EU Danube Region Strategy
PA 8 LIGHTHOUSE

GREEN TECH, CIRCULAR ECONOMY & CIRCULAR BIOECONOMY

Circular DigiBuild

Business Agency Association Bulgaria

Basics

Acronym: Circular DigiBuild

Name: Boosting the uptake of emerging technologies in circular economy implementation in construction and buildings industry in Danube region to sustainably harness the twin transition for greener future

Country: Austria, Bulgaria, Croatia, Hungary, Slovak Republic, Slovenia, Romania, Bosnia and Herzegovina, Moldova, Montenegro, Serbia

Scoring: 46/50

Key Project Data:

2024 – 2026

2.801.950,50 EUR

Funded by Interreg Danube Region Programme (IDRP)

Project Coordinator:

Business Agency Association Bulgaria

https://serda.ba/en/projects/circular-digibuild/43

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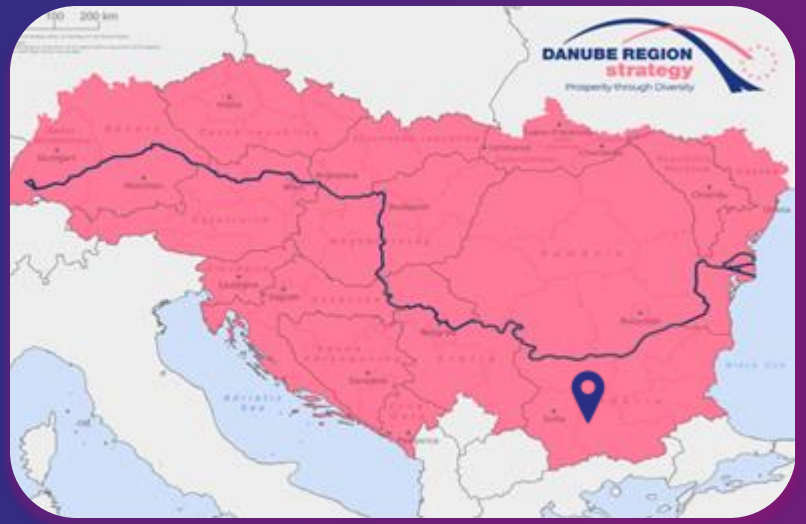
SERDA

Consortium



Coordinator:

Business Agency Association, Bulgaria

Partners from the Danube Region:

- Austria Wirtschaftsservice, Austria
- Hof University of Applied Sciences, Bavaria
- Sarajevo Economic Region Development Agency, BIH
- EDIH in Construction Sector, Bulgaria
- ReCheck, Bulgaria
- Vangavis, Bulgaria
- Innovation Centre Nikola Tesla, Croatia
- TERA Tehnopolis, Croatia
- Institute of Circular Economy, Czech Republic
- Chamber of Commerce and Industry of Pécs-Baranya, Hungary
- Business Advisory Center NGO, Moldova
- Zero Waste Montenegro, Montenegro
- Institute for Research in Circular Economy and Environment „Ernest Lupan“, Romania
- Regional Development Agency for West Region, Romania
- Science and Technology Park Novi Sad, Serbia
- Slovak Business Agency, Slovakia
- University of Ljubljana, Slovenia

About the project

The construction and building industry in Danube region depletes resources, generates over **a third of the total waste and emits greenhouse gases at large scale** - more in lagging countries and less in the innovations' pioneers in the area. The fragmented and risk-averse construction sector is slow to adopt digital innovation across Danube area. Digital technologies serve as a prerequisite for a shift to circular constructions where building materials are reused. The **circular economy (CE) has the potential to capitalise upon emerging digital technologies**, such as big data, artificial intelligence (AI), blockchain and the Internet of things (IoT), amongst others.

The **Circular DigiBuild project** aims to boost the **digitalization and sustainability of the construction sector** in the Danube region. It addresses significant environmental challenges, including high resource depletion and waste generation, by **promoting circular economy principles** and **leveraging digital technologies** to enhance efficiency and reduce the environmental footprint of construction activities.

INNOVATION

Pilot initiatives are implemented in the project, offering **innovative solutions**, like e.g. digital building logbooks, renovation passports, blockchain-based material tracking.

SUSTAINABILITY

Circular DigiBuild uses emerging technologies to **boost circularity in the construction sector**.

SCALABILITY

Circular DigiBuild puts its emphasis on interregional knowledge exchange and cross-border policy harmonization, showing stakeholder engagement and real-world benefit.

Pilot initiatives

Within the project, the implementation of pilot initiatives is ongoing:

1. Urban Mining Screener (UMS) (Austria)

Objective:
To close material loops in construction with the aim of reusing materials in future projects and reducing environmental impact.

Activities:
Development of an open-source software tool called Urban Mining Screener (UMS). The tool estimates the material composition of existing buildings based on building year, type and address, by using algorithm and building archetypes.

Innovation:
The initiative enables smart planning for material reuse in urban environments. It supports material manufacturers, city planners, and real estate developers in tracking material flows, CO_2 emissions, and estimating reuse potential.

2. Smart Building Sensor Minimization (Croatia)

Objective:
To explore how smart building operation can be made more cost-effective by minimizing the number of sensors while still maintaining high-quality energy efficiency and comfort.

Activities:
Installation of a dense sensor network including meteo station, digital controllers in 248 zones, 368 fan coil return temp sensors and calorimeters on ducts. The sensor network collected 5 years of 1-minute interval data in a PostgreSQL database.

Innovation:
The initiative addresses the cost barrier to adopting smart building technology by using data-driven modelling to enable simplified sensor configurations with similar performance.

Methodology

The methodology applied within project CIRCULAR DIGIBUILD is transnational, collaborative, and cross-sectoral, based on:

Quadruple-helix approach
Engaging academia, business, government, and civil society

Working groups
Collaboration, Knowledge, Piloting, and Change, each with defined roles and partners

Piloting digital technologies
Collaboration, Knowledge, Piloting, and Change, each with defined roles and partners

Use of international standards and regulatory compliance in pilot design and implementation

Development of joint strategies, action plans, and policy improvements through participatory processes (e.g., RMSGs, virtual workshops, stakeholder consultations).

Impact

Both pilots of the Circular DigiBuild contribute to a **more resource-efficient, low-carbon building sector** through complementary innovations:

1. UMS focuses on **embodied resources and material flows**

2. Sensor Minimization optimizes **operational performance**

Their synergy enhances data interoperability, encourages cross-pilot collaboration, and supports smart, circular urban infrastructure development.

Results

Circular DigiBuild

DANUBE REGION strategy Competitiveness

Key **outcomes and results** of CIRCULAR DIGIBUILD project include:

- Creation of a **Danubian network for circularity** in construction sector
- Implemented **pilot actions demonstrating practical digital and CE applications** in construction
- Created joint strategies, including a **Transnational Strategy and national action plans**
- Identification of **policy barriers and recommendations** for improved CE policy frameworks
- Development of a Plan for **upscaling the pilots beyond project duration**
- **Increased institutional capacity, innovation adoption, and regional cooperation**

Steinbeis Europa Zentrum Enabling Innovators to Grow
PBN advanced management
Gospodarska zbornica Slovenije Chamber of Commerce and Industry of Slovenia
DANUBE REGION strategy Prosperity through Diversity
Interreg Programme Danube Region
Co-funded by the European Union
REPUBLIC of CROATIA Ministry of Economy
Baden-Württemberg Ministry of Economic Affairs, Labour and Tourism

Barriers encountered

- Fragmentation and risk-aversion in the construction sector
- Slow uptake of digital innovations in traditional industries
- Lack of interoperability between existing systems/platforms and new digital solutions
- Diverse policy and regulatory environments across countries in the Danube region

Ideas for replication

- Promote policy alignment and knowledge transfer through cross-border cooperation
- Replicate pilots using standardised open-source tools and frameworks
- Engage local and national stakeholders early to ensure buy-in and facilitate implementation

Tips

- Use existing digital platforms and networks (e.g., EDIHs, FabLabs) to scale
- Ensure inclusive stakeholder engagement to align technological and social innovation
- Prioritise transparency and sustainability in digital solutions (e.g., use of blockchain for traceability)