

The Urban Circular Economy transition

**Trends, challenges & best
practices for creating
a sustainable city**



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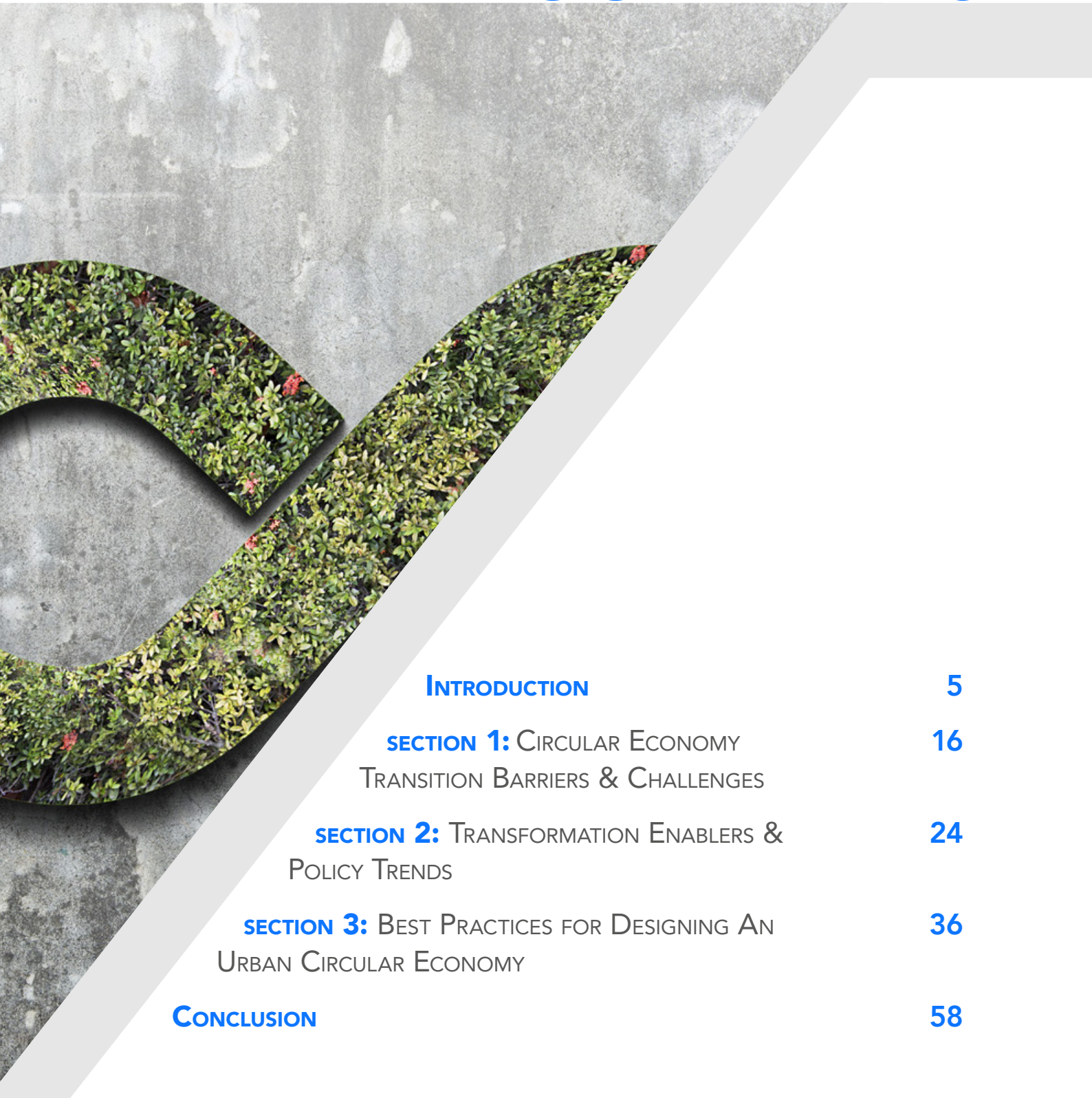
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A hand holding a magnifying glass over a globe, symbolizing environmental focus and urban systems. The background is a blurred image of a hand holding a magnifying glass over a globe. The globe is partially visible on the left side, showing a mix of white and grey. The hand is holding the magnifying glass handle, which is dark and curved. The background is a soft, out-of-focus image of a hand holding a magnifying glass over a globe. The globe is partially visible on the left side, showing a mix of white and grey. The hand is holding the magnifying glass handle, which is dark and curved. The background is a soft, out-of-focus image of a hand holding a magnifying glass over a globe. The globe is partially visible on the left side, showing a mix of white and grey. The hand is holding the magnifying glass handle, which is dark and curved.

THE URBAN CIRCULAR
ECONOMY AIMS
AT MANAGING
ALL DEFECTIVE
URBAN PROCESSES
THROUGH THE
EFFICIENT RECYCLING
UTILIZATION, METHOD
IMPROVEMENT, AND
REORGANIZATION
OF THE MATERIAL,
ENERGY, AND
INFORMATION IN THE
URBAN SYSTEM

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INTRODUCTION



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While

achieving financial development, the idea of protecting the environment, is reflected through the concept of Circular Economy. This is a widely popular theory, focusing on future sustainability with the aid of several activities, such as

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economic forms, comprehensive utilization of resources, environmental protection, or technological models. The term urban represents the core of financial and social responsibility, as it includes all the necessary elements for human production and life, like material, energy, information, environment, culture, economy, and institutions, as well as their in-between correlations. However, the rapid urbanization has also generated bottlenecks, like an increased consumption of energy, waste discharge issues, environmental pollution, water shortage, and traffic congestions. These repercussions can hinder the progress of cities and countries. The urban circular economy aims at managing all defective urban processes through the efficient recycling utilization, method improvement, and reorganization of the material, energy, and information in the urban system. Consequently, implementing this model of production and consumption enables a coordinated progress of society, economy, and environment, as well as to a mutual collaboration among organizations and self-organizing operations, based on legal frameworks.





CIRCULAR ECONOMY CHARACTERISTICS

As the urban circular economy becomes more prevalent, there are alterations concerning its institutional environment, research, scale, and perspective and thus, it can be characterized by 3 principal stages:

- At its earliest stage, before 2008, urban circular economy mainly focused on strategic planning, the scale of enterprises, parks, and cities, and the exploration of production links. Large enterprises

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conducted ecological industrial pilot projects, such as ecological product design and clean production, in order to lessen materials and energy usage and to diminish pollutant emissions. Eco- industrial park planning and construction were also developed, by establishing models and strategies to cope with problems and risks. From the perspective of production, novel processes and technologies were explored, including standards, indicator systems, audits and evaluations, and legal systems, in order to succeed a cleaner and more sustainable production.

- The second stage of urban circular economy, between 2009 and 2016, focused mostly on the efficiency evaluation, obstacle countermeasures, and the exploration of urban minerals and consumption links, at a regional, and societal scale. From the regional perspective, there were two ways to apply the urban circular economy; either by dividing the urban into several regions, which was mainly situated in megacities, or by exploring the urban as a part of the region. On the other hand, societies are more complex systems, involving numerous aspects, such as resources, environment, economy, politics, culture, production, life, circulation, and consumption. Circular economy research puts forward to build a resource-saving and environment-friendly society in cities, defined by the principles of construction and evaluation.
- In the present stage, from 2017 till nowadays, the most commonly discussed issues for urban circular economy, are the zero-waste city, garbage recycling,

material consumption, and their circulation links. It concentrates on the aspects of land, water, and energy, and specifically on the evaluation of element utilization, influencing factors, and spatial and temporal changes. Furthermore, it discusses the circulation links of the urban circular economy, including both the recycling of waste and components, as well as the circulation of materials, underlining the importance of green logistics, green storage, green packaging, green processing, and green transportation¹.

[1] Su, F., Chang, J., Li, X., Zhou, D., Xue, B. (2021). *Urban Circular Economy in China: A Review Based on Chinese Literature Studies*. Complexity, 2021.



Cities are fundamental pillars for the prosperity of economy worldwide, as they hospitalize more than 50 percent of the global population.

Also, they are hubs of knowledge and progress, with high concentration of resources, capital, data, and workforce. They account for 85 percent of global GDP production, 75 percent of natural resource consumption, and 50 percent of global waste and 60-80 percent of greenhouse gas emissions.

Thus, establishing the concept of circular economy in urban centers will not only produce sustainable cities, but also long-lasting effects for their habitants and the environment. In order to achieve this, buildings, mobility, products and services, and food systems must be examined in detail in order to identify any possible areas for development. Moreover, developing tools, such as innovations in design, business models, and digital technology can have a substantial influence in this effort. The realization of the urban circular economy idea can support the occurrence of:

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