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Case Study Report

Competition-based Approach to Climate Action: #CircularCityChallenge, A Competition for Teenagers

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Abstract

The world faces climate change caused by environmental degradation and ecosystem collapse. Cities play a vital role in addressing these challenges, and circular urban development, in the form of "circular cities," is becoming increasingly popular as a way to achieve sustainable development. The CircularCityChallenge, building on fundamentals of circular cities and approaches in education for sustainable development, is a competition that targets young people aged 14-18, encouraging them to submit their ideas for a circular future in their own environments and simultaneously educating them about sustainable development. The challenge offers an innovative example of a participatory platform that is structured on a five-step process, in which young people would be getting familiar with the (1) circular city concept, (2) critical thinking, (3) system thinking, (4) pluralistic thinking, and (5) creative thinking. Encouraging networking and providing approaches for networking, the challenge potentially creates a liaison between local government/businesses and young people, and the fresh ideas and approaches that young people bring to the table carry the potential to inform local governments/businesses about local urban development needs, allowing them to collaboratively build circular futures for cities.

Keywords

circular cities, education for sustainable development, young people, climate action, sustainable development, competition-based approach

1. Introduction

Cities provide habitats for billions of Earth dwellers, over 60% of the world's population. Cities also consume 60-80% of the world's resources and produce 50% of global waste due to their linear approach to urban resources (Camaren and Swilling, 2012). This makes cities a significant contributor to atmospheric warming and environmental degradation, putting them at the forefront of the global climate emergency. Cities have two central systems linked to each other and contribute to both waste and sustainable futures (Prendeville et al., 2018; Gravagnuolo et al., 2019; Williams, 2022): procurement and social. Procurement involves the production of goods and services by good providers like in the food and fashion industries and service providers like local governments. Social systems refer to communities, citizens (also called users) together with their skills and urban lifestyles, including consumption behaviors. Sustainable procurement alone is insufficient for cities, which also need a corresponding shift in community-led change, as enhanced community resiliency and adaptation is a more beneficial investment in sustainable futures than pursuing the ultimate goal of sustainability (Callaghan and Colton, 2008). Therefore, it is urgent that cities take action to transition to more sustainable modes of urban existence by creating resilient communities.

Creating resilient communities requires advancing citizens' skills and capabilities to ensure the survival of both places and people through the sustainable transition in climate action (Dale and Newman, 2006). Sustainable transition in climate action has emerged in cities in the form of various city models, such as carbon-zero cities (Kennedy and Sgouridis, 2011), eco-cities (Tang et al., 2022), and smart cities (Chen, 2023). Recently, "urban circularity" (Marin and De Meulder, 2018, p. 1) or "urban circular development" (Williams, 2021, p. 1) in the form of circular cities has emerged as a promising approach, introducing a new set of individual and collective skills that accompanied with urban circular actions: loop (RE-actions), regenerate, and adapt, as well as localize, substitute, and share (Williams, 2019). The familiarity of citizens with those actions not only brings out empowerment through gaining the necessary knowledge, values, and skills to advance sustainable development but also supports Sustainable Development Goal #11, which aims to create sustainable cities and communities (UN, 2015).

Circular urban development in the form of circular cities conceptually adopts circular economy principles to transform linear city systems into circular ones, offering a way to experiment with urban circular actions to address the problems in sustainable development. However, there is limited empirical evidence to validate the concept of circular cities internationally. While circular development potentially intends to create equal opportunities and benefits for all actors, it can, in practice, exacerbate existing inequalities (Williams, 2021). An emphasis is needed within urban circular development on creating fair procedures and aiming at fair outcomes for everyone. Additionally, community-led circular development initiatives hold significant potential for transformation, as they can drive changes in city systems, leading to more resilient and circular communities. Therefore, creating resilient communities requires the enhancement of citizens' competency in several different ways of thinking allocated under circular thinking: (1) critical thinking for recognizing urban problems caused by linear approaches, (2) system thinking for identifying related actors in the problem and solution, (3) pluralistic thinking for creating fair procedures and outcomes for all related actors, and (4) creative thinking for experimenting with urban circular actions. And these thinking approaches are commonly adopted in Education for Sustainable Development.

Education for Sustainable Development (ESD) is a crucial platform for promoting circular development, especially for young people, who are the future of nations. ESD aims to enhance young individuals' comprehension of the multifaceted aspects of sustainability, including social, environmental, and economic factors, and to help them understand the impact of their choices and actions on global sustainability (UNESCO, 2020). However, the content of ESD needs updating to include new means of sustainability, such as circular development. It is vital to introduce circular development and its aspects in upper secondary education through ESD since upper secondary education points out a threshold for individuals before starting higher education and then a career. Enhancing young people's capacity for circular thinking allows

them to explore their interests and passions in fields that contribute to sustainable futures. This can also help young people enhance their independence and responsibility as they navigate global issues in adulthood. Developing capacities for circular thinking, design, and actions is also a matter of value change, as values are primarily shaped during childhood, adolescence, and early adulthood through the influence of parents, neighbors, friends, and schools (Scharfbillig et al., 2021). As a result, it is crucial to impart the necessary values and capacities to the secondary school age group for sustainable transition.

2. #CircularCityChallenge

Responding to the global climate action and building on the conceptual framework that combines urban circular development and education for sustainable development, the #CircularCityChallenge aims to provide young people (14-18 years old) with a platform for amplifying their voices to encourage them to become sustainability and circularity ambassadors for older generations by stepping forth with their ideas addressing sustainability issues in their cities. The challenge will collect submissions from young people starting in September 2023. The submissions will be judged by a committee of experts in circularity and education for sustainable development based on the four criteria given below, and during the final event, the winners will be awarded, and their participation will be celebrated.

1. UNDERSTANDING URBAN CIRCULARITY: How well does the team display a basic understanding of circularity and the circular economy within complex urban systems of production and consumption?
2. UNDERSTANDING INTER-CONNECTIVITY: How well does the team understand of general landscape (key actors, organizations, initiatives), determine who needs to be involved, map the relationships, roles, and information flow in the system, identify opportunities to build new relationships, and explore other parts of the system?
3. SEEING OPPORTUNITIES FOR CIRCULARITY: How well does the team represent the problem in their environment and address this problem, establish objectives through cooperation, and find ways to achieve those objectives via circular actions?
4. CONVINCING THE JURY ABOUT THEIR ANALYSIS AND PROPOSAL: How well does the team present their overall analysis, which includes the problem, actors, cooperation, and their final proposal for the problem they defined?

The #CircularCityChallenge adopts the competition-based approach that is proven successful in motivating students and increasing their learning performance (Burguillo, 2010). By doing that, the challenge aims to develop the capacity of young people in circular thinking to help them to effect meaningful and positive change in their urban environments. The #CircularCityChallenge is a competition bringing together young people from different communities, countries, languages, and demographics to encourage them to collaborate with their peers and to think about climate change and environmental degradation. The goal is not just to find solutions but also to inspire young individuals to communicate, plan, and make a difference in their daily lives. Thus, the challenge empowers and instills a sense of agency in young people while equipping them with the necessary skills to navigate and tackle 21st-century challenges beyond upper secondary education. Ultimately, the objective is to help students gain an understanding of the complicated and controversial issues surrounding climate change and environmental degradation.

Additionally, by its ready package that includes necessary tools for both young people and teachers/facilitators, the challenge provides a stand-alone educational method to be utilized in upper secondary schools in teaching circularity and sustainability more broadly. The intended learning outcomes of the challenge are **(1)** gaining a basic understanding of circularity and the circular economy within complex urban production and consumption systems, **(2)** being empowered with systemic and critical

thinking, and encouraging them to reflect on how to assess information better and challenge un-sustainability, and **(3)** developing competencies related to project management, teamwork and communication, digital information and data literacy, problem-solving, and social responsibility.

The toolbox of #CircularCityChallenge contains five-step-instruction manuals designed especially for young people called 'the logbook' and for teachers/facilitators called 'the guidebook,' and a set of toolkits. The toolbox is formatted for both manual and digital use, depending on the availability of technological instruments. First, the logbook is an essential tool for helping participants keep track of their progress in preparation to submit their ideas for the competition. The logbook is divided into five steps (**Table 1**), and each step is divided into five sections that are explained below:

1. **First Reminders:** Before starting the step, the logbook provides reminders to ensure participants /young people are well-prepared for the step.
2. **Tasks and Questions:** This section contains tasks and questions related to the step.
3. **Inspirational Material:** The QR code provides access to further knowledge and the toolkit provided online.
4. **Blank Space:** This space is for notes and sketches. There are also more blank pages at the end of the logbook if needed.
5. **Second Reminders:** After completing the step, the logbook provides reminders to ensure participants/young people have finished it completely.

Table 1: Challenge steps. Source: #CircularCity Challenge Participant Logbook

STEP #1	INTRODUCTION introduces the six urban circular actions with which cities worldwide experiment to mitigate issues caused by unsustainable production and consumption of goods, food, and energy: (1) Looping, (2) Regeneration, (3) Adaptation, (4) Localization, (5) Substitution, (6) Sharing.	AIM Enhancing the knowledge of urban circular actions
STEP #2	IDENTIFY YOUR CHALLENGE encourages participants/young people to ask critical questions to identify sustainability issues, such as waste production, in their settings, such as "What is the impact of waste on the environment and human health?" and "What are the underlying causes of waste production?"	AIM Enhancing critical thinking
STEP #3	POSITION YOURSELF challenges participants/young people to explore the system around the issue by defining the actors (including themselves) who might be affected by the waste, who might be contributing to it, and who might have a role to play in reducing it, also encourages participants/young people to categorize defined actors based on the power and information they hold in taking action and their relationship to their defined challenge and to identify connections and relationships between these groups.	AIM Enhancing system thinking
STEP #4	ENVISION CIRCULAR FUTURES encourages participants/young people to imagine a better way, rewrite the rules, reshape the system, and imagine if this new system would eliminate waste, circulate products and materials, and regenerate nature. This step specially asks participants/young people to approach key people in their imagined system and expand their network.	AIM Enhancing pluralistic thinking

STEP #5	DEVELOP YOUR INITIATIVE leads participants/young people creatively to think and design their circular idea responding to defined challenges. They are asked to demonstrate (action-based presentation) or suggest a scenario (plan-based presentation) to present their ideas and submit them via the submission portal of #CircularCityChallenge in any format, including videos, poster presentations, reports, and so on.	AIM Enhancing creative thinking
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Second, the guidebook is an indispensable tool for teachers/facilitators who want to help young people/their students develop critical, system, pluralistic, and creative thinking skills while encouraging them to think about sustainability challenges in their settings. The guidebook follows the same five-step layout with the same order as the logbook and provides teachers/facilitators with step-by-step instructions specific to the tasks of each step on how to guide young people/their students. For example, for STEP #5, the guidebook includes techniques to kindle creative thinking in young people/participants, such as mind mapping, visualization, and role-playing. Third, a set of toolkits is accessible online via the QR codes in the logbook and guidebook for young people/participants and teachers/facilitators. Via the codes, participants and facilitators can access a collection of books, articles, videos on circular knowledge, and instructions on existing methods that can be utilized in each step to supplement the process whenever needed.

3. Potential Contributions of #CircularCityChallenge

The #CircularCityChallenge showcases an alternative approach to collaborative urban planning, aimed at creating circular cities as a means of sustainable development in climate action. Its focus on young people's participation also highlights their forgotten critical role in climate action. More importantly, the challenge points out the need to enhance citizens' capabilities to company local government responses to climate action.

The #CircularCityChallenge offers a competition-based approach to participation, allowing young people to challenge themselves, their cities, and the linear system through their circular ideas for their urban environments. The challenge not only brings institutional innovation regarding participation in urban planning and young people's agency but also potentially provides fresh ideas and approaches to urban circularity that local governments and businesses can adopt in climate action.

The #CircularCityChallenge enhances the multi-perspective approach to urban planning by providing a stand-alone collaborative platform that can be used by governmental and non-governmental organizations, such as local governments, foundations, and NGOs interested in collaborative urban planning and design for creating sustainable futures. Moreover, the #CircularCityChallenge methodologically and knowledge-creation-wise contributes to policy-making in both education and urban development. It localizes the sphere of transformation in urban settings, focusing on the knowledge and skill development of citizens for more resilient communities. This process enhances the adaptability of citizens and enlarges the concept of a pluriform society, potentially explaining the interconnectedness of cities' actors. Thus, the challenge facilitates a shift from the position of young people as outside observers of a system to change agents within the systems of cities.

4. Funding

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<https://project.circularcitychallenge.eu/>. The challenge submission portal and toolbox will be available starting in September 2023.

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