D. Serikbayev EAST KAZAKHSTAN TECHNICAL UNIVERSITY

CirculEc

Co-funded by the European Union

PROJECT NO. 101129169 | ERASMUS-EDU-2023-CBHE-STRAND-2

DEVELOPMENT OF INNOVATIVE CURRICULA AND MODULES IN CIRCULAR ECONOMY AND SUSTAINABLE DEVELOPMENT

2023 - 2026

Building human capital for a circular transition in Central Asia

Coordinated by:
D. Serikbayev East Kazakhstan Technical University (EKTU)

www.ektu.kz

D. Serikbayev EAST KAZAKHSTAN TECHNICAL UNIVERSITY

USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

Fachhochschule des Mittelstands UNIVERSITY OF APPLIED SCIENCES

TMES ENGINEERING SOLUTIONS

WESTMINSTER International University in Tashkent

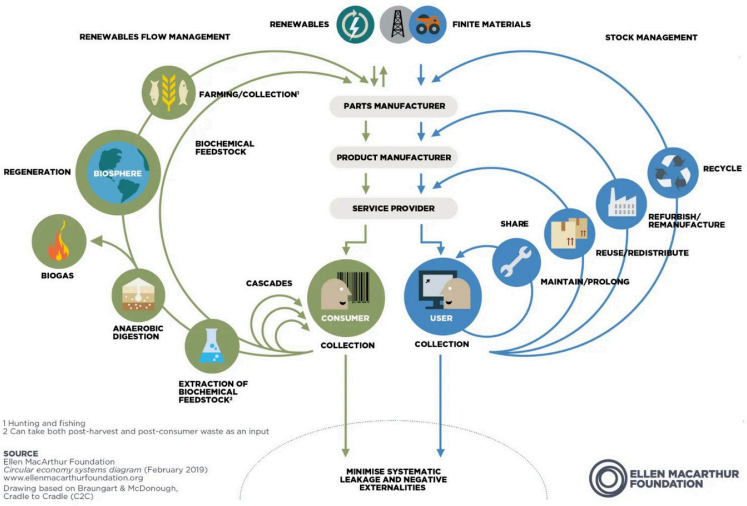
CAU CENTRAL ASIAN UNIVERSITY

ALIKHANOV University

WHAT IS THE CIRCULAR ECONOMY?

The Definition

According to the **Ellen MacArthur Foundation**, it is a system that eliminates waste and pollution, circulates products and materials at their highest value, and regenerates nature.



Technical and biological cycles (Ellen MacArthur Foundation)

Key Principles

Design for longevity: Prioritize durability, reuse, repair, remanufacturing, and recycling.

Shift the paradigm: Transition from linear take–make–waste to continuous circular value loops.

Renewable focus: Power the system with renewable energy and prioritize safe, non-toxic materials.

Why it matters for CA

- **Resource efficiency:** Maximizing the use of raw materials.
- **Job creation:** Fostering new green economies.
- **Competitiveness:** Driving innovation in SMEs.
- **Resilience:** Adapting to climate change challenges.

The CirculEc project integrates these core principles into Central Asian higher education, preparing a new generation of leaders to drive the circular transition.

CONTEXT: CIRCULAR ECONOMY IN CENTRAL ASIA

Addressing critical environmental challenges - water scarcity, mining waste, agricultural pressure, and desertification - through Circular Economy opportunities to ensure a sustainable regional transition.



Kazakhstan

Challenge: Mining & industrial waste, emissions.
CE Opportunity: Industrial symbiosis, green tech, and urban sustainability initiatives.

Uzbekistan

Challenge: Water scarcity, heavy agricultural pressure.
CE Opportunity: Agri-food resource efficiency and sustainable textile production.

Tajikistan

Challenge: Glacier melt, high climate vulnerability.
CE Opportunity: Hydropower resilience, eco-tourism, and fostering localized recycling.

Turkmenistan

Challenge: Desertification, extreme water stress.
CE Opportunity: Sustainable agriculture, green energy transition, and natural resource management.

PROJECT AT A GLANCE

Executive Summary & Key Facts for CirculEc



"Building capacity of the human capital in Central Asian HEIs to provide skills aligned to the needs of local labor markets."

PROGRAMME
Erasmus-EDU-2023-CBHE-STRAND-2

PROJECT NO.
101129169

DURATION
01.11.2023 – 31.10.2026
(36 months)

COORDINATOR
D. Serikbayev East Kazakhstan Technical University (EKTU)

CONSORTIUM
15 partner institutions across the EU and Central Asia

WEBSITE
circulec.tguk.tj

Key Project Objectives

- **Integrate Circular Economy & Sustainable Development** into educational programs of partner HEIs.
- **Develop 3 innovative interdisciplinary modules** tailored to regional market needs.
- **Build capacity of academic staff** via specialized methodology training in the EU.
- **Pilot test courses** with a target reach of over 1,100+ students across Central Asia.
- **Foster regional cooperation** in CE education and build a sustainable stakeholder network.

CONSORTIUM PARTNERSHIP

15 Partner Institutions across 3 EU and 4 Central Asian Countries collaborating for Circular Economy Education.

Coordinator

D. Serikbayev East Kazakhstan Technical University (EKTU)

Kazakhstan

European Union Partners

Universidad de Santiago de Compostela (USC) — Spain

Università degli Studi di Napoli Federico II (UNINA) — Italy

Fachhochschule des Mittelstands (FHM) — Germany

Tailor-Made Engineering Solutions (TMES) — Spain

Central Asia Partners

Kazakhstan

KarUK — Karaganda University of Kazpotrebsoyuz

ABU — Alikhan Bokeikhan University

KokSU — Sh. Ualikhanov Kokshetau University

Uzbekistan

WIUT — Westminster International University in Tashkent

CAU — Central Asian University

Tajikistan

TSUC — Tajik State University of Commerce

TUT — Technological University of Tajikistan

Turkmenistan

AST — Academy of Sciences of Turkmenistan

TSIEM — Turkmen State Institute of Economics and Management

TSIF — Turkmen State Institute of Finance

WORK PACKAGES STRUCTURE

A comprehensive implementation lifecycle spanning coordination, development, quality, and dissemination.

(EKTU)

Work Package 1

Project management and coordination

(TMES + WIUT)

Work Package 2

Market needs and capacitation of CA staff

(FHM + KoKSU)

Work Package 3

Development of module 1: Environmental Management

(UNINA + EKTU)

Work Package 4

Development of module 2: Sustainable competitiveness

(USC + ABU)

Work Package 5

Development of module 3: Environmental entrepreneurship

(TMES + TUT + TSUC)

Work Package 6

Capacity building in Circular Economy

(KarUK)

Work Package 7

Piloting across HEIs

Implementation Phase

(FHM + EKTU)

Work Package 8

Quality Assurance

Monitoring & Evaluation

(TSUC+ CAU)

Work Package 9

Impact & Dissemination

Sustaining outcomes

The 9 Work Packages are designed to seamlessly integrate European expertise with Central Asian institutional needs, driving sustainable capacity building and curriculum innovation across the region.

WP1: PROJECT MANAGEMENT & COORDINATION

Key Activities

- Overall coordination and supervision of the consortium.
- Financial and administrative management.
- Setup of governance bodies (Steering Committee, Management Committee).
- Monitoring of progress and risks.
- Communication with EACEA.
- Preparation of interim and final reports.



LEAD PARTNER

D. Serikbayev East Kazakhstan Technical University

WP Duration

- **Full Duration:** 36 months
- **Timeline:** November 2023 – October 2026

Key Deliverables

Project Handbook

Quality Plan

Steering Committee minutes

Periodic interim and final reports

Project Manager of the CirculEc project:



MADINA YUSSUBALIYEVA
e-mail: myussubaliyeva@edu.ektu.kz
www.ektu.kz

PROJECT KICK-OFF MEETING

Official launch of the CirculEc project and first assembly of the international consortium

Date
December 7-8, 2023

Location
Online Event, Zoom

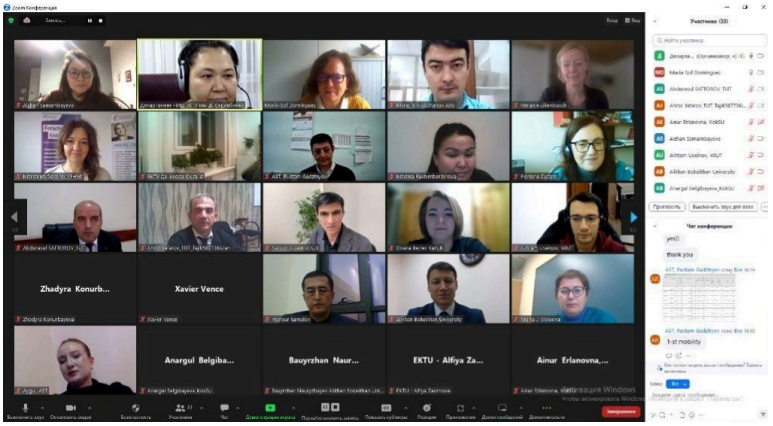
Participants
15 Institutions

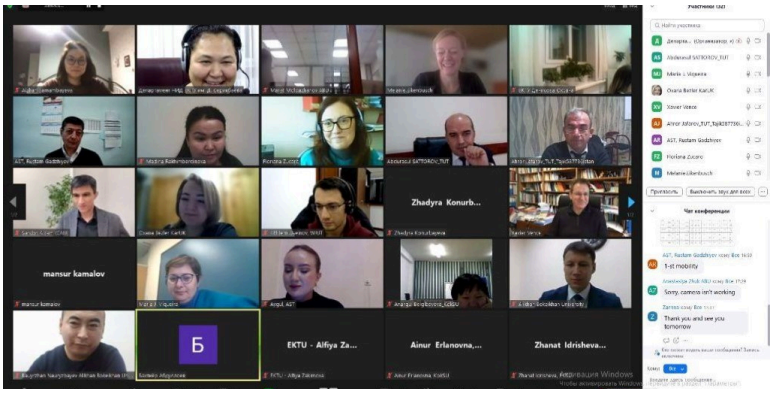
Event Objectives & Launch Activities

Official Launch: Representatives from all 15 partner institutions gathered for the official kick-off of the CirculEc project.

Strategic Alignment: Comprehensive presentation of project goals, overall teaching methodology, and the 36-month timeline.

Operational Setup: Work packages were assigned, visual identity was discussed, and reporting structures were agreed upon.





Special Guest

EU Project Officer **Ms. Maria Sol** officially welcomed all partners, led an interactive Q&A session, and provided crucial clarifications on project implementation and financial provisions.

Key Meeting Outcomes

Governance Structure

First Steering Committee successfully held, solidifying governance and formal reporting procedures.

Work Package Distribution

Clear responsibilities and timelines mapped out for all partners across all deliverables from WP1 to WP9.

Consortium Unity

Strong alignment established between EU and Central Asian partners on project goals and visual identity.

WP2: MARKET NEEDS AND CAPACITATION OF CA STAFF

Key Objectives

- Conduct labor market analysis on circular economy skills demand in Kazakhstan, Uzbekistan, Tajikistan, and Turkmenistan.
- Identify current skills gaps in Higher Education Institutions (HEIs).
- Map existing CE-related curricula across the region.
- Design a comprehensive skills and competency framework.
- Perform stakeholder consultations with industry experts, NGOs, and government.

Methodology

- **Surveys & Questionnaires:** Distributed among industry players and educational institutions.
- **Focus Groups:** Interactive sessions with stakeholders to dive deep into market needs.
- **Desk Research:** Comprehensive review of existing literature and regional CE policies.
- **Interviews:** In-depth discussions with employers to define required graduate competencies.



LEAD PARTNER

WESTMINSTER
International University in Tashkent

Westminster International University in Tashkent

TARGET REGIONS

- **Kazakhstan**
- **Uzbekistan**
- **Tajikistan**
- **Turkmenistan**

Key Outputs

1. Market Needs Analysis Report
2. Skills & Competencies Framework
3. National road maps for CE education in Central Asia

SKILLS & COMPETENCIES FRAMEWORK

Equipping Central Asian human capital with essential green skills for the circular transition.

Environmental Literacy

Building foundational knowledge in environmental systems, impact evaluation, and broad sustainability principles.

- **Systems Thinking**
- **Env. Assessment**
- **Climate Awareness**
- **LCA**

Circular Business & Econ

Designing and managing value propositions that eliminate waste, circulate materials, and regenerate natural systems.

- **Circular Models**
- **Value Chains**
- **Resource Efficiency**
- **Eco-design**

Entrepreneurship

Launching sustainable ventures, innovating green processes, and mobilizing capital to scale high-impact solutions.

- **Eco-startups**
- **Sust. Finance**
- **Green Marketing**
- **Social Innovation**

Transversal Skills

Cross-cutting competencies essential for effective collaboration, leadership, and complex problem-solving in dynamic environments.

- **Critical Thinking**
- **Teamwork**
- **Communication**
- **Digital Literacy**

Reference Frameworks



The CirculEc competency framework is rigorously aligned with leading European and international standards to ensure global relevance and academic excellence.

- **EU GreenComp:** The European sustainability competence framework, guiding the development of knowledge, skills, and attitudes for living, working, and acting sustainably.
- **EntreComp:** The entrepreneurship competence framework, fostering value creation and entrepreneurial thinking.
- **SDG Framework:** Comprehensive alignment with the United Nations Sustainable Development Goals, specifically targeting SDGs 4, 8, 9, 12, and 13.

WP3-5: DEVELOPMENT OF MODULES

Core Objectives

- Design interdisciplinary modules adapted to Central Asian HEIs' needs.
- Define learning outcomes aligned with EU standards (ECTS, EQF).
- Create comprehensive syllabi, lecture materials, case studies, and assessments.
- Translate and localise all educational content for regional context.
- Embed Circular Economy principles, SDGs, and digital tools throughout.
- Deliver pilot-ready modules for testing by the end of Year 2.



Fachhochschule des Mittelstands
UNIVERSITY OF APPLIED SCIENCES

LEAD PARTNER WP3

Fachhochschule des Mittelstands (FHM)



LEAD PARTNER WP4

Università degli Studi di Napoli Federico II (UNINA)



USC
UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

LEAD PARTNER WP5

Universidad de Santiago de Compostela (USC)

Module Work Packages

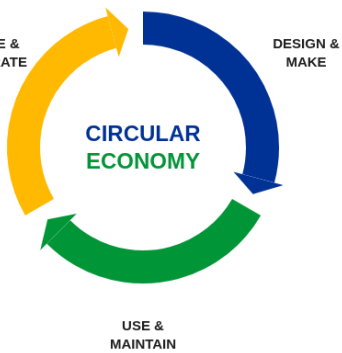
WP3: Module 1 – Environmental Management

WP4: Module 2 – Sustainable Competitiveness

WP5: Module 3 – Environmental Entrepreneurship

CirculEc

A systems approach to **design out waste** and pollution, keep products and materials in use, and **regenerate natural systems**.



Key Deliverables

- Completed syllabi & lecture notes for 3 modules
- Interactive case studies & practical assessment methods
- Translated & localised content adapted for each country
- Aligned frameworks ensuring seamless credit transfer

WP6: CAPACITY BUILDING IN CIRCULAR ECONOMY

Core Objective

Strengthen the teaching capacity of Central Asian academic staff through a structured training series at three EU partner universities, ensuring readiness to deliver the new modules.

Key Activities

- 3 intensive 4-day training workshops in Spain, Italy, Germany.
- Methodological training (active learning, case-based teaching, CIRCO methodology).
- Train-the-trainer approach.
- Preparation of CA staff to deliver the 3 new modules in their home universities.

Key Outputs

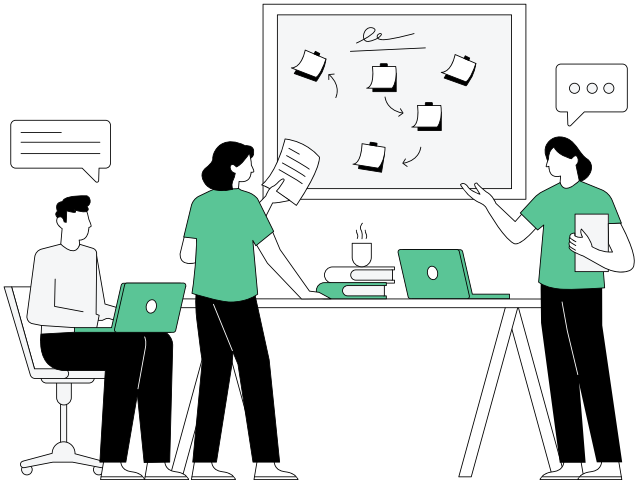
- Trained pool of Central Asian lecturers
- Comprehensive training materials
- Training certificates for participants
- Follow-up online support sessions



LEAD PARTNER

ДОНИШГОҲИ ТЕХНОЛОГИИ ТОҶИКИСТОН

Technological University of Tajikistan



STAFF TRAINING

Equipping academic staff with innovative Circular Economy teaching methodologies.

Program Objectives

To extensively train faculty members from Central Asian partner universities in modern pedagogical approaches, ensuring the highly effective delivery of the new Circular Economy (CE) and Sustainable Development modules.

Capacity Building Impact

100+ Staff Trained

11 Partner HEIs

Core Teaching Methodology Workshops

Curriculum Design & Integration

Techniques for embedding Circular Economy principles, LCA, and GHG accounting into existing Bachelor and Master level syllabi.

Advanced Pedagogy & PBL

Utilizing Problem-Based Learning (PBL) and flipped classrooms to foster active student engagement and critical thinking.

Digital Tools & Assessment

Mastering modern digital platforms for blended learning and designing effective rubrics to evaluate complex competencies.

Localized Case Studies

Adapting European best practices to Central Asian economic and environmental contexts for heightened relevance.



Key Deliverables

D6.1 Report

"Organisation of Trainings for Enhancing Teaching Staff Capacity for CA Partners"

TRAINING WORKSHOP 1

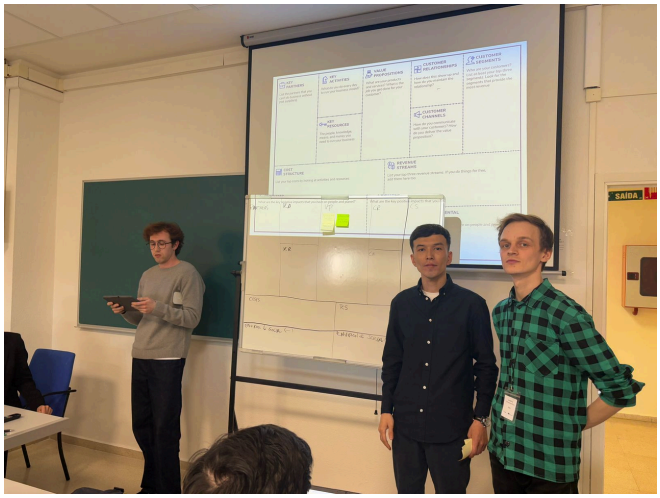
March 2025 | Hosted by Universidad de Santiago de Compostela, Faculty of Economic Science



Workshop Focus & Content

- **ERASMUS+ Module:** Immersion into the 'Fundamentals of Circular Economy & Sustainable Development' framework.
- **Core Concepts:** Comprehensive introduction to Circular Economy (CE) principles, sustainability, and circular entrepreneurship.
- **Practical Application:** Exploring and analyzing circular and sustainable business models directly at USC's Faculty of Economic Sciences.





Central Asian Faculty Network

CA Faculty Trained

Participating Institutions

Kazakhstan
- D. Serikbayev East Kazakhstan Technical University, Kazakhstan
- Karaganda Economic University of Kazpotrebsouz
- Sh.Ualikhanov atyndagy Kokshetau Memlekettik Universiteti
- Alikhan Bokeikhan University

Turkmenistan
- Academy of Sciences of Turkmenistan
- Turkmen State Institute of Economics and Management
- Turkmen State Institute of Finance

Tajikistan
- Technological University of Tajikistan
- Tajik state University of Commerce

Uzbekistan
- Toshkent Shahridagi Xalqaro Westminster Universiteti
- Central Asian University

Training Outcomes

Teaching Methodologies
Acquired advanced frameworks and methodologies for teaching CE Module 1 effectively.

Hands-on Case Studies
Developed practical cases and real-world examples for integration into localized curricula.

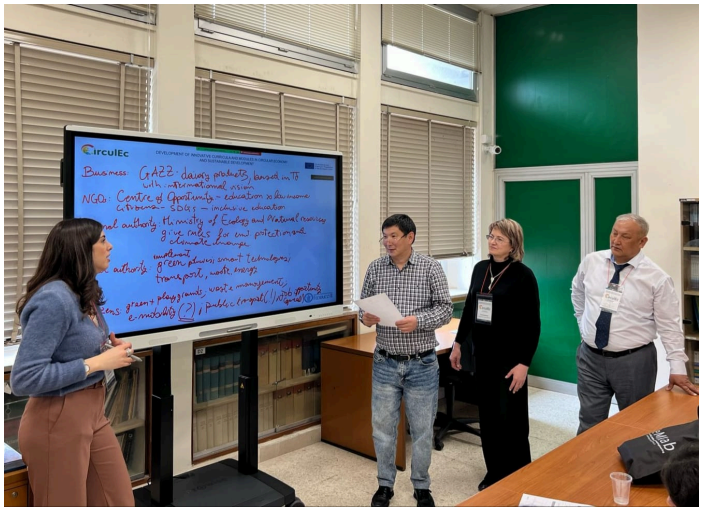
Academic Networking
Established strong collaborative ties with leading Spanish CE researchers and experts.

TRAINING WORKSHOP 2

Università degli Studi di Napoli Federico II (UniNa) | March 11–14, 2025

Sustainable Development & Competitiveness

- **Module 2 Curricula:** Designing innovative and highly relevant educational programs focused on economics and sustainable development principles.
- **Urban Sustainability:** Analyzing sustainable urban development practices, deeply informed by the rich European experience studied firsthand in Naples.
- **Value Chains & ESG:** Mastering the integration of Environmental, Social, and Governance criteria and sustainable value chains into modern university teaching.



20+ CA Lecturers

Key Activities & Engagement

Lectures & Strategy Development

Intensive lectures by distinguished UniNa professors focusing on advanced course development strategies and progressive teaching methodologies.

Practical Application & Adaptation

Joint workshops, immersive study visits, and collaborative discussions focused on accurately adapting European pilot modules for the Central Asian context.

Training Outcomes

Module 2 Completion

Successfully finalized foundational materials for the sustainable competitiveness curricula.

Advanced Pedagogies

Acquired state-of-the-art teaching approaches specifically tailored for economics and ESG.

Strategic Partnerships

Forged significantly deeper academic cooperation and networking with Italian universities.



TRAINING WORKSHOP 3

April 2025 | Hosted by Fachhochschule des Mittelstands (FHM), Bielefeld



Workshop Focus & Content

- **Module 3 Theme:** Environmental Entrepreneurship & Circular Business Models, leveraging FHM's expertise in environmental management education.
- **CIRCO Methodology:** Intensive 3-day workshop applying circular design strategies to redesign products, services, and business models.
- **Practical Application:** Study visit to Innovation Campus Lemgo to explore the promotion of sustainable practices and eco-friendly business models.







Training Outcomes

Circular Business Design

Gained hands-on skills in circular business model design and eco-entrepreneurship.

CIRCO Train-the-Trainer

Acquired methodological skills to deliver the CIRCO framework across CA universities.

Module 3 Curriculum

Finalized curriculum structure, case studies, and resources for Pilot Module 3.

CA Faculty Trained

WP7: PILOTING

Core Objective

To successfully pilot the 3 newly developed interdisciplinary modules in 11 Central Asian partner universities, reaching and training **1,100+ students**.

Key Activities

- Scheduling pilot courses in Bachelor and Master programs.
- Recruiting targeted student cohorts across all CA universities.
- Delivering Modules 1-3 in a blended format (in-person + online).
- Collecting attendance, academic performance, and student feedback data.
- Running pilot monitoring meetings (e.g., Dushanbe Oct 2025, Ashgabat Nov 2025).



LEAD PARTNER

KAZPOTREBSOYUZ UNIVERSITY SINCE 1966

Karaganda University of Kazpotrebsoyuz

Key Outputs

- **1,100+ students** officially trained
- Comprehensive Pilot Evaluation Report
- Revised and optimized teaching modules
- Detailed teaching observation and feedback reports



MODULE 1: ENVIRONMENTAL MANAGEMENT

Core Subjects & Topics

1.1 Ecology & Policy Fundamentals

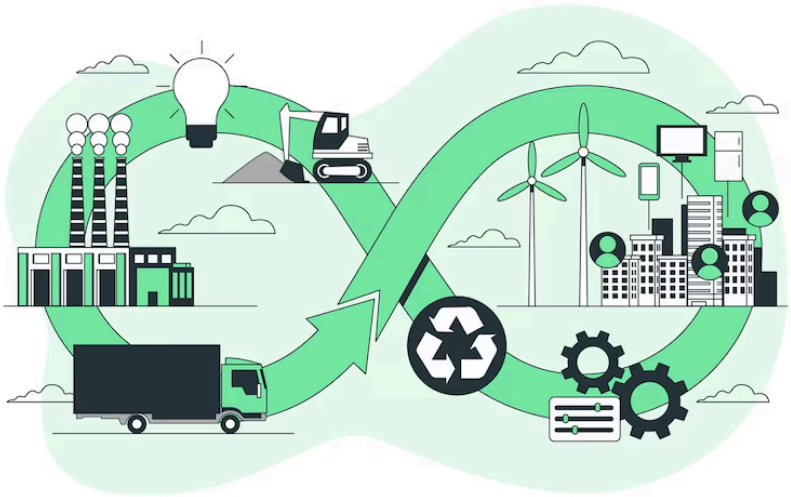
Ecology fundamentals, environmental policy and law, and core sustainability principles.

1.2 Assessment & Reporting (EMS & ESG)

Environmental Management Systems (ISO 14001), Life Cycle Assessment (LCA), and ESG reporting.

1.3 Resource & Climate Management

Sustainable resource management, climate change & mitigation, and green technologies.





Course Framework

Lead Institution & Credits

USC (Spain) | ~6 ECTS Credits

Teaching Methods

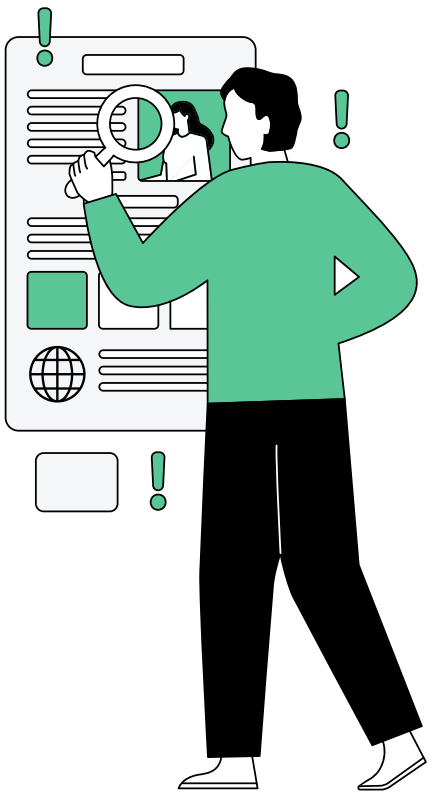
Lectures, PBL, flipped classroom, labs.

Assessment Strategy

Case studies, group projects, exams, and sustainability audits.

Learning Objectives & Competencies

- **System Understanding:** Understand environmental systems & sustainability principles to assess environmental impacts and risks.
- **Practical Application:** Apply Life Cycle Assessment (LCA) tools and use ISO 14001 environmental management systems.
- **Strategic Integration:** Apply resource efficiency, pollution prevention, and integrate corporate climate action.



MODULE 2: SUSTAINABLE COMPETITIVENESS

Core Subjects & Topics

2.1 Circular Business & Value Chains

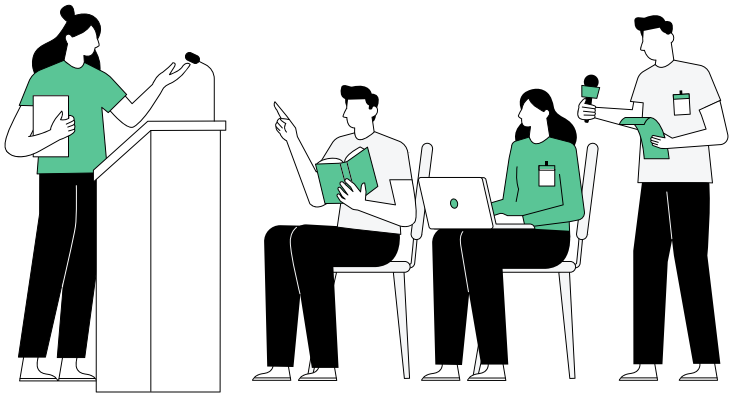
Circular business models (Bocken, Lacy, etc.), sustainable value chains, eco-design, and sharing economy principles.

2.2 ESG & Sustainable Finance

ESG metrics implementation, sustainability reporting standards, and sustainable finance mechanisms.

2.3 Sustainable Cities & Territories

Sustainable urban development, territorial competitiveness, and alignment with the EU Green Deal.





Course Framework

Lead Institution

Università degli Studi di Napoli Federico II (UniNa, Italy)

Teaching Methods

Case-based learning, business simulations, company visits, and group projects.

Course Credits

~6 ECTS

Learning Objectives & Competencies

Circular Business

- **Business Strategy:** Design circular business models, analyze sustainable value chains, and build competitive advantage through sustainability.
- **Sustainability Management:** Effectively manage ESG metrics and sustainability reporting to meet modern corporate standards.
- **Urban Development:** Understand sustainable urban development and the role of territories in the green transition.

MODULE 3: ENVIRONMENTAL ENTREPRENEURSHIP

Core Subjects & Topics

3.1 Green Entrepreneurship & Circular Design

Green entrepreneurship, eco-innovation, and applying the CIRCO methodology for circular design.

3.2 Social Ventures & Green Marketing

Social entrepreneurship, sustainable startups, green marketing, and intellectual property for green tech.

3.3 Finance & Scaling Green Businesses

Sustainable finance, impact investment, and strategies for scaling green businesses.





Course Framework

Institution & Credits

Lead: FHM Germany | ECTS: ~6

Teaching Methods

Design sprints, pitching, mentoring, hackathon-style projects, and business plan competitions.

Assessment Strategy

Business plan development, investor pitch decks, and team-based practical projects.

Learning Objectives & Competencies

Eco-Innovation

- **Startup Ideation:** Ideate and launch eco-startups targeting green markets.
- **Circular Design:** Apply the CIRCO circular design methodology and create robust circular business models.
- **Green Finance:** Access sustainable finance and understand the dynamics of green markets.

STUDENT REACH & IMPACT

Building capacity across Central Asia through pilot implementation

1,100+

Students Reached

In the project pilot phase

11

CA Universities

Across 4 Central Asian countries

3

New Modules

Developed and delivered

Regional Implementation



Driving the Sustainable Transition

New graduates are equipped with practical CE skills to lead green startups, optimize resource use, and accelerate sustainability across Central Asian industries.

Demographics & Distribution

Gender Balance

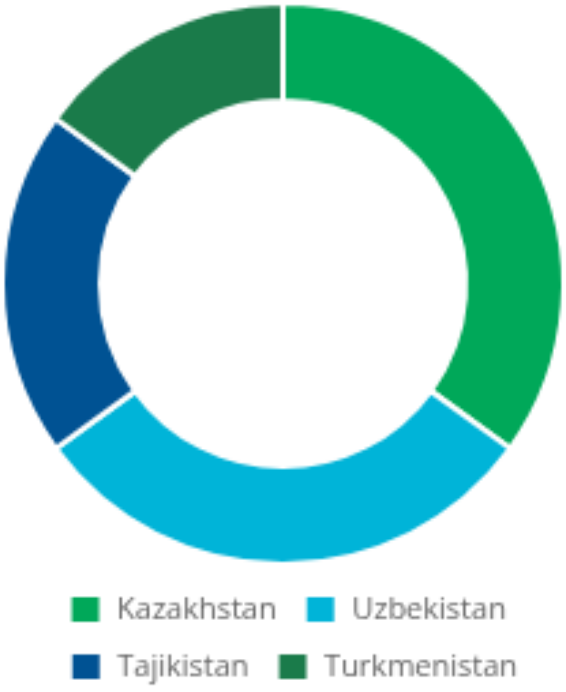
50% Female **50% Male**

Academic Levels

Integrated into both **Bachelor** and **Master** degree programs.

Multiple Disciplines

- Economics
- Engineering
- Business
- Environmental Sciences
- Management



STUDENT FEEDBACK & EVALUATION

Insights, testimonials, and continuous improvement from the first cohort of 1,100+ students across Central Asia.

88%
Satisfied with Content

91%
Would Recommend

84%
More Competent in CE

78%
Interested in Green Careers

> *"The CirculEc modules opened my eyes to sustainable business models. I now understand how circularity can be a competitive advantage, not just an environmental obligation."*

Aizhan S.
Alikhan Bokeikhan Univ. (KZ)

> *"As an engineering student, learning about Life Cycle Assessment (LCA) and resource efficiency has completely reshaped my approach to product design and development."*

Timur B.
WIUT (Uzbekistan)

> *"The practical nature of the environmental entrepreneurship course was amazing. It gave my team the confidence to develop a green startup pitch for the hackathon."*

Madina K.
Tajik State Univ. of Commerce (TJ)

Feedback Collection Methods

Post-course surveys, interactive student focus groups, and structured evaluation rubrics applied across 11 partner universities.

Key Improvement Actions Taken

Enhanced bilingual materials (English & local languages), introduced more localized Central Asian case studies, and increased practical lab hours based on direct feedback.

CIRCULEC HACKATHON

To create innovative solutions aimed at waste reduction, resource reuse, and environmentally friendly product design.

87+

Teams

3 Winners

Top Projects Selected

Central Asia

Cross-Border Event

Multi-Stakeholder Jury

Evaluated transparently by a panel of Central Asian experts, EU project partners, and industry representatives to ensure fair selection.

Selection Criteria

Winning projects demonstrated high innovation, practical market relevance, and strong alignment with core circular economy principles.

Teaching Modules (TmEs) Funding Pathways

The CirculEc project continues to support students and young professionals by offering direct opportunities to apply for Circular Economy funding.







HACKATHON WINNERS: DECENT

CirculEc Regional Hackathon 1st Place Winner — Westminster International University in Tashkent (WIUT), Uzbekistan

WESTMINSTER
International University in Tashkent

Project Overview

Digital Sustainable Work Platform

The Core Idea

A digital platform promoting decent and sustainable work practices, connecting workers, employers, and educational institutions to advance fair employment and green jobs.

Features & Users

Targeted at young professionals, HR teams, universities, and policymakers. It provides tools to match talent with sustainability-focused opportunities and educational resources.



Platform Highlights

- Dedicated jobs board for green and CE positions.
- Integrated training and micro-credentials modules.
- Advanced workforce analytics and employer sustainability ratings.





Sustainability Focus

Circular Economy & Impact

Circular Economy Angle

Channels human capital into the circular economy, promoting circular labor practices and advancing skills essential for sustainability transformation.

Impact Potential

Enhances fair employment opportunities, fosters green job growth, and builds a resilient workforce equipped to tackle modern environmental challenges.

Global Goals Alignment

- Advances SDG 8: Decent Work and Economic Growth.
- Supports SDG 12: Responsible Consumption and Production.
- Details available in the CirculEc Google Drive.

HACKATHON WINNERS: CA ENERSAVE AI

CirculEc Regional Hackathon 2nd Place Winner — Westminster International University in Tashkent (WIUT), Uzbekistan

WESTMINSTER
International University in Tashkent

Project Overview

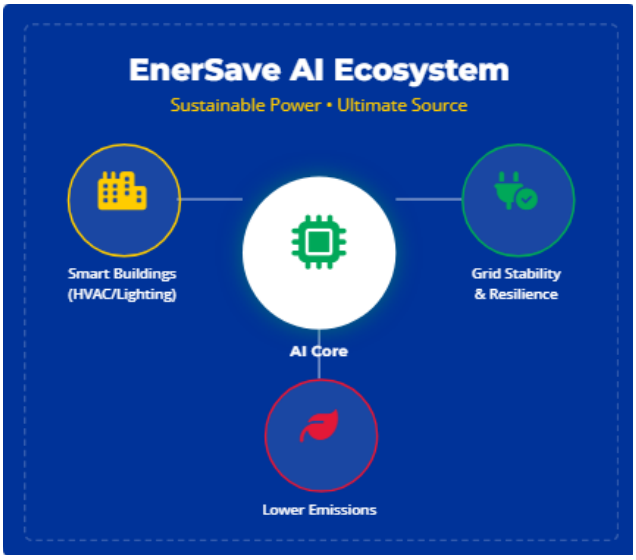
AI-Powered Energy Saving

The Core Idea

An intelligent platform utilizing smart algorithms to optimize electricity consumption in households and SMEs, effectively reducing energy waste and lowering monthly utility bills.

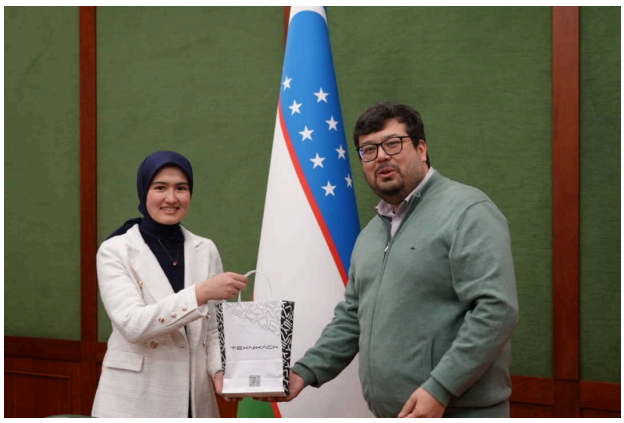
Technology & Users

Designed for households, SMEs, and local utility companies. The robust tech stack integrates AI/Machine Learning, IoT sensors, smart meters, and a user-friendly mobile application.



Technical Highlights

- Real-time monitoring via seamless IoT integration.
- Automated load-balancing and smart forecasting.
- Scalable architecture to support regional energy grids.





Sustainability Focus

Circular Economy & Impact

Circular Economy Angle

Extends the lifetime of electrical assets and infrastructure through predictive maintenance, while fundamentally reducing resource demand for power generation.

Impact Potential

Capable of delivering up to 20-30% energy savings. This directly reduces peak pressure on national grids and significantly cuts overall CO_2 emissions in target regions.

Global Goals Alignment

- Advances SDG 7: Affordable and Clean Energy.
- Supports SDG 13: Climate Action via emissions cuts.
- Project details are documented in the **CirculEc Google Drive**.

HACKATHON WINNERS: SPLITHUB

CirculEc Regional Hackathon 3rd Place Winner — Central Asian University (CAU), Uzbekistan

Project Overview

Collaborative Sharing Platform

The Core Idea

A sharing-economy platform connecting neighbors and small communities to share underused items (tools, appliances, books), reducing overconsumption, waste, and household costs.

Technology & Users

Designed for urban communities, students, and eco-conscious consumers. The tech stack features a mobile app, geo-location matching, a robust trust & rating system, and secure payments.

Technical Highlights

- Seamless geo-location based item matching.
- Built-in trust, verification, and rating system.
- Secure in-app transactions and deposit handling.



Sustainability Focus

Circular Economy & Impact

Circular Economy Angle

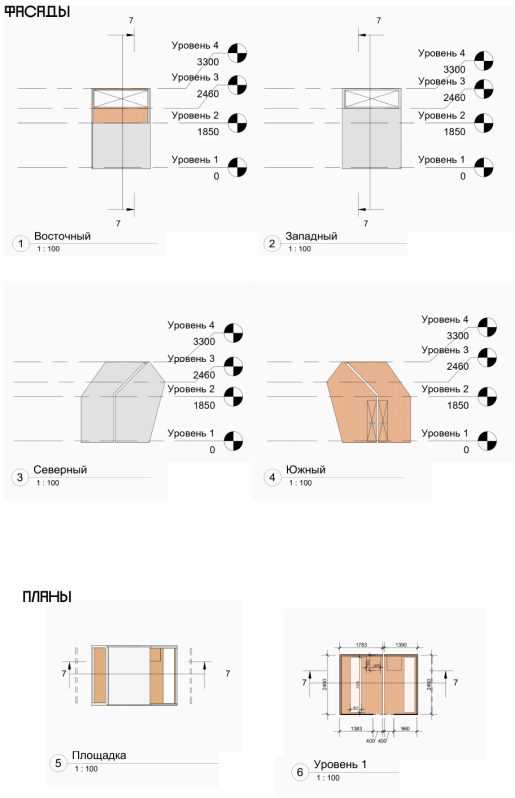
Maximises product use intensity and extends product life. It fundamentally embodies the 'access over ownership' principle by reducing the need to manufacture new goods.

Impact Potential

Significantly lowers the consumption footprint and reduces urban waste, while building stronger, more resilient local communities through shared resources.

Global Goals Alignment

- Advances SDG 12: Responsible Consumption.
- Supports sustainable and connected communities.
- Project details are documented in the **CirculEc Google Drive**.



CIRCULEC HACKATHON

Impact & Innovation Pathways

Fast-Track
Entrepreneurship

Mentoring
EU & CA Partners

Real Impact
Measurable Results

Why It Matters

Serves as a powerful catalyst for fast-tracking student entrepreneurship, creating a direct pipeline for real-world pilots and robust SME partnerships across Central Asia.

Dedicated Support

Participants receive expert mentoring by EU and CA partners, alongside strategic alignment with TmEs funding calls to turn innovative ideas into viable ventures.

Next Steps & Future Vision

The hackathon transitions into prototype development within campus labs. We are establishing local industry MoUs and implementing impact tracking systems to measure energy saved, materials diverted, and new green jobs created.



WP8: QUALITY ASSURANCE

Objectives & Mechanisms

Objectives:

- Ensure academic rigor and EU standards across all modules.
- Monitor delivery of each WP and verify deliverables.
- Provide formative and summative evaluation.
- Identify risks and implement corrective actions.

Mechanisms:

- Internal QA committee and peer review of modules.
- External evaluators to ensure objective assessment.
- Student satisfaction surveys and feedback collection.
- Observation of pilot teaching and periodic QA reports.

Standards Followed

- **ESG:** European Standards & Guidelines for QA in higher education.
- **ECTS:** Alignment with European Credit Transfer & Accumulation System.
- **ISO Standards:** Application of ISO-like quality and evaluation processes.



LEAD PARTNER

Fachhochschule des Mittelstands
UNIVERSITY OF APPLIED SCIENCES

Fachhochschule des Mittelstands (FHM)

Supported by all consortium members

Key Deliverables

- **Quality Plan:** Outlining all QA procedures and KPIs.
- **Mid-term QA Report:** Formative evaluation of project progress.
- **Final QA Evaluation:** Summative assessment of overall impact.
- **Recommendations:** Continuous improvement actions throughout the project.

QUALITY ASSURANCE RESULTS

Ensuring academic excellence and adherence to EU standards

100%

Deliverables on Track

All planned WP milestones met

3

Modules Approved

By internal QA committee

>85%

Student Satisfaction

Positive pilot course feedback

Monitoring & Compliance

- WP1. Project management
- WP2. Market needs analysis
- WP4. Development module 2: Sustainable competitiveness
- WP 5 Development module 3: Environmental entrepreneurship
- WP7. Piloting
- WP8. Quality Assurance

Work Package Status

- WP3. Development of module 1: Environmental Management
- WP6. Capacity Building in Circular Economy
- WP9. Impact and Dissemination

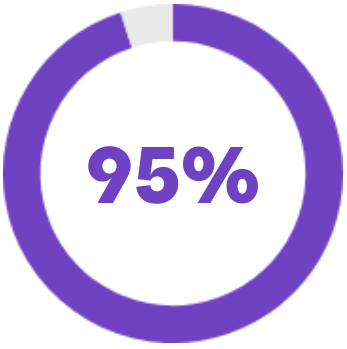
Pilot Monitoring Visits

Successful monitoring visits conducted in **Dushanbe (Oct 2025)**, **Ashgabat (Nov 2025)**, and other CA capitals to evaluate module implementation quality.

External Assessment

External evaluator confirmed full alignment of the 3 modules with **EU standards, ESG guidelines, and ECTS requirements**.

Feedback & Continuous Improvement



Trainer Satisfaction

Evaluation surveys from EU capacity-building workshops (Spain, Italy, Germany) indicate overwhelming approval of the teaching methodologies, content relevance, and organization among Central Asian faculty.

Key Improvement Actions Implemented

Localized Cases

Added more Central Asian industry examples

Bilingual Materials

Translated resources to national languages

Practical Labs

Increased hours for hands-on CIRCO methods

WP9: IMPACT AND DISSEMINATION

Maximizing project visibility and uptake in Central Asia

Key Activities & Channels

Digital Presence: Project website (circulec.tguk.tj) and active social media channels (Instagram, Facebook, LinkedIn).

Events & Workshops: Organization of international workshops, multiplier events, and participation in regional and EU events.

Publications: Academic publications, press releases, and broad dissemination of Open Educational Resources (OER).

Target Audiences

Academia: Students, faculty, and university leadership across Central Asia and the EU.

Government: Ministries of education, environment, and economy, along with key policy makers.

Industry & NGOs: Local businesses, SMEs, and non-governmental organizations involved in circularity.

International: EU stakeholders and the wider public beyond Central Asia.

Key Exploitation Outputs

- Academic Papers
- Open Educational Resources
- Press Releases
- Alumni Network



LEAD PARTNER

Tajik State University of Commerce

Objectives & KPIs

Our primary objective is to maximise project visibility and uptake by HEIs, industry, policy makers and the wider public in Central Asia and beyond.

Website Visitors	Tracked
Social Followers	Tracked
Articles & Citations	Tracked
Event Participants	Tracked

INTERNATIONAL WORKSHOP SERIES

Bringing together EU and Central Asian academics, practitioners, and policymakers

Format
Hybrid Event

Organizers
CircuIEC Consortium

Target Audience
Academics & Policy

Key Topics & Workshop Format

Curriculum & Policy: Discussions focused on CE policy frameworks, educational curriculum design, and tailored regional case studies.

Industry & Metrics: Coverage of industry-academia cooperation, sustainable finance, CE indicators, and digital tools for circularity.

Interactive Elements: Engaging participants through interactive panels, expert working groups, and collaborative joint publications.





Workshop Outcomes & Impact

Cross-Country Networking

Building robust connections between European and Central Asian stakeholders to share educational best practices.

Harmonised Teaching

Aligning educational approaches, curriculum delivery, and academic quality standards across CA partner HEIs.

REGIONAL DIPLOMATIC & PARTNERSHIP EVENTS

CirculEc featured in EU-Uzbekistan Partnership Festival & 30th Anniversary of EU-Turkmenistan Relations





EU-Uzbekistan Partnership Festival

Tashkent, Uzbekistan

- Showcased the innovative **CE curriculum** and the impressive outputs of the regional hackathon to a wide public audience.
- Demonstrated the strength of the **Central Asian partner network** in advancing sustainability.
- Conducted high-level meetings with the **EU Delegation** and key Uzbek government officials.

EU Delegation | CA Partners



30th Anniversary EU-Turkmenistan

Ashgabat, Turkmenistan

Presented CirculEc as a **flagship EU-funded project** actively supporting Turkmenistan's sustainable transition.

Highlighted active participation from the **Academy of Sciences of Turkmenistan**.

Showcased strong engagement from **Turkmen State Institute of Economics & Management** and **Institute of Finance**.

AST | TSIEM | TSIF



REGIONAL ECONOMIC FORUM «VOSTOK»

Greening the regional economy & building CE capacity in Kazakhstan

Keynote & Presentation

Alikhan Bokeikhan University delivered a keynote presentation, positioning the CirculEc project as a flagship initiative for sustainable development and circular economy education in Central Asia.

ALIKHAN BOKEIKHAN UNIVERSITY





Project Exhibition Stand

CirculEc hosted a dedicated stand showcasing the three newly developed interdisciplinary modules, engaging directly with regional businesses, government officials, and media representatives.

Panel on Green Jobs

The consortium participated in an interactive panel discussion focusing on the growing demand for green jobs, circular economy skills, and the importance of industry-academia cooperation.

Key Event Outcomes

- Achieved **high-level visibility** for CirculEc among regional stakeholders.
- Signed strategic **cooperation memos** with regional industry partners.
- Positioned **EKTU** as a leading hub for CE education in Central Asia.
- Strengthened **cross-sector networking** for future sustainability initiatives.

ERASMUS+ INFORMATION DAY

Promoting CirculEc in Kazakhstan, Tajikistan, and Uzbekistan

Event Overview & Activities

CirculEc actively participated in **Erasmus+ Info Days** organised by National Erasmus+ Offices across Central Asia to promote Circular Economy education and share CBHE practices.

- Hosted dedicated project stands and shared CBHE good practices.
- Presented achievements and demonstrated the 3 CE modules.
- Met with prospective student and faculty applicants.
- Showcased innovative outputs from the regional CE hackathon.

Key Outcomes

- Increased Erasmus+ awareness.
- Recruitment of new students.
- Networking with CBHE projects.
- Promotion of CE as a skill area.



Kazakhstan



Astana & Almaty

Stats: High attendance from prospective pilot students and academics.



Tajikistan



Dushanbe

Stats: Excellent networking engagement with other CBHE projects.



Uzbekistan



Tashkent

Stats: Strong interest generated by CE hackathon demonstrations.

AUTUMN CLIMATE SCHOOL

CirculEc dedicated Circular Economy platform integrating CE modules with climate education

Event Date
Autumn Season

Location
ABU, Kazakhstan

Participants
100+ Attendees

Format & CirculEC Contribution

Multi-day Format: Combining interactive lectures, workshops, and collaborative student projects centered on climate change and sustainability.

Dedicated CE Track: Featured expert lectures from EU partners (USC, UniNa, FHM) addressing circular business models and the critical climate-CE nexus.

Target Audience: Brought together undergraduate and graduate students from CA partner universities, alongside young researchers and NGO representatives.







Key School Outcomes

High Engagement

Over 100 participants actively engaged in hands-on circular economy education and climate action workshops.

Student Projects

Successful development and presentation of innovative, student-led climate and circularity projects.

Curriculum Synergy

Effective integration of CirculEc module content with broader regional climate education initiatives.

STAKEHOLDER ENGAGEMENT NETWORK

Building a collaborative ecosystem for the Circular Economy transition

Government

Ministries of Education, Environment, and Economy in Kazakhstan, Uzbekistan, Tajikistan, and Turkmenistan. Actively collaborating with National Erasmus+ Offices and EU Delegations.

- Ministries & Policy Makers
- EU Delegations

Academia

The core consortium of 15 partner HEIs across Central Asia and the EU, alongside other regional universities, research centres, and the Academy of Sciences of Turkmenistan.

- 15 Partner HEIs
- Research Centres
- Academy of Sciences

Industry & Business

SMEs specialized in green tech, sustainable energy, and recycling. Broad engagement includes business associations, national chambers of commerce, and regional start-up incubators.

- Green SMEs
- Incubators
- Chambers of Commerce

Civil Society & Media

Environmental and youth NGOs, active student associations, and regional media outlets. Synergizing with international organizations including UNEP, UNDP, and the EBRD.

- NGOs & Youth
- Regional Media
- UNEP / UNDP / EBRD

Engagement Tools

WORKSHOPS • INFO DAYS • JOINT EVENTS • MEMORANDUMS OF UNDERSTANDING (MoUs) • ADVISORY BOARD

INDUSTRY PARTNERSHIPS

Connecting academia with industry across Central Asia and the EU

Practical Industry Activities

Facilitating direct engagement between students, faculty, and the private sector to bridge theory and practice.

- **Company visits during EU trainings (e.g., CIRCO Hub Germany)**
- **Student internships in regional eco-businesses**
- **Joint case studies with local Central Asian companies**

Sectors Engaged

Targeting key economic sectors to drive the circular transition and sustainable development in Central Asia.

- **Green energy, recycling & waste management**
- **Food and agriculture, textile, and construction**
- **Smart cities and IT/AI for sustainability**

Advisory & Mentorship

Leveraging industry expertise to ensure the curriculum meets current labor market needs and innovation trends.

- **Guest lectures delivered by industry CE experts**
- **Hackathon mentoring by regional business leaders**
- **Advisory boards guiding module design and delivery**

Strategic Benefits

Employer-Ready Graduates

Driven by industry-relevant curricula

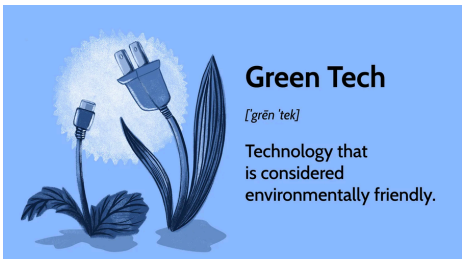
Applied Real-World Solutions

Bridging academic theory with market needs

PUBLICATIONS & RESEARCH

Disseminating Circular Economy knowledge, fostering academic exchange, and scaling outputs beyond the project.

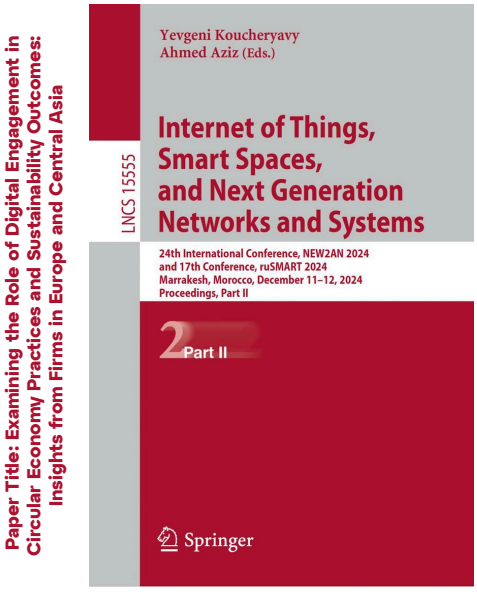
Featured Output



Deliverable 2.1: Circular Economy

A comprehensive baseline report mapping market needs and CE education in Central Asian countries. Available for download on the official project website.





Educational & Competency Frameworks

Module Curricula (OER): Complete frameworks for the 3 core modules (Environmental Management, Sustainable Competitiveness, Environmental Entrepreneurship) published as Open Educational Resources.

Skills & Competencies Framework: A structured guide bridging academic training with local industry demands and labor market requirements.

Academic Research & Case Studies

Joint EU-CA Publications: Collaborative academic research papers between European and Central Asian partner institutions.

Case Studies Booklet: A comprehensive collection showcasing localized, real-world circular economy solutions from Central Asia.

Conference Papers: Insightful presentations delivered at international CE symposiums and regional events.

Policy Briefs & Strategic Reports

Market Needs Analysis Report: An extensive document identifying CE skills demand across Kazakhstan, Uzbekistan, Tajikistan, and Turkmenistan.

Policy Briefs: Targeted recommendations on integrating CE education tailored for Central Asian governmental ministries.

Knowledge Scaling

Open Educational Resources

High citation potential

Scaling outputs beyond the project

MEDIA & OUTREACH

Amplifying the impact of the CirculEc project through robust digital channels, press coverage, and public engagement.

15,000+
Website Visits

50,000+
Social Media Reach

85+
Published Articles

12.5%
Engagement Rate

Extensive Digital & Media Footprint

Project & Partner Websites

Official hub (circulec.tguk.tj), EKTU news portal, and active coverage across USC, UniNa, FHM, WIUT, CAU, and CA HEI's portals.

External & Diplomatic Coverage

Mentions by Turkmenistaninfo.gov.tm, EU Delegation channels (EEAS), and widespread press releases for key regional events.

Social Media Communities

Highly engaged following across Instagram, Facebook, and LinkedIn, sharing real-time training updates and hackathon highlights.



Public Engagement

Driving awareness across digital platforms including the official project portal (**circulec.tguk.tj**), partner institution networks, and active social media campaigns to foster cross-regional environmental dialogue and education reform.

D. Serikbayev EAST KAZAKHSTAN TECHNICAL UNIVERSITY

CirculEc

Co-funded by the European Union

Contacts & Social Media

Connect with the CirculEc project network

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Scan to Connect

Official Website

Instagram

LinkedIn

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