Press Release

CIRKLA Summer School 2025: Kick-off for a cross-border scientific format in circular economy research

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CIRKLA UniGR | Centre for Circular Economy of Metals and Materials

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From **September 1 to 5, 2025**, the University of Luxembourg hosted the first **CIRKLA Summer School on *"Sustainable Construction: Materials, Circularity, and Innovation"*** as part of the Interreg project UniGR-CIRKLA. Thirty participants from nine countries – including advanced master's students, doctoral candidates, postdocs, and young professionals – came together on The Kirchberg campus to explore the opportunities and challenges of a resource-conscious construction and materials industry.

Over the course of five days, participants engaged in a dynamic program combining academic input with practical application. Alongside lectures from various research fields and group discussions, a multi-part case study and two site visits in Luxembourg provided valuable insights into current developments and hands-on approaches to the circular economy.

Questions and key factors of the circular transition

The Summer School opened with keynotes offering a wide range of perspectives on materials, construction, and business processes in the context of circular economy. These contributions covered not only academic research but also insights from politics and business practice.

Prof. Dr. Markus Schäfer from the Department of Engineering at University of Luxembourg welcomed the participants and presented the university's activities within the UniGR-CIRKLA project. Under the title *"Building as Material Bank"*, his team investigates the value chain of building materials within the recycling process. Doctoral researcher Monica L. Louie is developing a digital 3D building data model that stores building materials and simulates deconstruction, enabling the planning of material use from construction to reuse. In his talk, Prof. Schäfer highlighted the geopolitical dimensions of this transition and emphasized the key factor that sets the circular economy apart from traditional recycling: resource-efficient design that minimizes material (over)use. As he aptly summarized: *"The most efficient material is the one we don't need."*

Dr.-Ing. Agustina Guitar from Saarland University brought attention to the crucial role of materials science and engineering in developing new product life cycles and closed resource loops: *"Materials Science and Engineering are key players in narrowing, slowing and closing resource loops."* In her presentation, she addressed the problem of global resource scarcity and shared data examples from the steel industry. Within the UniGR-CIRKLA project, she works with the team of Prof. Dr. Frank Mücklich and Dr. Flavio Soldera on a cross-border case study on steel construction and materials recycling in the Greater Region.

Prof. Dr. Jörn Block demonstrated how business models can gradually evolve from linear to circular approaches. Together with the participants, he worked through the *"Trash-to-Cash"* model of a waste management company, emphasizing that a successful transition requires not only ecological and technological adjustments, but above all new forms of value creation and entrepreneurial opportunities. Within UniGR-CIRKLA, his team at Trier University conducts research on ecological innovations and patents in the context of the circular economy.

Dr. Paul Baustert from the Luxembourg Ministry of Economy explained the importance of governance and EU regulations for implementing circular concepts and showed how political frameworks can foster sustainable innovation and resource-conscious business practices. He also gave participants the opportunity for direct exchange and provided insights into the institutional cooperation among key actors and circular economy incubators in the Greater Region.

Hands-on workshops and practical insights

At the core of the Summer School was a multi-part case study on concrete and timber construction. Using life cycle assessment (LCA), participants examined material flows and construction decisions in a four-story existing building.

Their group work underscored the importance of robust evaluation tools for long-term sustainability strategies – going well beyond CO_2 reduction. With strong commitment, the participants developed practice-oriented solutions and addressed the complex challenges of the circular economy. The exercise showcased the full potential of the interdisciplinary approach that defines the UniGR-CIRKLA project.

Lectures from UniGR-CIRKLA experts and partners in the Greater Region enriched the discussions with practice-relevant topics such as green steel, industrial ecosystems, concrete and composite recycling, and the dismantling of industrial facilities:

- **Samira Bouzid & Felix Even (Luxinnovation)** – Sustainable Construction
- **Dr. Klaus Blug (VSE AG Saarbrücken)** – Dismantling Power Plant
- **Dr. Daniel Rupp (Dillinger Hütte)** – Green Steel
- **Prof. Dr. Luc Courard (University of Liège)** – Recycling of Aggregate Concrete
- **Prof. Dr. Cécile Deliberto & Prof. Dr. Romain Trauchessec (Université de Lorraine)** – Valorisation of Waste and By-products in Cement & Concrete

A special highlight of the program was the two site visits in Luxembourg. **Climalux S.A.** (cement production) and **ArcelorMittal Belval** (steel production & circular approaches) welcomed the participants, providing exclusive insights into their production processes and sustainability strategies. The young researchers had the opportunity to observe the production stages firsthand and see how circular economy principles are applied in industrial practice.

CIRKLA Summer School: A new scientific format

The CIRKLA Summer School was jointly organized by **Saarland University, the European School of Materials (EUSMAT), and the University of Luxembourg** as part of the UniGR-CIRKLA project. Supported by the Interreg Greater Region 2021–2027 program, this inaugural edition marks the start of a recurring event series.

The aim: to provide **young talents** from the Greater Region and across Europe with a platform to deepen their knowledge of the circular economy, build cross-border and interdisciplinary networks, and explore new opportunities for collaboration.

It is by joining forces and pooling expertise that circular economy moves from concept to reality. The project team warmly thanks all contributors for their valuable input and looks forward to the next edition!

More information on the UniGR-CIRKLA project: https://www.uni-gr.eu/en/cirkla

LinkedIn: UniGR-CIRKLA
Instagram: @unigr_cirkla

Contact:

Jean-François Nivart – Project Coordinator
Jf.nivart@uliege.be
+32 495 23 00 08

Selina Blaha – Communications Officer
selina.blaha@uni-gr.eu
+49 681 301 40 803