

LET'S GO CIRCULAR!

Paving the way for a circular transition of cities

Thematic Article 5

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DRIVING CIRCULAR ECONOMY AWARENESS AND EDUCATION ACROSS EUROPEAN CITIES



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Driving Circular Economy Awareness and Education Across European Cities

The transition to a circular economy (CE) represents a paradigm shift from traditional linear economic models towards a regenerative system. Cities, as epicenters of consumption and innovation, play a crucial role in fostering awareness and education around circular principles. This article synthesizes insights from the Let's Go Circular! Paving the way for circular cities Action Planning Network financed by the URBACT IV programme and from various case studies in Europe, highlighting measures to engage different target groups and foster educational initiatives.

1. Understanding Circular Economy Education and Awareness

Education and awareness are pivotal for integrating circular principles into urban life. Effective awareness-raising programs demystify CE concepts, illustrate their benefits, and inspire behavioral change across demographics. Key principles include:

- **Practical Engagement:** Facilitating direct interaction with CE practices, such as repair workshops and upcycling projects, increases understanding and adoption.
- **Community Integration:** Localized initiatives resonate better with residents when tied to cultural and economic contexts.
- **Digital Tools:** Platforms supporting information sharing, resource management, and educational content amplify the reach and efficiency of CE initiatives.

2. Target Groups for CE Education and Awareness

Successful awareness-raising efforts target diverse audiences, tailoring strategies to their specific roles and needs:

- **Schools and Educational Institutions:** Incorporating CE into curricula fosters early adoption of sustainable practices.
- **Businesses:** Training programs and collaborations encourage the development of circular business models and sustainable practices.
- **General Public:** Community events, campaigns, and hands-on activities spread awareness among broader audiences.

3. Case Study Insights

Oulu, Finland

Oulu stands out as a leader in integrating CE into its urban strategy, emphasizing technological innovation and education.

Digital Tools for Engagement: Oulu's *Hauru Smart* waste management system employs IoT sensors to optimize waste collection, directly involving citizens through an app. The Jaete sensor is a cornerstone of Hauru Smart's success. This system not only reduces environmental impact but also **educates users** about waste minimization and **efficient resource use**.



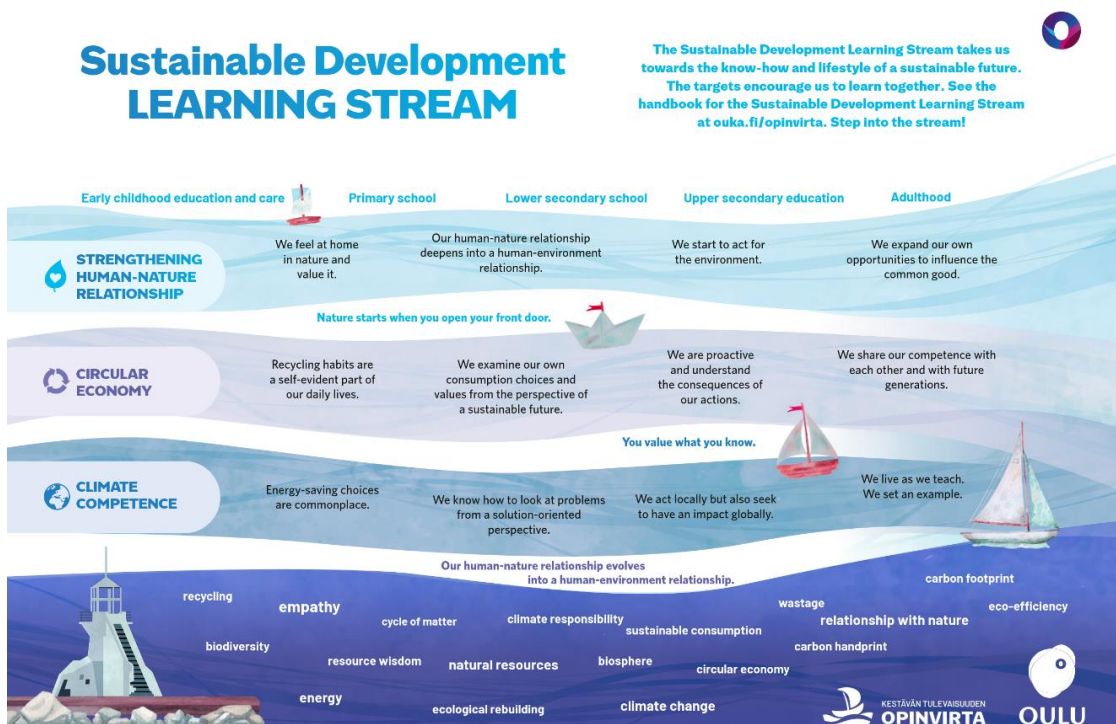
Picture 1 source wastebook.fi

For more information and contacts: <https://www.wastebook.fi/en/jaete-sensor/>

For further read: [The leading paradigm of Oulu's alliance serving digitalization and circular economy](#)

Learning Streams for Sustainable Futures: Oulu has developed thematic educational pathways focusing on climate competence, human-nature relationships, and CE principles. These pathways offer age-specific activities, like creating recycling rules for younger students and embedding CE concepts into professional skills training

The "Learning Stream for Sustainable Future" takes us to the know-how and lifestyle of sustainable future. The learning stream has three main themes. Each theme has school level specific goals, activity examples and supporting topics and organizations.



Picture 2 source: Jussi Tomberg, City of Oulu

Through these themes, the stream advances towards eco/social lifestyle.

More examples from Oulu

Primary school – animation series for teaching

This is an easy and fun way to teach primary school kids about the importance of preventing food waste, sharing and recycling.



Picture 3 source and movie available here: <https://www.youtube.com/watch?v=RwwDtafOcl0&list=PLkcgUIxt-HklwJl8sgojoHvgFSOuqupY>

More early childhood education

For early childhood education, in the case of Sampola daycare centre, the following take place in collaboration with the University:

- Modeling of recycling
- Determining the carbon footprint

Sempola is registered in Eco Schools programme where children explore the world around them through STEAM pedagogy. STEAM education is an approach to teaching STEM subjects that incorporates artistic skills like creative thinking and design. The name derives from the acronym STEM, with an A added to stand for arts. STEAM programs aim to teach students innovation, to think critically, and to use engineering or technology in imaginative designs or creative approaches to real-world problems while building on students' mathematics and science base.

Three little pigs

The task focuses on a) the design and implementation of a machine, device or robot that will help the three little pigs survive the attacks of the big bad wolf and save themselves from the wolf's claws on forest trips b) the design and build a machine, device or robot that helps the bad wolf with emotion regulation and friendship skills so that she can make friends with the piglets and they can live happily together in their shared forest.

Secret of the forest

Children focus to invent a machine, device or robot that will help preserve all the secrets of the forest for future generations as well. What kind of properties does the invention need in order to preserve nature and its diversity? They can also find out the secret of the forest. What would that be like? How would it increase the well-being of the forest?

In what way would it help children to move more in nature, learn about nature and act for nature. The invention can be e.g. toy, robot or play. The workshop is based on Mila Teräksen and Karoliina Pertamo to the picture book "Olga the squirrel and the secret of the forest".

More STEAM pedagogy

Steam challenges, for upper secondary schools, with interdisciplinary learning modules, have taken place, addressing the topics of recycling at schools, lifecycle of materials and sharing.

Innovation camp for upper secondary education – Innovation camp for high schools

Approximately 60 students from three different high schools in the Oulu region take part in the task to innovate solutions for a self-defined sustainability challenge and to meet new people. The event organized by the Työn Taitajat program in collaboration with the Circular Economy Cluster. Hauru (the circular economy and waste company) is also a partner. Groups tackle issues, such as the reuse of raw materials, recycling products from one owner to another, and increasing the utilization of spaces. During the day, several app innovations promoting sustainable everyday choices and well-being were created, as well as an online store selling used toys.

The toolCamp project

ToolCamp -project consist of working on a solution to the selected challenge and of a ToolCamp day. Each project should be implemented through the STEAM process. The entire process must be documented and presented together with the solution to the challenge to an audience and the jury at the ToolCamp day -event. ToolCamp takes place once a year and the challenges will be published at the end of each academic year for the coming academic year.

ToolCamp is open to children and young people in pre-primary school, comprehensive school (grades 1-9) as well as to upper secondary education students. Challenges are solved in groups of 3-5 people. The program is suitable for all types of children and young people, combining different subjects and teaching methods.



Picture 4 Source and more information here: <https://www.ouka.fi/en/media/8197/download>

For further read check out the STEAM manual for more tips: [STEAM Oulussa – STEAM IN OULU](#)

More examples around the daycare and education in Oulu here: <https://www.ouka.fi/en/experience-arena-0>

More info: Jussi Tomberg, City of Oulu, jussi.tomberg@ouka.fi

Promotion of reading skills

Reading café has also been initiated in a mall to promote reading skills.

Guimarães, Portugal

Guimarães exemplifies how small-medium cities can pioneer CE education through community-focused initiatives.

Examples from Guimaraes

Pegadas Environmental Education Program

This initiative engages citizens across all ages in activities such as biodiversity monitoring and waste reduction. Programs like "Green Brigades" encourage citizens to volunteer and execute their own environmental projects.



Picture 5 source: Landscape Laboratory

Specific initiatives that are supported through Pegadas:

- 65+ aiming to contribute to active a healthy aging through approach to nature
- Eco Parlamento that promotes debate and presents solutions to everyday problems regarding sustainable development,
- E-missao 0 aiming to raising awareness for the urgency of actions to adapt to climate change
- Mobilidade Sem Pegada that raises the importance of adopting a more environmentally friendly alternative in daily travel and adoption of green mobility,
- Bairro C that aims to convene the school community to debate ideas and co-create actions
- Plástico: O Invasor that informs about the impact of plastic pollution on aquatic ecosystems, biodiversity and human health
- Patrulheiros da Biodiversidade that promotes knowledge and raises awareness among the community about the importance of biodiversity,
- AQUALASTIC that is a set of activities to draw the community's attention to the global dimension of the problem of plastics in waterways
- [360.com project](#): Through the use of innovative education and communication strategies, the aim is to demonstrate that healthy eating, food waste, proximity consumption, the transition to a circular economy and the promotion of good soil use are issues that should be seen in a holistic and interconnected way, enhancing behavioural change

For more information about Pegadas actions: Francisco Carvalho, Landscape Laboratory, francisco.carvalho@labpaisagem.pt

Urgeztes circular

The goal of the community was to refurbish an old building, make a repair café, organize workshops. As a result of the programmes' and project's activities, a micro vegetable cultivation kit developed out of textile waste and masks



Picture 6 source: Let's Go Circular! network, depicting a planting pot, made out of reused textile



Picture 7 circular economy workshop in Guimaraes, Urgeztes Circular

Textile Circularity Projects

Guimarães promotes textile recycling and reuse through initiatives like [re.store](#)[®], a Portuguese textile brand, which combines social innovation with environmental innovation and pedagogy actions to change current consumption habits. It is a recent brand, but in 4 years they have already managed to pay €62.000,00 to social partners



Picture 8 source: [restore.com.pt](#)

and upcycle 7.5 tonnes of fabric and textile accessories into new products while fostering social inclusion. The impact of re.store – [video here](#).

For more information about re.store: Silvia Correia, Founder and CEO – re.store, hello@restore.com.pt

Digital tools such as the [ToBeGreen app](#) further integrate community engagement by encouraging clothing swaps and offering reuse opportunities.

For more information about ToBeGreen app: Antonio Dinis Marques, CEO ToBeGreen.

Community gardens

The Landscape Laboratory is developing a project with schools and the general community that intends to reduce waste and increase circularity in public and private canteens, map local producers and identification of good agricultural practices, enable behavioural change, promote more sustainable production and consumption, reducing

food waste and promoting healthier and more sustainable food. More than 6000 community gardens exist, where fertilisers out of biowaste are used.



Picture 9 source Landscape Laboratory

Reusing caps in public events (CARE project)

The [CARE project](#) managed by [Virus Ambiente](#) arrived at the Historic Center to help the city to get rid of plastic cups.



Plastic Prevention Campaigns - Aqualastic and Care Projects



Picture 10 source: <https://virusambiente.pt/care>

For more information about projects including CARE: Victor Oliveira, Vitrus Ambiente

Pay-As-You-Throw (PAYT) System

This waste collection strategy incentivizes waste reduction by linking disposal costs to the amount of waste generated. It has increased recycling rates and decreased waste generation since its implementation in the city center.

For further read about circularity in Guimaraes: [From waste to wonder: The successful case of Guimaraes in shaping a circular city](#)

Riga, Latvia

Riga employs a multifaceted approach, integrating education, digital tools, and community spaces to raise circular economy awareness.

Examples from Riga

The Viskaļi Creative Hub exemplifies this, serving as a space for entrepreneurs and creatives to explore sustainable solutions. Previously, the Faculty of Mechanical Engineering, Transport and Aeronautics of Riga Technical University was located here.



Picture 11 source: Let's Go Circular! network visiting Viskali

The goal in Viskaļi is to create a social innovation incubator, putting the improvement of the quality of life for everyone at the center. People are carrying out their activities based on their values and the principles of the social and circular economy.

For more information about Viskali: [Free Riga NGO](#)

Circular Economy Resource Center

Riga is developing spaces for community gatherings and practical workshops, aiming to repair and refurbish household items. These centers will serve as educational hubs for CE practices.



Picture 12 source: *Let's Go Circular!* visiting the Circular Economy Resource Centre in Riga operating at [CleanR](#)

Riga's material exchange points, now supported by private players, bridge citizens and businesses to promote resource reuse.

For more information about the Circular Economy Resource Centre and other relevant initiatives: Ieva Kalnina, Riga Energy Agency, kalnina.ieva@riga.lv

Digital Platforms

Platforms like [Lietovelreiz.lv](#) connect citizens with rental, repair, and reuse services, promoting sustainable consumption habits. This tool also collects valuable data on reuse activities, contributing to broader CE metrics

It is a unique, one stop platform, that serves the following purposes:

- Provision of information on the possibilities of repairing goods, renting, exchanging things and other circular services throughout Latvia and things for reuse that are already available addressing people's needs
- Bridging citizens (customers) and organizations that offer goods, services and activities that replace the purchase of new things
- Promotion of the transition to a circular economy
- Facilitation of citizens to form more sustainable habits
- Collection of data for [reporting on reuse](#) in accordance with Directive 2008/98/EC of the European Parliament and of the Council

Cultural Integration

Public events like the **Song and Dance Festival** have become platforms for raising awareness about sustainable practices, with emissions from catering and waste meticulously analyzed to inform future planning.

For further read about circularity in Riga: [Mainstreaming circular economy criteria in unused buildings: The Successful case of Riga](#)

4. Effective Methods for Raising Awareness

- Gamification: Tools like the *Circularity Deck Board Game* make learning about CE principles interactive and engaging, suitable for schools and community groups
 - **Circularity Deck** developed by Jan Konietzko. It has online and off-line versions: <https://www.circularitydeck.com/>
 - **Waste What?** Online printable version and rules can be found here:



Picture 13 source: Lets' Go Circular! network playing circularity deck

<https://tscriado.org/2023/04/24/wastewhat/>

- Workshops and Repair Cafés: Hands-on activities encourage skill-building and repair culture, fostering a sense of agency in participants
- Demonstrations and Pilot Projects: Live demonstrations, such as waste sorting and PAYT systems, showcase practical benefits, inspiring participants to adopt similar practices.



Picture 14 source: Lets' Go Circular! network, Workshop in Viskali

5. Overcoming Challenges

Cities often face obstacles in scaling CE education, including funding, stakeholder alignment, and data collection. Key strategies include:

- **Policy Support:** Legislative backing and incentives, such as tax reductions for sustainable businesses, drive long-term engagement.
- **Cross-Sector Collaboration:** Partnering with academia, NGOs, and private enterprises maximizes resources and expertise.
- **Monitoring and Feedback:** Using data platforms to assess the impact of CE programs ensures continuous improvement and relevance.

6. Key lessons and recommendations

The circular economy presents cities with an opportunity to align economic growth with environmental stewardship. Oulu, Guimarães, and Riga offer valuable lessons in leveraging education and community involvement to drive this transition. By targeting diverse groups and employing innovative tools and methods, cities can build resilient, sustainable communities and inspire a global shift towards circularity.

Key lessons and recommendations are listed below:

1. **Targeted Educational Programs:** Programs tailored to schools, professionals, and citizens ensure diverse audience engagement.
2. **Integration of Digital Tools:** Platforms for waste management, resource exchange, and carbon tracking amplify community participation and efficiency.
3. **Community and Private Sector Involvement:** Collaborative spaces and private sector initiatives enrich public awareness campaigns and provide scalable solutions.
4. **Social Inclusion:** Initiatives that involve vulnerable groups not only support community integration but also enhance public buy-in for circular practices.

7. Examples from other cities

Many European cities are proactively raising awareness and educating public authorities, citizens, and businesses about the circular economy through innovative programs, workshops, and campaigns. Here are notable examples, highlighting the “educational” character of activities that are not initially intended to educate or raise awareness:

Amsterdam, Netherlands

- **Approach:** Comprehensive Public Campaigns and Business Tools
- **Initiatives:**
 - Circular Economy Implementation Program, targeting businesses, citizens, and policymakers.
 - Circular Innovation Tracker, an open-access platform showcasing ongoing projects to inspire businesses and citizens.
 - Workshops for local government employees on implementing circular policies.
 - Citizen awareness campaigns, such as We Make the City Circular, including public events, exhibitions, and practical guides on sustainable living.
- **Success Factor:** A strong emphasis on measurable impact and co-creation with local stakeholders.

Glasgow, Scotland

- **Approach:** Knowledge Hubs and Business Networking
- **Initiatives:**

- Circular Glasgow Initiative, a partnership between Glasgow Chamber of Commerce, Zero Waste Scotland, and local businesses.
- Circular economy business workshops and one-on-one consultancy for SMEs to identify circular opportunities.
- Public campaigns like the #MakeThingsLast initiative to educate citizens about waste reduction and product longevity.
- Success Factor: A collaborative framework integrating local businesses and policymakers.

Ljubljana, Slovenia

- Approach: Citizen-Centric Education and Eco-Design Competitions
- Initiatives:
 - Eco Schools Program, teaching circular principles to students and fostering a circular culture from a young age.
 - Design challenges encouraging residents to upcycle materials and rethink waste as a resource.
 - Public workshops on composting, repair, and sustainable consumption.
- Success Factor: Citizen involvement and integration of circular concepts into education and daily life.

Helsinki, Finland

- Approach: Focused Training for Municipal Authorities
- Initiatives:
 - Circular Economy Training for City Officials, ensuring all departments understand how circular strategies align with their goals.
 - “Think Sustainably” service, an online tool helping businesses and residents make eco-conscious choices.
 - Partners with universities and startups to test circular solutions, showcasing them as pilot projects.
- Success Factor: Close collaboration between public authorities and academia.

Barcelona, Spain

- Approach: Urban Circular Economy Labs
- Initiatives:
 - Barcelona Circular Economy Strategy, involving Urban Labs to pilot circular projects in waste management, urban agriculture, and building materials.
 - Workshops for businesses focus on eco-design, sustainable packaging, and circular procurement practices.

- Public engagement campaigns include repair cafes, zero-waste markets, and neighborhood competitions for sustainable living practices.
- Success Factor: Integration of innovation hubs within urban neighborhoods.

Milan, Italy

- Approach: Focus on Food Waste and Public-Private Collaboration
- Initiatives:
 - The Food Policy Milan, educating citizens on reducing food waste through public campaigns and school programs.
 - Partners with businesses and supermarkets to redistribute surplus food to non-profits and food banks.
 - Circular Economy Week, showcasing successful initiatives and educating local authorities.
- Success Factor: Targeted efforts on specific circular economy aspects like food systems.

Copenhagen, Denmark

- Approach: Sector-Specific Training and Citizen Co-Creation
- Initiatives:
 - Trains public authority employees on circular practices, focusing on construction, urban planning, and procurement.
 - Invites citizens to participate in designing solutions through events like Copenhagen Circular Festival, promoting upcycling and waste reduction.
 - Business-focused programs support SMEs in adopting circular models, such as using recycled materials or leasing services instead of selling products.
- Success Factor: Sector-specific approaches with citizen engagement.

Tallinn, Estonia

- Approach: Digital Awareness Campaigns and Competitions
- Initiatives:
 - Promotes circular economy concepts through interactive digital platforms, offering tools for calculating personal or business waste footprints.
 - Circular Design Hackathon, engaging startups and businesses to innovate circular solutions for urban challenges.
 - Local governments receive e-learning modules and access to circular economy toolkits.
- Success Factor: Leveraging digital tools to reach a broad audience.

Paris, France

- Approach: Urban Circular Strategies and Citizen Involvement
- Initiatives:
 - Circular Economy Roadmap emphasizing construction, textiles, and food waste.
 - Repair Cafes and organizes public events to teach citizens about waste prevention and upcycling.
 - Engages public employees through training programs on sustainable procurement and circular design.
- Success Factor: A clear roadmap guiding diverse stakeholders.

Hamburg, Germany

- Approach: Public-Private Partnerships and Green Procurement
- Initiatives:
 - Circular Procurement Policy, educating public authorities on sustainable procurement practices.
 - Partners with local industries to promote material reuse and waste minimization.
 - Offers citizens resources like the Hamburg ReUse App, connecting them to local second-hand shops and upcycling services.
- Success Factor: Strong emphasis on partnerships and digital tools.

Source and further reading:

<https://circulareconomy.europa.eu/platform/sites/default/files/circular-cities.pdf>

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