg.

Besides exploring the city of Gothenburg, excursions will be made to leading stakeholders in the area, which will provide you with insights into the work of leading stakeholders in the field of bio-clusters and.

Learning objectives

Unlocking the climate change mitigation and adaptation potential and economic potential requires connecting different sectors and value chains. In addition to technical skills, successful innovation in this area requires a holistic view on these interconnections, as well as solid stakeholder and innovation management skills. Connecting the dots is what our summer school will aim for.

The summer school is designed with four central learning objectives inspired by the general C-KIC summer school concept, and the methods taught at The Challenge Lab, and they will be achieved in various ways, as outlined below.

Equipping the students with the knowledge of transformative, socio-technical innovation using a systems approach, and transformative backcasting tools, in the field of Sustainable Production Systems.

Key lectures will be given enriching the students' knowledge of the topics relevant for solving the core challenges. The lectures will be focusing on; alternative feed stocks, zero waste, and resource efficiency.

Through the summer school the students will reach a fundamental understanding of the principals of Circular Economy and be able to apply them to their own research or business idea. Backcasting from sustainability principles is a key methodology during the whole summer school. Backcasting is helpful to break free from path-dependency and free the mind by starting from a desirable sustainable future.

A key aim is to facilitate the understanding of the need for 'hearing different voices' and making connections between relevant stakeholders while designing solutions that tackle system challenges AND improves business practice and enhances value creation.

Enabling the students to link their individual research projects to low carbon innovation activities. The aim is to motivate students to utilize their own research and deep insights in various disciplines, and create solutions to real life challenges. The challenges will be provide by 3 companies/organisations.

During ideation sessions the participants will start creating solid solutions and these ideas will be further developed during lectures on the dynamics of circular economy and smarter resource use. In short we will investigate how to maintain the value of resources as long as possible and minimize waste.

Through case work we will focus on major emitting sectors such as plastic production, as we introduce the students to the elements of industrial symbiosis as explored in the Stenungsund Chemical and Material cluster, close to Gothenburg, as well as learn other bio-economy clusters of Europe.

Providing practice oriented tools that will enrich the student's individual projects in the field of Sustainable Production Systems.

Being able to communicate own knowledge and research to businesses as well as scholars from other disciplinary areas is not an easy task. Developing communication and presentations skills will therefore be a core element in this summer school. The summer school will end with a session on how to return to you own research project and integration the new learning from the summer school. The students will be ready to participate in the creation of new green business models.

Exchange ideas between candidates and experts and to develop new project ideas for low carbon innovation. During the summer school, the students will work on real-life challenges from companies in the Gothenburg area. They will have exclusive access to these international corporations and work continuously with their challenges – this will be a valuable networking opportunity for the students and a good chance for the companies to scout for future collaborators.

The summer school will consist of lectures, workshops and discussions with world renowned experts, company workshops, all with the aim to drive our carbon neutral future.

The social part of this summer school is prioritized as community building is seen as vital for create future connections the participants will also enjoy leisure activities showcasing the core green sights of Gothenburg. A few dinners will be hosted by the organisers.

Opportunities

Our summer school offers students an opportunity to get away from the regular work environment, meet people from other cultures and disciplines, enlarge your knowledge on sustainable production systems, join in international networking opportunities, enjoy the summer in Sweden and have a great time!

Who can participate?

The participation in a PhD thematic summer school is part of the Climate-KIC PhD programme. All Climate-KIC PhD students should take part in a thematic summer school in their second or third year.

Students from Idea League are encouraged to apply.

Furthermore we are happy to welcome students pursuing their PhD outside of Climate-KIC or Idea League and who are interested in climate change topics. Post-graduates with outstanding skills and motivation to participate are also invited to apply. Language is English; participants should have sufficient language skills.

Programme

The programme starts Monday August 29 at 10 am, and ends September 9 at 3 pm.

Day	Programme
Day 1 August 29	**Welcome** by Climate-KIC Introduction Challenge Lab, Chalmers Keynote on Circular Economy Principles
Day 2 August 30	**Defining criteria's for sustainability** Presenting and working with the back-casting methodology: 1: Defining criteria for sustainability, 2: Describe present situation in relation to the criteria for sustainability 3: Envision future solutions, 4: Finding strategies towards sustainability
Day 3 August 31	**Leadership for sustainability transition.** Inside-out perspective. Personal values exercise. Dialog tools
Day 4 Sept 1	**The challenges presented, all-day site visit**
Day 5 Sept 2	**Tools and theories** Group formation (3-5 persons) Choose your challenge, hot-spot match
Day 6 Sept 5	**Site visit / The Cluster concept** Group work
Day 7 Sept 6	**Transition dialogs / talking to experts, other stakeholders (who and why)** Group work Subject matter expert can be contacted during the day
Day 8 Sept 7	**Envision future solutions (what)** Group work, facilitated by Challenge Lab
Day 9 Sept 8	**Back casting strategies (how)** Group work, facilitated by Challenge Lab
Day 10 Sept 9	**Pitching to challenge owners and subject matter experts**

Climate-KIC

Climate-KIC is Europe's largest public-private innovation partnership, working together to address the challenge of climate change. The KIC is one of three Knowledge and Innovation Communities (KICs) created in 2010 by the European Institute of Innovation and Technology (EIT). The EIT is an EU body whose mission is to create sustainable growth. Climate-KIC supports this mission by addressing climate change mitigation and adaptation. The KIC integrates education, entrepreneurship and innovation resulting in connected, creative transformation of knowledge and ideas into economically viable products or services that help to mitigate climate change. Read more: www.climate-kic.org

Registration

Please register at **www.climate-kic.org/programmes/phd-summer-schools**

Deadline for registration is July 15, 2016. We accept students on a running basis and applicants will be notified about acceptance 2 weeks after the application has been received. You are asked to confirm your attendance at least six weeks ahead.

Costs

As the PhD summer school is an integral part of Climate-KIC's PhD programme, for Climate-KIC labelled students and Idea League students, costs are fully covered. For other students the fees are:
500, - EUR for PhDs from partner universities and EU citizens
2.000,- EUR for non-EU passport holders

The costs of the programme include accommodation (in double rooms), breakfast and lunch, approximately three dinners per week, as well as local transportation. Participants need to cover the travel costs to/from Gothenburg themselves and a few diners during the weeks and the weekend.

After the confirmation of acceptance, invoices will be sent out to participants. Course fees need to be paid three weeks before the start of the programme.

Partners

STENA
Innovative recycling

Stena Recycling is a large company offering recycling services and operating 165 facilities in 5 countries. Its strong R&D department aims at finding innovative solutions to the recycle process in order to optimize the use of resources. Research is conducted in close collaboration with organisations, companies and universities and combines industrial recycling with a research academy. Stena Recycling sponsors a professorship at Chalmers University.

Johanneberg Science Park

The West Swedish Chemistry & Materials Cluster, with activities that include initiating innovation and development projects in prioritised areas to achieve the sustainable chemistry goal. The Chemistry Cluster is comprised of some twenty stakeholders from trade and industry, research and the public sector. The Chemistry Cluster arranges, for example, seminars and information meetings to share knowledge of the conditions affecting the industry on regional, national and international level.

City of Gothenburg

With its 533000 inhabitants the City of Gothenburg is the second largest city in Sweden. With roots stretching back to the days of heavy industry, the region has made the successful transition from an industrial heartland, to a greener, cleaner waterfront metropolis.

Key Academic partner

Chalmers Challenge Lab will be hosting the summer school and Professor John Holmberg will be the key academic partner of the event. John Holmberg is professor of Physical Resource Theory and he also holds Sweden's first UNESCO Chair in Education for Sustainable Development. John Holmberg's main research interests are sustainable consumption, energy efficiency, industrial ecology, decoupling, back-casting, principles and indicators for sustainability and education for sustainable development (ESD).

Contact us

In case of any questions concerning this PhD summer school, feel free to contact Line Gry Knudsen (Education Lead) via line@climate-kic-nordic.org.