CIRCULAR ECONOMY IN CITIES
The Ellen MacArthur Foundation recognises cities as a focal point in the transition to a circular economy. This new framework has been rapidly gaining momentum as an opportunity to rethink our approach to using materials in cities. It leads to wholly new ways of creating value, as well as opportunities to support key mayoral priorities around housing, mobility, and economic development.

In March 2019, the Foundation will launch Circular Economy in Cities, a suite of easily accessible resources which provide a global reference on the topic. Its modules have been developed to respond to the growing interest in circular economy from city governments and mayors, and will offer insights to many other urban stakeholders.

This document, issued at the 2019 Annual Meeting of the World Economic Forum in Davos, offers a preview of this content that builds on the city-related research and initiatives the Foundation has developed over the years. The project has been developed together with our Knowledge Partner, Arup.

We invite you to engage with us on this ongoing work to unlock the economic, social, and environmental benefits that a circular economy can bring to the 21st century city.
WHAT DOES A CIRCULAR ECONOMY BRING TO CITIES?

It is well documented that 75% of natural resource consumption occurs in cities. Cities produce 50% of global waste and 60-80% of greenhouse gas emissions. These are symptoms of the 'take, make, dispose' linear economic model.

The need for change is increasingly evident, with cities feeling the effects. The circular economy offers an opportunity to respond to these challenges by rethinking how we use materials, leading to wholly new ways of creating value.

Cities are where most materials are used and wasted, and where buildings, cars, and products are consistently under-used.

What if we:

- **Design out waste and pollution from cities?**
- **Keep products and materials in use in cities and maintain their value?**
- **Regenerate natural systems in and around cities?**

The implementation of a circular economy vision in cities can bring tremendous economic, social, and environmental benefits. It can foster the emergence of a:

- **Thriving city** in which economic productivity increases through reduced congestion, eliminated waste, and reduced costs, and where new growth and business opportunities can support skills development and jobs;
- **Liveable city** with improved air quality and urban health, reduced carbon emissions and pollution, and with enhanced social interactions;
- **Resilient city**, keeping materials in use and reducing virgin material pressures, working with both local and distributed production capacity, and harnessing digital technology.

These benefits can be achieved by changing the way urban systems are planned, designed, and financed, and how they are made, used, and repurposed.

This vision can help address important and pressing mayoral priorities on housing, mobility, and economic development. It also aligns with the 2030 Sustainable Development Goals, including reducing greenhouse gas emissions and adapting to the effects of climate change.

City governments are uniquely positioned in the transition to a circular economy – they can enable, lead, and involve other key stakeholders from across the public and private sectors, using the wide range of policy instruments at their disposal. Ultimately, this is a collaborative transition towards a future of thriving cities that are liveable and resilient, and that use materials according to circular economy principles.
A VISION FOR A CIRCULAR ECONOMY IN CITIES

OPPORTUNITIES IN HOUSES AND OFFICES, MOBILITY SYSTEMS, AND PRODUCTS

PLANNING
In cities that embed circular economy principles, there is greater proximity between where people live, work, and play. The air gets cleaner as vehicles switch to zero-emission engines and congestion reduces as shared transit increases. More people walk and cycle to work, boosting health and interactions with local businesses and communities. Valuable land previously dedicated to roads and car parks is freed up for green spaces, shops, offices, houses, and recreation.

CIRCULATING
The layout and design of cities also changes the way materials and products move around them. Instead of throwing materials ‘away’ to landfill or incineration, a new distributed system of resource management, nutrient flows, and reverse logistics makes the return, sorting, and reuse of products possible. Valuable materials stay in use.
DESIGNING
In parallel to the urban plan, circular economy principles transform the design of elements within cities. Infrastructure, vehicles, buildings, and products are designed to be a combination of durable, adaptable, modular, and easy to maintain and repurpose. Nature inspires design. Materials are non-harmful, locally sourced where appropriate, from renewable feedstocks where possible, and can be composted, recycled, and reused. Renewable energy powers cities.

MAKING
Buildings, vehicles, and products are assembled using techniques that design out waste. Local ingenuity and skill levels increase as focus is put on decentralised, distributed production within cities. Through digital material banks, the composition of buildings, vehicles, and products are known, enabling their repair and reuse. Products and parts are created on-demand and on-site, transforming construction methods and storage needs.

USING AND REUSING
People gain access to the things they need - be it space, products or transport - in new ways. This can be through sharing rather than owning, which can connect people to their neighbours and communities, or through product-as-a-service contracts, where producers remain involved. Modular designs allow for the reconfiguration of buildings and vehicles as needs change, even over the course of a day. People care for, repair, and refurbish their products. New jobs emerge and urban economies become more thriving and resilient.
ABOUT THE CIRCULAR ECONOMY IN CITIES PORTAL

In March 2019, the Ellen MacArthur Foundation will launch Circular Economy in Cities, a suite of easily accessible resources which provide a global reference on the topic. Its modules have been developed to respond to the growing interest in circular economy from city governments and mayors, and will offer insights to many other urban stakeholders, including urban citizens.

The portal will contain the following modules:

VISION
Circular economy opportunities within three key urban systems – the built environment, mobility, and product systems – are brought together to illustrate what they can unlock in cities.

FACTSHEETS
A series of easy-to-reference factsheets focused on circular economy opportunities in built environment, mobility, and product systems. The factsheets provide numerous examples and a range of qualitative and quantitative benefits, including improvements in economic and resource productivity, health and environmental outcomes, and social prosperity.

URBAN POLICY INSTRUMENTS
This module identifies policy instruments that city governments could leverage to embed circular economy principles and enable the transition – from the development of city circular economy roadmaps to specific policy instruments such as public procurement, and urban planning.

CITY-LED CASE STUDIES
Each case focuses on a specific initiative championed by a city government, covering a wide range of focus areas and policy instruments identified in previous modules.

NETWORKS AND RESOURCES
Momentum is building around circular economy in cities. This reference page provides an overview of the relevant resources, tools, and initiatives from our partners and other organisations in the field.

This project has been developed in partnership with our Knowledge Partner, Arup, and is supported by the MAVA Foundation.
CITIES AT THE ELLEN MACARTHUR FOUNDATION

The Ellen MacArthur Foundation recognises cities as a focal point for the transition to a circular economy, and this project builds on and expands the knowledge and initiatives that we have developed on cities over the years.

THOUGHT LEADERSHIP ON CITIES

The Foundation has influenced the cities and circular economy narrative through thought leadership pieces such as Cities in the circular economy: An initial exploration and Cities in the circular economy: The role of digital technology in 2017.

These efforts build on the evidence base and understanding of city, regional, and national governments developed through the research Delivering the circular economy: A toolkit for policymakers led by the Foundation in 2015.

In addition, regionally focused work such as The circular economy opportunity for urban and industrial innovation in China, Circular economy in India: Rethinking growth for long-term prosperity and Growth Within: A circular economy vision for a competitive Europe provide an evidence base for the benefits of applying circular economy principles to key urban systems such as mobility, the built environment, products, and food.

SYSTEMIC INITIATIVES ON KEY MATERIAL STREAMS

The Ellen MacArthur Foundation’s Systemic Initiatives aim to accelerate the global transition towards a circular economy by applying circular economy principles to key material streams.

In 2016, the Ellen MacArthur Foundation launched the New Plastics Economy initiative building momentum to a plastics economy that works. In 2017, we launched Make Fashion Circular to create a new textiles economy including the development of demonstration projects in cities. At the World Economic Forum in Davos 2019, we launched a major report, Cities and the Circular Economy for Food setting out the significant contribution cities can make in shifting the global food system.

Working with businesses, governments and cities, philanthropists, innovators, and NGOs, Systemic Initiatives spark unprecedented levels of cross-sectoral and value-chain collaboration to unlock innovation and new system solutions.

CONVENING AND WORKING WITH CITIES

The Foundation works closely with cities such as Brussels, Charlotte, London, Phoenix, and Toronto through the CE100 programme, a pre-competitive innovation programme that supports the private and public sector in their transition to a circular economy. The Foundation also works with cities through our Systemic Initiatives including Austin, Brussels, Copenhagen, Guelph, New York, Porto, and São Paulo.

The Circular Cities Network, set up by the Foundation in 2016 as the first network of its kind to focus exclusively on cities and the circular economy, exchanged knowledge between a group of 12 pioneering cities. The network informed much of the early development of the Foundation’s thinking on the topic. Cities in transition also feature in the annual Disruptive Innovation Festival, and are the focus of the 2018 film System Reset that amongst other topics, explores the opportunities of distributed production in cities.

In addition, the Foundation has developed partnerships with key influencers in the urban ecosystem, such as the C40 Cities Climate Leadership Group as a Platform Partner and UN Environment Cities Unit.
ELLEN MACARTHUR FOUNDATION PUBLICATIONS LAUNCHED AT THE 2019 ANNUAL MEETING OF THE WORLD ECONOMIC FORUM AT DAVOS

The Ellen MacArthur Foundation, supported by the Project MainStream initiative, launched a major new publication, Cities and the Circular Economy for Food, setting out the significant contribution that cities can make in shifting the global food system onto a healthier and more regenerative trajectory.

Together with Google, the Ellen MacArthur Foundation also launched Artificial Intelligence and the Circular Economy: AI as a tool to accelerate the transition, with research and analytical support provided by McKinsey & Company. It provides a first look into the intersection of these two emerging megatrends, artificial intelligence and a circular economy.

For all the Ellen MacArthur Foundation publications visit: www.ellenmacarthurfoundation.org/publications
ABOUT THE ELLEN MACARTHUR FOUNDATION

The Ellen MacArthur Foundation was launched in 2010 with the aim of accelerating the transition to the circular economy. Since its creation, the charity has emerged as a global thought leader, putting the circular economy on the agenda of decision-makers around the world. The charity’s work focuses on seven interlinking areas: insight and analysis; business; institutions, governments and cities; systemic initiatives; learning; circular design; and communications.

Further information: www.ellenmacarthurfoundation.org • @circularconomy

ABOUT ARUP

Arup is the creative force at the heart of many of the world’s most prominent projects in the built environment and across industry. With over 80 offices in 34 countries Arup has more than 14,000 planners, designers, engineers and consultants delivering innovative projects across the world with creativity and passion.

Further information: www.arup.com • @ArupGroup