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Construction and demolition waste and urban resource centres

March 18th, 2025, Kavala, Greece

Supported by:

Federal Ministry for Economic Affairs and Climate Action

European Climate Initiative EUKI

on the basis of a decision by the German Bundestag

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CENTRES FOR URBAN RESOURCES,
REUSE AND REMANUFACTURE

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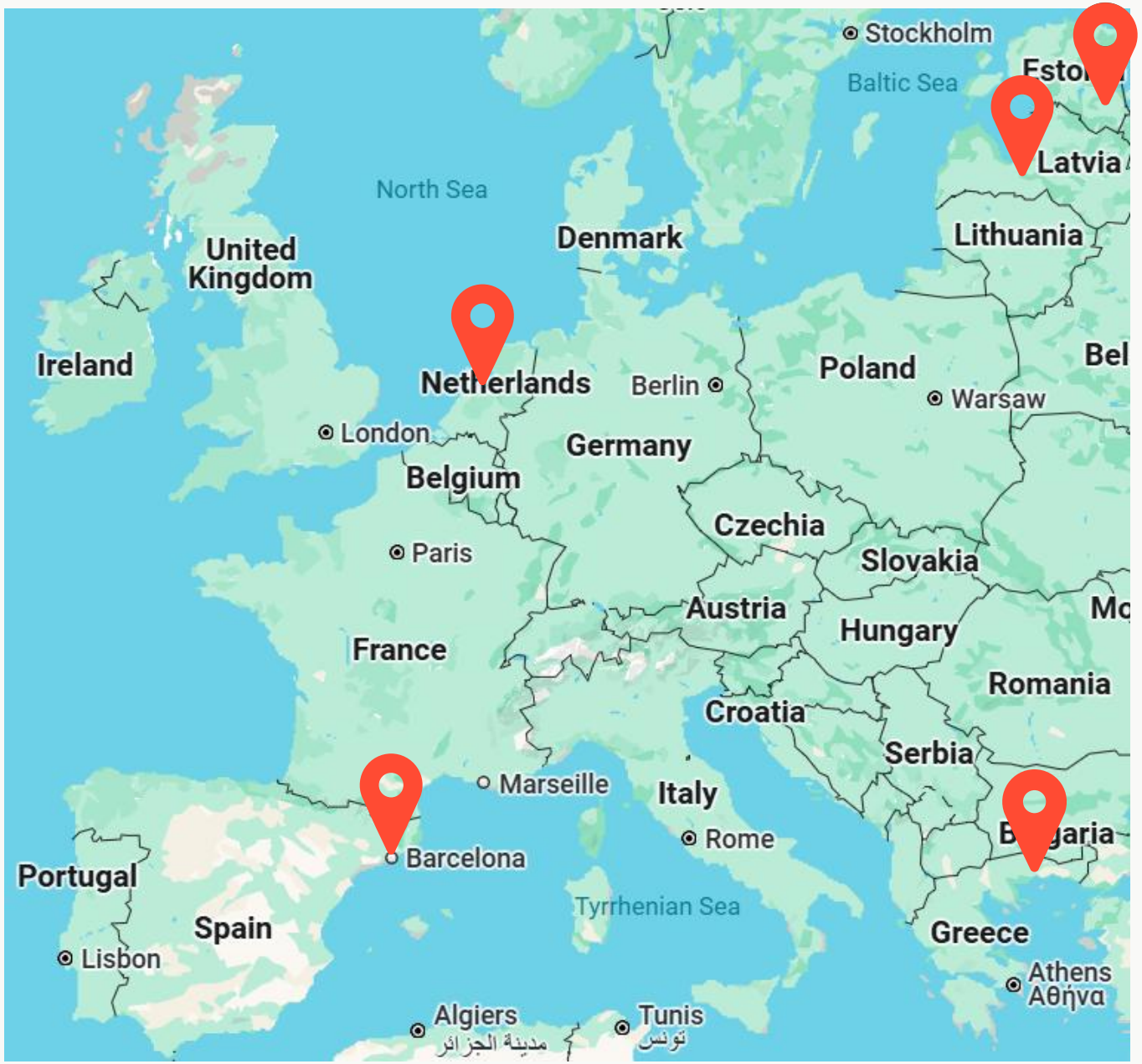

RIGA

Amsterdam University of Applied Sciences

AR

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CDW and URCs

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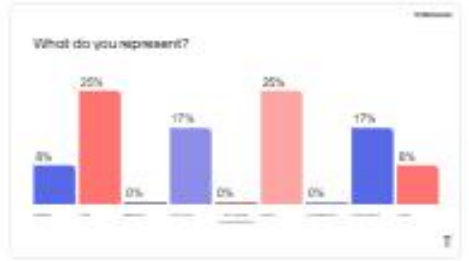

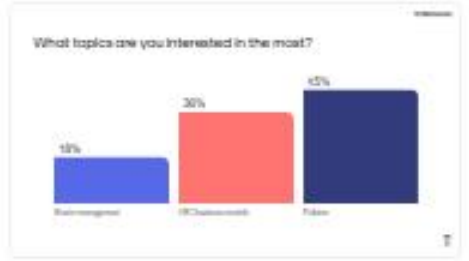

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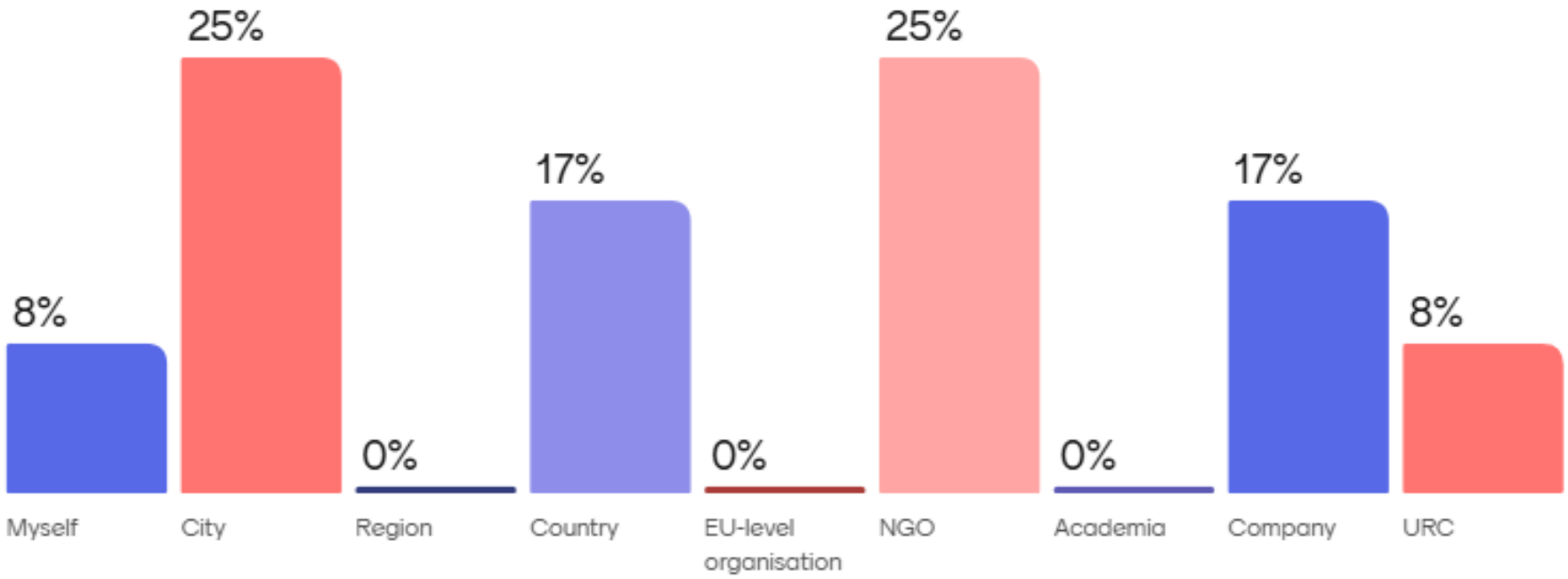
What do you represent?



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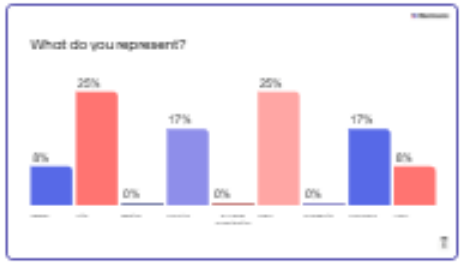

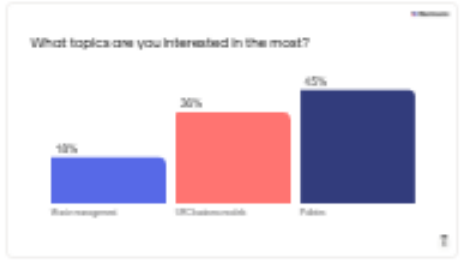

How did we get here?

Baseline

Stakeholder interviews

Document and policy analysis

City reports & recommendations

Scientific paper #1

2023

Learning from others

Mapping and selecting URCs

15 URCs visited and

4 more presented at webinars

Scientific paper #2

2024

Piloting

Local co-creation

Establishment of the URCs

Running & evaluating URCs

2025

Policy

Gap analysis

Multi-criteria analysis

Recommendations

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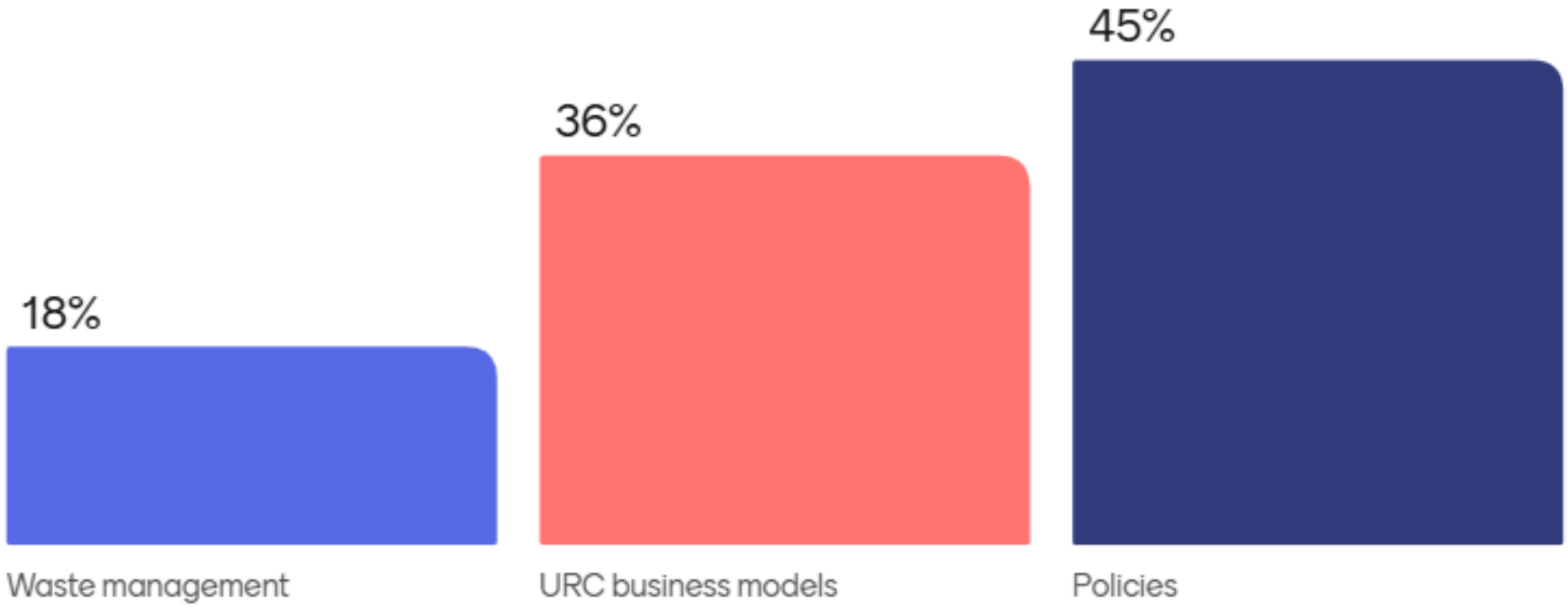
What topics are you interested in the most?



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CDW and URCs

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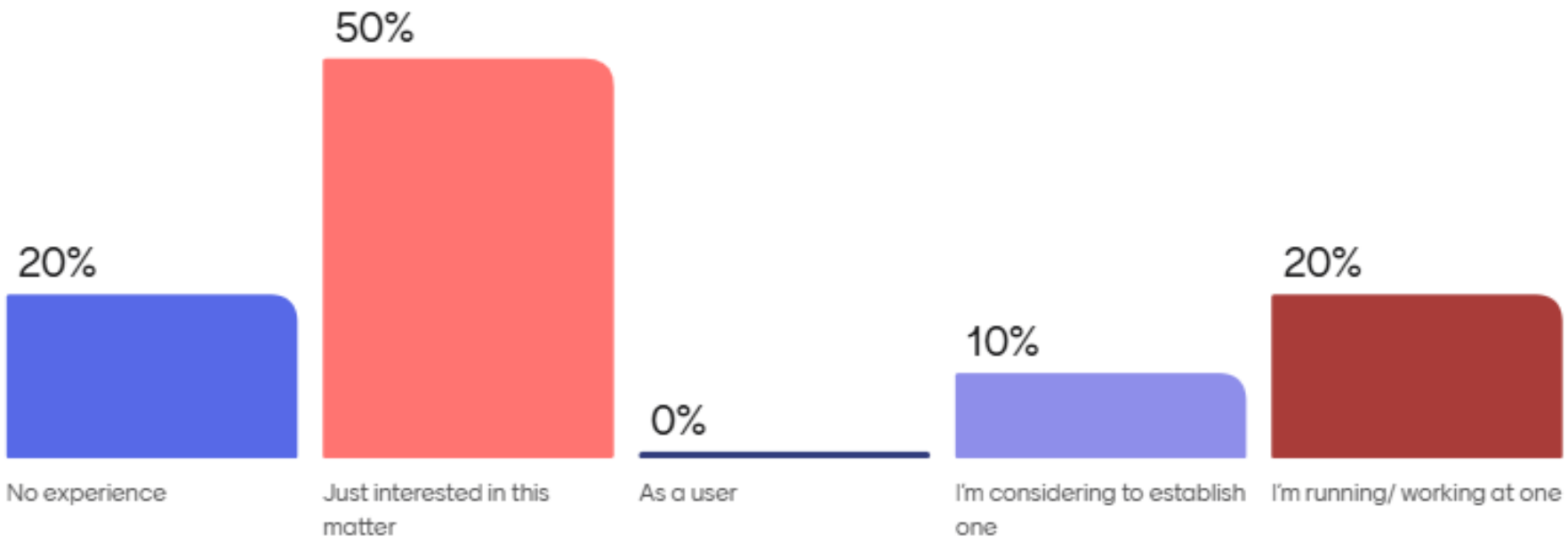
No experience

What has been your experience with URCs so far?



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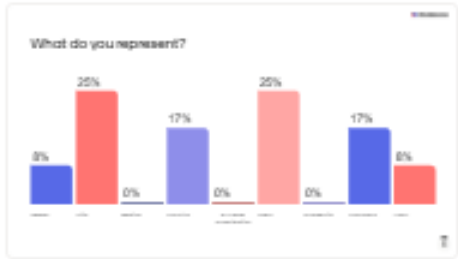

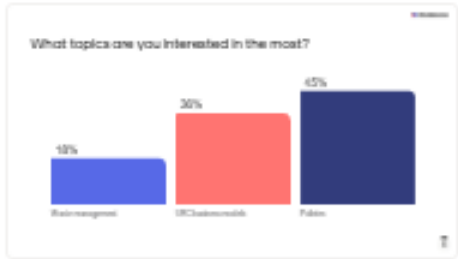

Ieva Kalniņa

City of Riga

RIGA

María Isabel Ordóñez Pizarro

Elisava Barcelona School of Design and Engineering

Marion Kade

City of Tartu

Sara Rueda Raya

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Amsterdam University of Applied Sciences

Christina Paraskevopoulou

City of Kavala

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Positive ✅ & Challenging ⚠️ Aspects

BARCELONA	
✅	⚠️
Provision of subsidies	Strict Regulations Limiting Material Use
Established Recycling Infrastructure	Absence of Market Standards for Reused Materials
Existing Initiatives for CDW management	Costs of recovering waste is high

KAVALA	
✅	⚠️
Active Involvement of Civil Engineers	Lack of Data
Initiatives Enhancing Citizen Engagement/Awareness	Low amount of CDWs at local level
Move towards organizing transport of CDW	Challenging Geographical features for managing CDW

RIGA	
✅	⚠️
Presence of Separation and Recycling Technology Companies	Insuficiente Waste Generation for CE Practices
Green procurement	High Costs Associated with Upcycling and Logistics
Mandatory Waste Sorting with Financial Penalties	Language barriers

TARTU	
✅	⚠️
High Level of Digitalization	Perceived Risks of Using Second-hand Materials
Strong Startup Community	Non-compliance with the rules
Green Loans	Unregulated CDW imports

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COMMON ENABLERS	COMMON BARRIERS
• Local Government Support and Subsidies	• Insufficient and Unclear Legislation
• Presence of Technology and Infrastructure	• High Costs and Economic Constraints
• Digitalization and Online Platforms	• Lack of Market for Reused Materials
• Awareness and Education Campaigns	• Illegal Dumping and Improper Waste Disposal
• Green points	• Virgin materials are cheaper
	• Risk Perception
	• Low awareness and Lack of knowledge

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Proposed Solutions I

Establishment and Operation of Urban Resource Centers

- Locations for collecting, sorting, repairing, reusing, refurbishing second-hand construction materials
- Act as marketplaces, repair cafés, social innovation hubs, educational facilities
- Promoting CE principles at the community level

Capacity Building and Educational Initiatives

- Provide continuous education, training, and awareness-raising campaigns for stakeholders
- On circular practices such as waste identification, sorting, repairing, reusing, upcycling
- Improving knowledge and skills related

Implementation of Digital Inventory Systems

- Introduce digital platforms, online marketplaces
- To track and manage reusable CDW material flows
- Facilitating easier access, exchange, monitoring among companies, municipalities, and citizens

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Proposed Solutions II

Inclusion of Circular Criteria in Public Procurement

- Municipal and public construction projects include circular design principles - use of recycled, recyclable, or sustainably sourced materials,
- Creating a steady market demand for circular construction products.

Financial and Economic Incentives for Circular Practices

- Provide financial incentives such as subsidies, grants, loans, tax reductions for businesses, and initiatives that adopt CE practices
- Make use of reused and/or recycled materials, engage in innovative material upcycling
- Supporting economically sustainable CDW management solutions

Certification and Quality Standards for Recycled Materials

- Implement common certification and quality standards for recycled and second-hand, upcycled, recycled construction materials
- Enhancing consumer trust, ensuring consistent quality, and increasing market acceptance among different stakeholders

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Urban Resources Centers in Circular CDW Management

- **DEFINITON**

  - URCs are physical spaces designed to support sustainable consumption and waste management practices in urban areas, primarily focusing on waste prevention, reuse, repair, and recycling.

  - Function as multifunctional hubs where different stakeholders (municipalities, businesses, social enterprises, and citizens) collaborate to manage key urban waste streams (including CDW) effectively implementing CE principles at the local scale.

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The Role of URCs in Circular CDW Management

1. Facilitating Waste Prevention and Reuse:
    - Serve as central hubs promoting waste prevention by extending product lifespans, mainly through repair, reuse, and refurbishment activities.
    - Support local markets for second-hand materials, reducing the amount of waste going to landfills.

2. Education and Awareness:
    - Contribute to public education, awareness, and community involvement in circular practices.
    - Offer workshops, trainings, practical demonstrations, helping stakeholders, understand and adopt sustainable practices.

3. Local Economic Development:
    - Stimulate local economic growth by supporting small businesses, social enterprises, and start-ups focused on innovative reusing methods.
    - Often host entrepreneurial activities, innovation labs, or co-working spaces aimed at developing sustainable business models.

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The Role of URCs in Circular CDW Management

4. Collaboration and Partnerships:

- Promote collaboration among public authorities, private businesses, NGOs, educational institutions, and citizens to enhance CE practices.
- Function as community and networking spaces, fostering co-creation and exchange of best practices.

5. Employment and Social Inclusion:

- Often integrate social objectives, such as vocational training and employment opportunities, for marginalized groups through their activities.

6. Testing and Demonstration of Circular Innovations:

- Provide space for piloting and demonstrating circular innovative solutions, such as modular design, advanced material sorting technologies.

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Can you think of other enablers for circular CDW management?

3 responses

students of the sector

expired construction wast

online forums

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CDW and URCs

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Questions & discussion

Were you aware of the situation?

What did surprise you?
What did you learn?

10’ coffee break

Not to reinvent the wheel – learnings from other URCs in the EU

Learning from others

- Mapped 26 URCs
- Study Visits to 9 URCs

Additionally

- 3 in Barcelona partner visit
- Other 5 URCs in webinars
- 3 in Tartu partner visit

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Can you name any good URC examples in your city?

5 responses

Fixoteket

Haus der Materialisierung

In Munich, only starting with Horizon project CircoFin.

Probably not URC, but I am leading Material bank of used building materials in Tartu/Estonia.

Budapest recycling center

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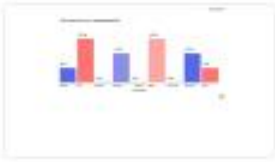
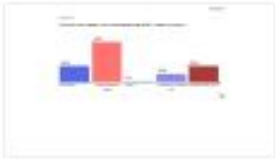




9 Locations Visited during CURE+ Study Visits

Holland

Hof van Cartesius, **Utrecht**
Circularly built workplace for creatives and sustainable entrepreneurs, that operates as a cooperative.
www.hofvancartesius.nl

De Terugwinning, **Woerden**
“The Recovery” is a Circular Crafts Centre, that works as a social enterprise that reuses waste and trains people with distance to the labour market.
www.deterugwinning.nl

Refunk / Maakhaven, **the Hague**
Consultants focused on creative reuse for interior and itinerant architecture
refunc.nl

Denmark

Vermlandsgade Gengbrugstation, **Copenhaguen**
Recycling Centre with space for direct reuse operated by the municipal company ARC
vermlandsgade-genbrugsstation

Grönne Gengbrugshal, Christiania, **Copenhaguen**
Independent URC run by a cooperative since 1971
www.gronnehal.dk

Sydhaven Gengbrugstation, **Copenhaguen**
Recycling Centre with space for direct reuse operated by the municipal company ARC
sydhavn-genbrugscenter

Sweden

Återbruket, **Gothenburg**
URC focused on construction material, operating at the municipal recycling centre in Alalyckan
@aterbruketalelyckan on Insta

Fixoteket, **Gothenburg**
Neighbourhood reuse centre operated by a housing company
@fixotekethammarkullen on Insta

Återbyggdepå, **Malmö**
URC focused on construction material, run in collaboration with the municipal company Sysav
www.malmoabd.se

Five URC Typologies Identified

- Recycling Centres “plus”
- CDW Resellers
- Residential reuse and repair spaces
- Remanufacturer
- Demonstrator

Five URC Typologies Identified

Recycling Centres “plus”

- Space for reusable materials at existing Recycling Centers
- Reusable items can be taken for free (DK) or sold (SE)

Vermlandsgade (CPH)
Sydhaven (CPH)
Återbruket (GBG)

Five URC Typologies Identified

CDW Resellers

- Focused in selling CDW
- Might include new materials/tools
- Some testing and preparing for reuse

Grönne Gengbrugshal (CPH)
Återbruket (GBG)
Återbyggdepå (MLM)

Five URC Typologies Identified

Residential reuse and repair spaces

- Social space for neighbours
- Reuse and repair or household items

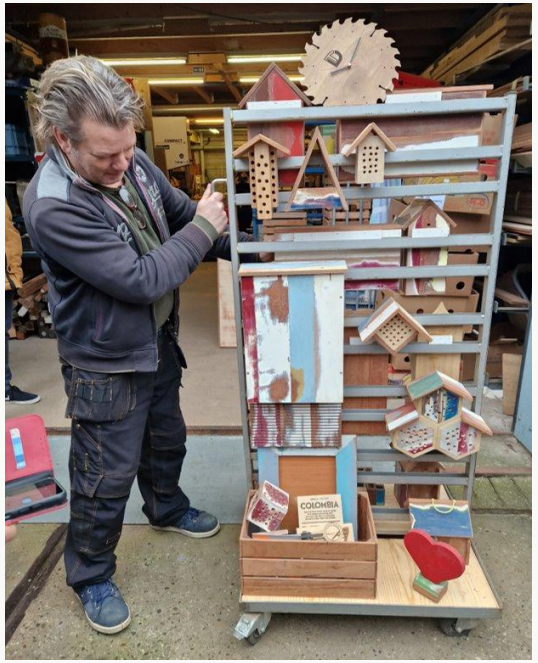
Fixoteket (GBG)

Five URC Typologies Identified

Remanufacturer

- Focused on repurposing, repairing and/or remanufacturing (+ reuse)
- Production capabilities

De Terugwinning (WDN)



Five URC Typologies Identified

Demonstrator

- Building made or refurbished making use of CDW
- Demonstrates what can be done

Hof van Cartesius (Utrecht)
Refunc/maakhaven (The Hague)

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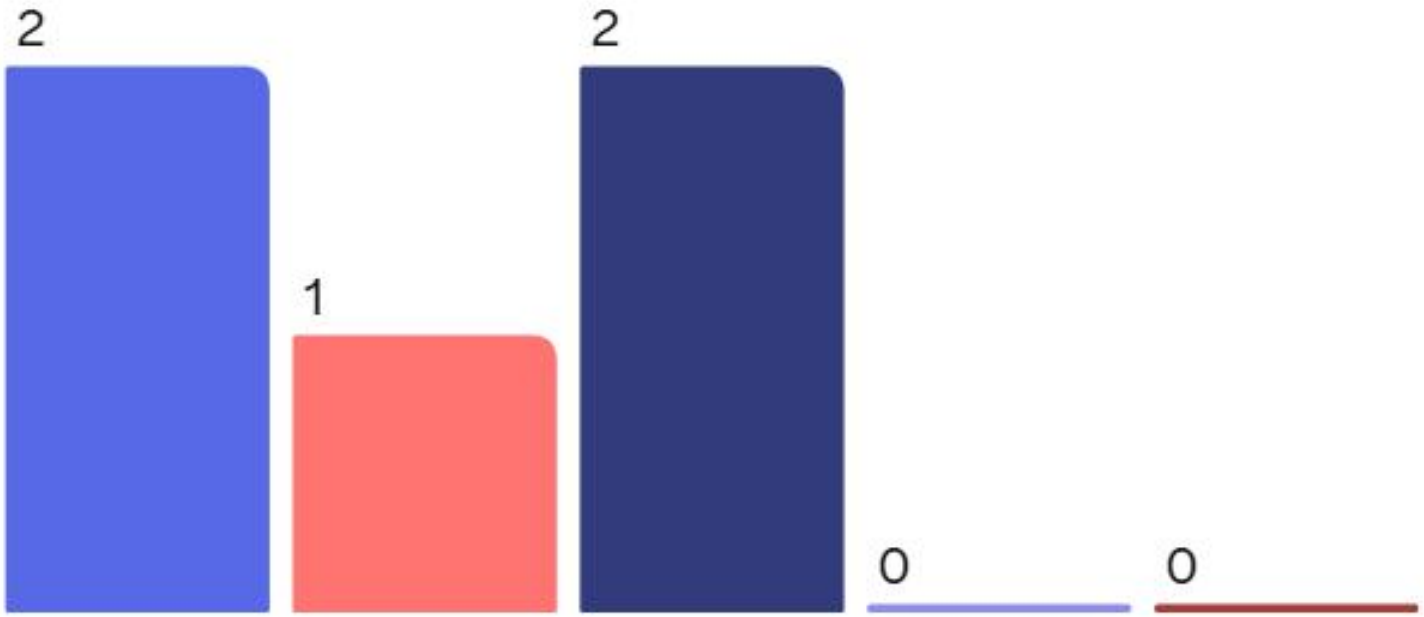
Which type of URC have you seen before?



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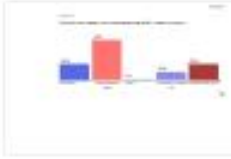


Supply

- Demolition teams (Gronne Genbrugshal) help to generate high-quality supply of materials
- Selecting adequate supply from citizens requires smart selection mechanism at recycling parks (Vermlandsgade)
- Supply from companies is driven by sustainability demands, requires professionalisation (weighing, counting)
- Municipal stations: organise logistics from smaller wate stations to larger ones (Återbruket)

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Urban Resource Centre

-Purpose
-Governance
-Funding
-Pricing
-Location
-Staffing
-Logistics

Social

- Poverty reduction (De Terugwinning)
- Jobs for lower skilled, training

Environmental

- Lower environmental impact through re-use of materials (all)
- Raising awareness (Sydhaven Gengbrugstation)

Economic

- Reduce municipal waste and hence save cost
- Cheaper materials (ranges from 30-50% of new materials)
- Selling only reused products is not profitable
  - Add complementary things to sell
  - Use subsidised workforce

- They do not keep inventory

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Demand

- Local (Copenhagen) vs regional (Återbruket URC)
- Professionals/companies (De Terugwinning) vs citizens
- Issues of quality, certification of construction materials
- Marketing: Municipal, B2B
- Demand for reused materials has gone up in the last 10-15 years
- Quality and good materials are appreciated

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Conclusions - Main take aways

- URCs are key for the circular economy but still small scale
- Mainly focus on re-use & repair; upcycling still in infancy
- URCs take up (expensive) urban space, city government must intervene to enable their operations
- URCs rely on cheap, subsidized labour
- Supply & demand at URCs is boosted by circular public procurement and CSRD/sustainability demands on companies

Questions & discussion

What lessons from the site visits did you consider when creating your URC?

Questions & discussion

How did you decide on the format and functions of your URC?

Questions & discussion

What are your city's main challenges in creating a URC?

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What are the main obstacles in creating URCs?

6 responses

- Making it a feasible One
- Urban space and regulations
- Spread the word
- Space and contacts/partners of demolition companies.
- Management capacity
- Storage

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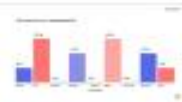

Pilot in Riga

Sadarbnīca

Space for education, networking, promotion, discussions and development

Workshop for creation, repair, repurpose, learning and wellbeing

Aims to facilitate and foster the transition to the circular economy

Pilot in Tartu

Selli Waste Management Centre

A free-access waste management centre with URC functions for promotion of CE

Previously, only a reuse room was available for household items like furniture, books, and appliances, but it lacked space for larger construction materials. The pilot expanded CDW circulation by adding a **dedicated material storage hall**, enhancing sorting, storage, and reuse.

A designated space for the exchange of construction materials and large items

Pilot in Kavala

Kavala Urban Resource Centre

A dynamic community space promoting sustainability through upcycling and repair.

- A fully equipped makerspace where citizens can restore, refurbish, and craft furniture under expert guidance.
- A hub for master classes, seminars, and networking events, fostering collaboration and learning about circular economy practices.
- An initiative reducing bulky waste in Kavala by encouraging reuse and resource circulation.
- Integrated with an online platform that facilitates the exchange of items, strengthening the local circular economy

A community space fostering circular economy practices through upcycling and repair.

Pilot in Barcelona

Elisava Material Depot

- Storage of used materials at Elisava, School of Design and Engineering UVic-UCC
- Free for students to take materials, but they should take a picture of it
- Online catalogue updated weekly by a student intern

Reuseable materials available for the Elisava community to use in prototyping

Questions & discussion

What is happening in your URC these days?

Questions & discussion

What KPIs have you set and what are the results so far?

Results from the piloting

Riga	Tartu	Kavala	Barcelona
50+ workshop visitors Since January 2025	**~ 300 kg reused CDW** Since February 2025	**100+ visitors** since December 2024	Very popular with students
30+ repaired / created items Since January 2025	**~ 6 m³ furniture reused** Since February 2025	**15+ Repaired items** since December 2024	More than **300 items** reported as taken
24 events Since December 2024		**3 partners attracted** to collaborate with URC	**3 workshops** done with the material
286 participants Since December 2024		**5 Educational events** organized	

Questions & discussion

How will you ensure the sustainability of your URC?

What developments have you planned for your URC?

Policy recommendations

Analysis Approach Brief Overview

The analysis was conducted using the ELECTRE method, a multi-criteria decision-making tool. This method ranked alternative policy scenarios for each country and city based on criteria such as economic feasibility, environmental impact, technological feasibility, and social acceptance.

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Analysis Process

- **Gap Identification:** A literature review and stakeholder input were used to identify gaps in circular economy policies for each country and city.
- **Scenario Development:** Four alternative policy scenarios were created:
  - P1 (Business as Usual): Minimal changes to existing policies.
  - P2 (Incremental Improvements): Gradual policy enhancements.
  - P3 (Aggressive Circular Economy Push): Comprehensive reforms and strong regulatory interventions.
  - P4 (Sector-Specific Reforms): Targeted interventions for key waste-producing sectors.
- **Evaluation Criteria:** The scenarios were assessed based on:
  - Economic Factors: Investment costs, profitability, financial incentives.
  - Social Acceptance: Public awareness, stakeholder engagement, job creation.
  - Environmental Impact: Circular material use, waste reduction, pollution control.
  - Technical Feasibility: Infrastructure readiness, innovation potential.
- **Application of ELECTRE Method:** This method ranked the policy scenarios by weighing the criteria and identifying the most effective solutions at both national and city levels.

Comparison of Policy Approaches by Country

Country	Best Scenario	Key Policy Actions
Estonia	P2 – Incremental Improvements	- Improve selective demolition guidelines - Upgrade CDW sorting infrastructure - Strengthen Quality Management Systems (QMS)
Spain	P4 – Sector-Specific Reforms	- Implement Pay-As-You-Throw (PAYT) schemes - Strengthen public awareness and EPR schemes
Latvia	P3 – Aggressive Circular Economy Push	- Develop CDW regulations - Enforce EPR for construction materials - Increase landfill taxes and compost QMS
Greece	P3 – Aggressive Circular Economy Push	- Increase landfill taxes - Enhance quality management & support R&D

Policy Approaches by Municipality

City	Best Scenario	Key Policy Actions
Tartu	**P3 – Aggressive Circular Economy Push**	- Increase landfill and incineration taxes - Strengthen EPR obligations for construction materials - Provide subsidies for circular economy innovations - Introduce mandatory training programs -Invest in Urban Resource Centers (URCs)
Barcelona	**P4 – Sector-Specific Targeted Policies**	- Implement scaled landfill and incineration taxes - Invest in Urban Resource Centers (URCs) - Strengthen eco-design and material standards
Riga	**P3 – Aggressive Circular Economy Push**	- Increase landfill and incineration taxes - Enhance circular material use rates -Invest in Urban Resource Centers (URCs) - Develop tracking and certification systems
Kavala	**P4 – Sector-Specific Targeted Policies**	- Strengthen separate collection systems - Promote selective demolition and material certification - Implement mass balance monitoring -Invest in Urban Resource Centers (URCs)

Tartu

Best Scenario: P3 – Aggressive Circular Economy Push

Key Results

- **Strongest overall performance in circular economy transition:** P3 drives higher material recovery, waste reduction, and innovation compared to other scenarios.
- **Higher recycling and reuse rates:** Increased landfill taxes and incineration fees drive circular economy practices.
- **Stronger incentives for circular construction materials**: EPR policies promote higher recovery and reuse of materials.
- **Support for innovation and capacity building:** Financial incentives and mandatory training programs enhance waste management efficiency.

(Elements from P4 scenario, such as selective demolition guidelines and urban resource centers, can further enhance the policy impact).

Key Policy Recommendations

- **Increase landfill taxes and incineration fees** – Introduce higher fees for waste disposal to discourage landfilling and promote circular alternatives, while offering reduced fees for pre-sorted recyclable materials.
- **Strengthen EPR)for construction materials** – Require producers to manage end-of-life processing of key materials, ensuring compliance with strict recycling and recovery targets.
- **Provide subsidies for circular economy innovations** – Offer financial support to startups, SMEs, and research institutes for the development of advanced sorting technologies, material recovery facilities, and upcycling hubs.
- **Implement mandatory training programs and capacity-building programs** – Equip demolition contractors, architects, and construction managers with skills on selective demolition, material sorting, and recycling best practices.

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Barcelona

Best Scenario: P4 – Sector-Specific Targeted Policies

Key Results

- **Reduced landfill dependency**: Scaled landfill and incineration taxes discourage disposal of non-recyclable materials.
- **Enhanced innovation and infrastructure**: Investment in Urban Resource Centers (URCs) supports material recovery, upcycling, and sustainable construction research.
- **Stronger eco-design standards**: Mandatory criteria for construction materials and industrial packaging improve recyclability and lower environmental impact.

Key Policy Recommendations

- **Implement scaled landfill and incineration taxes:** Introduce a tiered system with higher fees for mixed and non-recyclable waste, using revenues to fund circular economy projects.
- **Invest in Urban Resource Centers (URCs) and innovation hubs:** Establish dedicated facilities for material recovery and circular economy research, fostering public-private collaborations.
- **Strengthen eco-design and material standards:** Introduce mandatory eco-design principles to ensure construction materials are more recyclable, with incentives for manufacturers using recycled content.

Riga

Best Scenario: P3 – Aggressive Circular Economy Push

Key Results

- **Reduced waste disposal through landfill tax increases**: Higher fees discourage landfilling and promote recycling initiatives.
- **Enhanced material tracking and certification**: Digital monitoring systems improve transparency and compliance in CDW management.
- **Market adoption of circular construction materials**: Mandatory targets increase demand for recycled content in new construction projects.

Key Policy Recommendations

- **Increase landfill and incineration taxes:** Implement a tiered tax system to discourage waste disposal and promote recycling.
- **Enhance circular material use rates:** Set mandatory targets for recycled content in new construction projects, reinforced by procurement policies.
- **Develop advanced tracking and certification systems:** Introduce digital monitoring frameworks and certification schemes for secondary raw materials.

Kavala

Best Scenario: P4 – Sector-Specific Targeted Policies

Key Results

- **Sector-focused interventions for higher impact**: Addressing specific waste streams, such as CDW and packaging, leads to more effective recycling and reuse.
- **Greater public and industry engagement**: Awareness campaigns and financial incentives encourage compliance and participation in circular economy initiatives.
- **Stronger regulatory framework for circular material use**: Standards, monitoring, and certification ensure higher-quality reclaimed materials in construction projects.

Key Policy Recommendations

- **Introduce a CDW** – Incentivize the return of clean, sorted demolition materials (e.g., metals, aggregates) to designated collection points, improving reuse and recycling rates.
- **Enhance separate collection systems for key waste streams** – Run communication initiatives and training sessions for local contractors and citizens.
- **Mandate selective demolition and introduce material quality standards** – Require demolition projects to follow selective sorting practices while implementing certification systems to guarantee high-quality reclaimed materials for reuse.
- **Support public education and training programs** – Launch awareness campaigns and training sessions for contractors, businesses, and citizens to improve compliance and long-term adoption of circular practices.

Key policy recommendations structured into four thematic areas that are crucial for advancing circular economy practices in CDW

Regulatory & Governance Measures

✓ Adopt Extended Producer Responsibility (EPR) for Construction Materials:
- Require producers to ensure recyclability, traceability, and take-back schemes for key construction materials.
- Incentivize reusable and recyclable material design in building projects.

✓ Strengthen CDW Legislation & Enforcement:
- Develop national legal frameworks ensuring standardized sorting, collection, transport, and recovery of CDW.
- Introduce selective demolition mandates to facilitate high-value material recovery.

Economic & Financial Instruments

✓ Increase Landfill Taxes & Incineration Fees:
- Raise taxes on non-recyclable CDW to discourage landfilling and redirect funds into circular economy infrastructure.
- Establish differential fees for sorted vs. unsorted waste to promote source separation.

✓ Expand return systems for Construction Materials:
- Implement refundable deposit schemes for materials such as wood, metals, glass, and aggregates.
- Establish sector-specific exchange points (e.g., window factories for glass, brick reclamation hubs).

Infrastructure & Digitalization

✓ Develop a National Digital Building Material Passport:
- Track material composition, reuse potential, and disposal history for construction materials.
- Ensure transparency in material flows to facilitate high-quality recycling and secondary market development.

✓ Invest in Smart Waste Collection & Sorting Technologies:
- Implement QR-coded material tracking for automated deposit-refund processing.
- Upgrade recycling plants with AI-driven sorting technologies to improve efficiency.

Capacity Building & Public Engagement

✓ Provide Technical Training for the Construction Sector:
- Develop certification programs for architects, engineers, and demolition contractors on material recovery best practices.
- Strengthen compliance with circular economy principles in procurement and project planning.

✓ Launch Public Awareness & Incentive Programs:
- Promote urban resource centers (URCs) for material reuse and citizen engagement.
- Offer discounted waste fees for companies & individuals actively participating in DRS programs.

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Questions & discussion

How do you see the future development of C&DW management in your city?

Join at menti.com | use code 6556 0826

Mentimeter

Please share your takeaways

7 responses

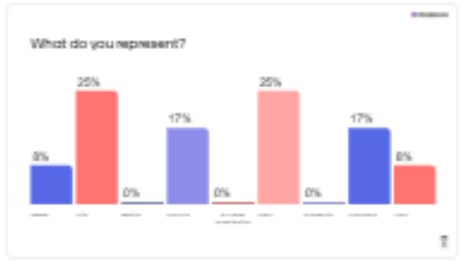
- Best practicew
- Financial options
- Others have legal problems of reusing materials as well, not only us in Estonia.
- Networking
- Comparison of different policy approaches and possible use cases.
- Very interesting URC cases
- Feel that we share the same agonies and interests

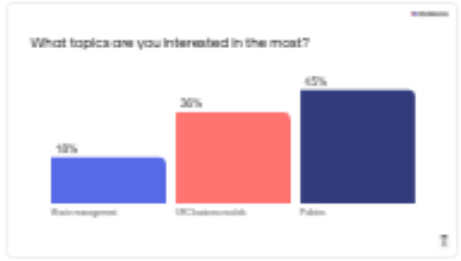
AR

Menti

CDW and URCs

Choose a slide to present





Thank you!

www.rea.riga.lv

www.tartu.ee

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https://www.euki.de/en/euki-projects/cure-centres-for-urban-reuse/

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