

CIRCULAR CITIES WEEK REPORT

No city left behind the circular economy revolution
#CircularCities



CIRCULAR ECONOMY
C L U B

February 2020

EXECUTIVE SUMMARY

Cities around the globe are generating waste in different sectors such as food, textile, building, etc. Three quarters of people will live in cities by 2050 and we already consume 75% of our natural resources, emit 60-80% of greenhouse gases, and produce over 50% of global waste ([UNEP, 2017](#)). Cities and regions play a significant role to promote, facilitate and implement circular economy to eliminate waste, create resilient and liveable urban space. The circular economy is a model in which every material is designed to go back into the economy to avoid generating waste.

We believe that the change towards a circular economic model in our cities has been prevented by a series of barriers such as lack of incentives, disconnectedness and lack of clear/organized information and deadlines.

The *Circular Cities Week* report presents the outcomes of the global event “Circular Cities Week” including the circular challenges and opportunities for cities. This report represents a crowdsourced tool for cities worldwide to implement the circular model.

This report explores the association between municipalities pursuing circular economy policy and investments in circular business that create jobs. Additionally, it takes a closer look at how businesses perceive this municipal support for the circular economy. The report summarises the findings of a study by CEC and the CEC local chapters. The key learnings can be summarized in five points.

1. The role of new technologies introduced as using big data and map the material flows of the city. New tech enables cities to establish a tangible direction for setting up circular projects by mapping the various value flows amongst stakeholders such as money, materials, and energy.

2. Creating new markets such as creating a platform for buying, selling or sharing waste can provide opportunities in which waste can be reused across sectors and can be a kick off for the right infrastructure to be in place.

3. Clear incentives need to be put in place for circular implementation which could convince and support companies to adjust circular business models and for consumers to change their mindset and behaviour.

4. Policies can promote circulation through a revision of the concept of waste, including circular requirements in procurement, demanding the implementation of AI and blockchain tech to require supply chain transparency.

5. The role of reverse logistics which is the return flows of manufactured goods back from consumers. Cities need to invest in providing the right infrastructure so that reverse logistics can be implemented.

At CEC we bring to anyone the possibility to open a CEC chapter in their city and be a key change agent by helping implement the circular economy locally. To take part in this valuable journey, please apply [here](#).

“ The club started with the mission to bring the circular economy framework to every city and town in the world. We can make smart changes happen, and we are working on it.”

Anna Tari
Founder, Circular Economy Club (CEC)

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INTRODUCTION

A circular economy is defined as an alternative to the current linear economy in which we take resources, produce, consume and generate waste. In a circular economy, systems and products are designed to eliminate the concept of waste, by enabling the recovery and reuse of all materials at the highest value possible at all times.

A circular city implements the principles and strategies of circular economy across all of its functions in its urban system which regenerate and restore by design. These cities aim to eliminate the concept of waste, keep assets at their highest value at all times and employ digital technologies. A circular city seeks to improve resilience for the city and its citizens and decouple economic growth from the consumption of finite resources.

The Circular Economy Club (CEC) is the largest international network of circular economy professionals and organizations with worldwide representation through a network of over 260 CEC local chapters in over 110 countries. The CEC is global and open to anyone to join for free. CEC envisions a new era where all cities worldwide function through a circular model, setting the end of an age of waste. CEC aims to bring the circular economy to cities worldwide by building strong local networks to design and implement circular local strategies and ensuring the circular economy professionals are recognized as such worldwide.

Circular Cities Week (CCW) is an annual, decentralized global event that took place from Nov 28th to Oct 3rd along the United Nations World Cities Day.

Over 80 CEC Chapters signed up to organize workshops to identify opportunities and encourage the implementation of the circular economy in their cities. So far over 30 CEC Chapters have hosted the event. In this report we are presenting the outcomes of some of those chapters. The objectives of the week are twofold:

- Convince and support city governments to publish a local circular economy strategy plan with clear goals, and
- Share knowledge through an report of the challenges, opportunities and next steps to embed circularity for all the participating cities.

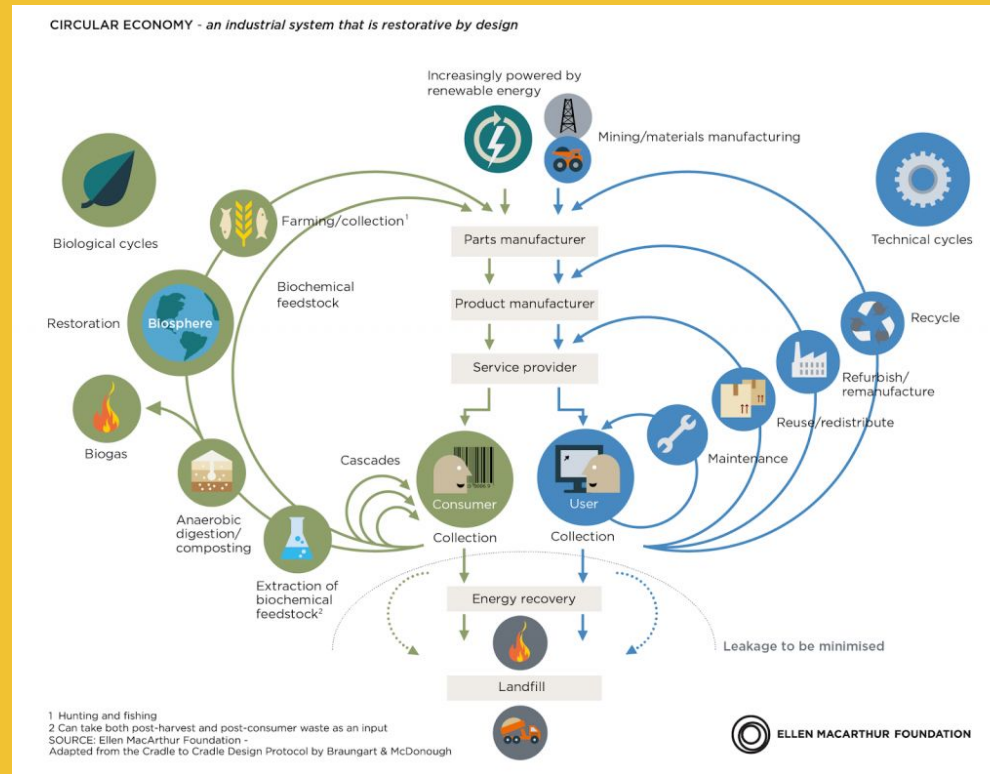
In the first section of this report we provide an overview of the circular economy model and share the aims of the Circular Cities Week. In the second section, CEC selected one city per continent to recognize their effort in becoming circular, providing the names of the world's top 5 cities investing in circularity and thus a compilation of best practices from such cities. The third section provides a summarized version of the discussion that took place in 16 of the CEC local workshops during Circular Cities Week, demonstrating singular commitment in advancing circularity in their cities and their effort is recognized in this report. The fourth section provides with the key learnings from the Circular Cities Week.

THE CIRCULAR ECONOMY

A circular economy is defined as an alternative to the current linear economy in which we take resources, produce, consume and generate waste. In a circular economy, systems and products are designed to eliminate the concept of waste, by enabling the recovery and reuse of all materials at the highest value possible at all times.

Benefits: The major economic benefit that the circular economy provides at a macroeconomic level is that it is able to decouple economic growth from resource consumption. Many social aspects would be influenced by the adoption of a circular economy, including an increase in employment opportunities (i.e., in Europe alone, the transition towards a circular economy is estimated to generate 580,000 jobs. Moreover, more resilient cities would be generated, providing a healthier space for citizens to live in. The circular economy has the potential to reduce the input of resources (e.g. energy) and output of materials (e.g. CO2 emissions).

Barriers: Initial investments needed such as the adoption of new technologies, understanding and correct measurement of circularity performance and indicators which could make unclear the benefit of the adoption of new practices as well as the return on investment. Also, thinking systemically and leading by example is necessary rather than thinking of individual impacts as an isolated and innocuous impact in the world, it would be beneficial if each of us thinks about our impacts as part of a bigger system.



The system of butterfly diagram above illustrates the continuous flow of both biological and technical materials through the system.

Biological cycle where biological (or organic) materials such as wood, food and water, can be incorporated into the ecosystem and be re-generated through biological processes so that they can enter the biosphere safely through processes like aerobic composting which regenerate living systems such as soil.

Technical cycle recover and restore products with technical components, and materials (such as fossil fuels, plastics and metals) through strategies like reuse, repair, remanufacturing or (in the last resort) recycling. The objective is to keep all materials circulating within the technical loops and avoid any leakage to the biosphere.

CIRCULAR BUSINESS MODELS

Rent: It offers the product as a service provides. By renting a product, the consumer becomes a “user” and pays for the time or usage of the product for a certain period of time. E.g. Bundles is a company that rents washing machines and charges the user per every time they use it.

Circular design: It is the way to design a product or a service so that waste are not generated during, or at the end of life of the product or service. E.g. Fairphone is a phone which is designed for longevity, easy repair, and modular upgrades.

Keep in use for longer: it prolongs the product’s lifespan for as long as possible through designing for durability, maintenance and repair. E.g. Patagonia is an outdoor clothing company which encourages good maintenance of its products and offers repairs to worn damaged clothes.

Reuse/Redistribute: it recovers the value of materials. E.g. RePack is a reusable and returnable packaging service.

Refurbish/Remanufacture: it renovates and restore the older or damaged products or equipment to bring them to a better looking condition. E.g. RypeOffice refurbish existing furniture back to as-new condition.

Recycle: it is the process of converting waste materials into new materials and objects. E.g. Evrnu is known for inventing an entirely new kind of engineered fiber which permits turning waste clothing into clothing with extraordinary performance.

THE CIRCULAR ECONOMY CLUB (CEC)

The Circular Economy Club (CEC) is an international network of over 6,000 professionals and organizations with over 260 CEC local chapters in over 110 countries.. The CEC is non profit, global and open for anyone to join the club for free.

We envision a new era where all cities worldwide function through a circular model, setting the end of an age of waste. In this light, we aim to bring the circular economy to cities worldwide by building strong local networks to design and implement circular local strategies.

CEC was formally established in London by [Anna Tari](#), who realized that there were a number of great initiatives but lacking visibility, the right tools, funding and connections in order to have an impact. CEC was set up to bridge this gap and to establish strong connections amongst the circular economy community, to share best practices and try our best to have an impact at a local and global level simultaneously.

The goals by 2022 are:

1. Bringing together local actors to create circular economy strategies in 200 cities.
2. Providing training and circular economy certification to over 2,000 individuals to ensure the profession is recognized worldwide across different levels of public and private organizations.

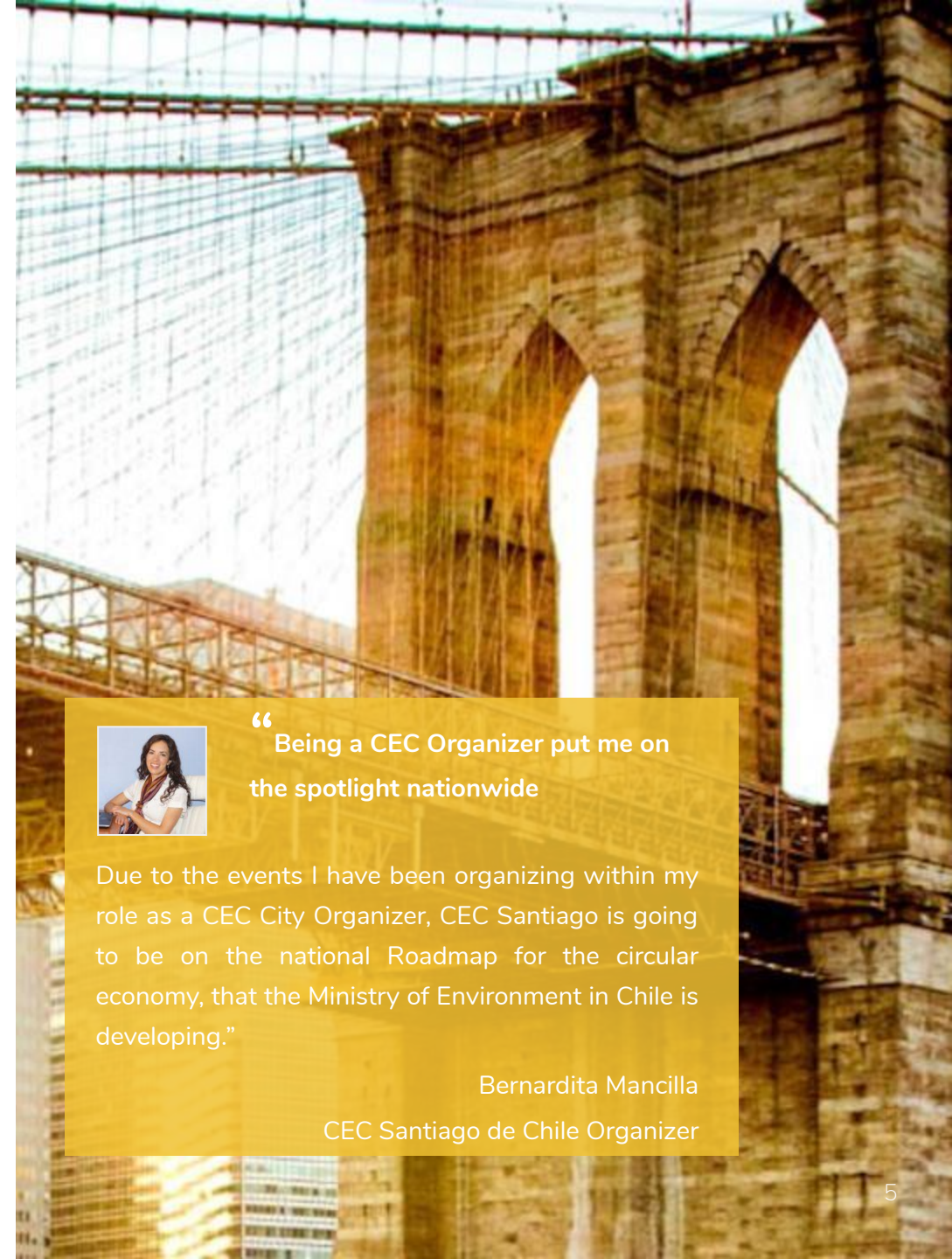
CEC PROGRAMS

CEC Chapters: this program is for circular leaders to become a CEC Organizer and help lead the transition towards a Circular Economy in their city, university, hub or company.

- City organizers are responsible to organize external events in their city to gather different stakeholders in variety of sectors to investigate challenges and opportunities to implement CE local strategies and connect to their city councils.
- University organizers are responsible to organize internal events for their university members to identify challenges to implement CE initiatives in their university and also find a best way to embed CE in the curriculums.
- Company organizers are responsible to organize internal events for their company members to identify challenges to implement CE initiatives in their company.

CEC Certificate: this program provides an official certificate for anyone who wants to develop skills, improve their knowledge about CE in different sectors and understand how the CE is being deployed in the real world.

CEC Mentors: this program is connecting CEC Members who have vast experience in implementing circularity with those who can benefit from their expertise. CEC Mentors provide free advices to young students, professionals, and startups who are trying to embed the circular economy in their projects.



“ Being a CEC Organizer put me on the spotlight nationwide

Due to the events I have been organizing within my role as a CEC City Organizer, CEC Santiago is going to be on the national Roadmap for the circular economy, that the Ministry of Environment in Chile is developing.”

Bernardita Mancilla
CEC Santiago de Chile Organizer

CEC CIRCULAR CITIES WEEK

The “Circular Cities Week” is an annual, decentralized global event. Over 80 CEC Chapters signed up to organize workshops to identify opportunities and next steps to encourage implementation of the circular economy in their cities. Over 30 CEC Chapters have organized the workshops so far. This process includes bringing in stakeholders from city governments, private and nonprofit sectors, and academia—and providing a multi-stakeholder call to action.

The condensed time frame of "Circular Cities Week" encourages a sense of urgency and purpose designed to help stakeholders identify opportunities, challenges and next steps for supporting the development of circularity at the city government level.

The objectives of the week are twofold:

- Convince and support city governments to publish a local circular economy strategy plan with clear goals for their city,
- Create a report of challenges and opportunities for participating cities.

If you are interested to engage, you can consider applying to [Open a CEC Chapter](#) or contacting CEC to becoming a partner in this endeavor. As a CEC City Organizer, you will be able to create the event in your city and will be asked to follow the [CEC Toolkit](#) with the step-by-step on how to organize the session.

What is a Circular City?

A circular city seeks to improve resilience for the city and its citizens and decouple economic growth from the consumption of finite resources.

These cities aim embed the principles of a circular economy to

1. eliminate the concept of waste,
2. keep assets at their highest value at all times,
3. develop digital technology.

Circular Economy in Cities has a great focus on the top sectors in the urban systems such as buildings, mobility, and products. It will consider to connect with the city governments to understand how the transition from linear to circular works to be able to implement circular local initiatives.

The implementation of a circular economy provides benefits for economic, social, and environment:

- Economic growth will occur through reduction in the likelihood of supply shocks, reusing waste, acquiring, using fewer virgin materials and leveraging new business models.
- Health will be improved by the enhancement of air quality. Social equality will be enhanced by extending green transport for all, urban agriculture, among other initiatives.
- Environmental benefits will be gained by the reducing use of raw materials (e.g., energy, water, minerals and land), regenerating ecosystems, and decreasing the negative externalities brought by the linear model (e.g., greenhouse gases emissions, waste).

CEC Chapters that signed up to host the Circular Cities Week

AFRICA

Congo - Kinshasa
Ghana - Accra
South Africa - Durban
Morocco - Casablanca
Uganda - Kampala

EUROPE

Austria - Vienna
Belgium - Brussels
Bulgaria - Sofia & Varna
Czech Republic - Prague
Finland - Helsinki
France - Toulouse
Georgia - Batumi
Germany - Berlin & Stuttgart
England - Bath, Birmingham,
Brighton & Hove, Kendal,
London, Reading and York
France - Paris
Italy - Milan and Torino
Ukraine - Kyiv
Portugal - Lisbon and Porto
Romania - Râmnicu Vâlcea
Serbia - Belgrade
Spain - Alicante, Barcelona, Bilbao
and Madrid
Switzerland - Lugano
Wales - Carmarthenshire and
Swansea

AMERICAS

Bahamas - Freeport, Nassau
Brazil - Belo Horizonte, São Paulo
Chile - Santiago
Canada - Gatineau
Colombia - Bogota, Cartagena
Ecuador - Cuenca & Quito
Mexico - Cholula, Merida, Mexico City,
Puebla and Saltillo
Paraguay - Asunción
St. Lúisa - Castries
Trinidad & Tobago - Port of Spain and
San Fernando
United State - Austin, Orlando and
Seattle

ASIA, MIDDLE EAST & OZ

Armenia - Yerevan
Australia - Melbourne, Perth &
Sydney
French Polynesia - Papeete
Hong Kong - Hong Kong
India - Bangalore, Gurgaon,
Hyderabad,
Mumbai, New Delhi and Pune
Japan - Tokyo
Israel - Tel Aviv
Malaysia - Kuala Lumpur and Petaling
Jaya
Pakistan - Karachi
Singapore - Singapore
UAE - Dubai

WORLD'S TOP 5 CITIES

AFRICA: JOHANNESBURG

ASIA & OCEANIA: SINGAPORE

EUROPE: AMSTERDAM

NORTH & CENTRAL AMERICA: NEW YORK

SOUTH AMERICA: MEDELLIN

INTRODUCTION

The next section of this report explores the key activities propelling circularity in 5 cities per continent and contains 6 key initiatives for each city from different sectors to highlight the importance of CE implementation in cities, provide real-life examples to look at and recognize the advancement of circular transitions.

The 5 cities of Johannesburg, Singapore, Amsterdam, New York and Medellin has been chosen due to their great projects and activities in shifting the urban system from linear toward circular and adapting new business models.

The city of Johannesburg in Africa has a great focus on improving recycling and the municipality supports households and businesses to separate recyclables from non-recyclable waste, encouraging a community to consider waste management and companies to reuse materials to reduce waste to landfills. Johannesburg's Integrated Development Plan 2040 is focusing on improving the built environment and mobility systems including the concepts of land use densification and diversification in which residents would invest less time for commuting and have better access to services within a city.

The city of Singapore in Asia determined the year of 2019 as "Zero Waste" and announced a "Zero Waste Masterplan" which provides new regulations and governing bodies for the sectors of Food, Electronic, and Packaging Waste over the next five years. Moreover, the EU has led circular missions to Singapore to finance for circular economy projects and provide guidance on circular economy risk financing.

The city of Amsterdam in Europe implemented variety of initiatives and businesses engaged with circular ideas and projects including Philips' product as a service cooperation with Amsterdam Airport Schiphol. The De Ceuvel which is a Amsterdam's first circular office park. Also, the city mapped material flows and gathered information about the inputs used (e.g. energy)) and the outputs emitted (e.g. types of waste). Moreover, the project of Park 20|20 is based on the Cradle to Cradle.

The city of New York "Zero by 2030" waste goals to foster the circular economy and its benefits to human health and the environment. Furthermore, Brooklyn's "Sponge Park" as a green infrastructure, acts like a sponge, absorbing and reducing the amount of contaminated runoff into natural bodies of water and redirecting it to be recycled for community purposes. Also, smart city tech program in the city is testing wireless and cloud-based communications which allows a larger scale of experimentation and provide opportunities for the researchers to use new technology like internet of things (IoT).

The city of Medellin in South America is transforming production and consumption to develop and implement new business models that incorporate waste management, efficient use of materials and change in the lifestyles of citizens. The city is also focusing on urban metabolism projects to map and analyse material flows in the city through Geospatial analysis and Geonode to provide tools for the researchers to study further and for the citizens to realize and promote their own waste stream. In addition, the city has initiatives regarding green buildings and zero emission mobility.



AFRICA: JOHANNESBURG

Johannesburg is South Africa's biggest city and capital of the Gauteng province with an estimated population of over 4,949,347 people. Its key activities propelling circularity include:

1. Waste pickers into the recycling economy

Unilever South Africa, the African Reclaimer Organisation (ARO) and Wits University announced their project: "Building an inclusive circular economy: recycling with reclaimer" to integrate reclaimers – also known as waste pickers – for the service they provide and is designed to demonstrate the benefits reclaimers provide. Reclaimers collect approximately 80-90% of postconsumer paper and packaging collected in South Africa for recycling companies to reuse and have extended the life of landfills and saved municipalities up to R750 million a year in landfill airspace ([Witz, 2019](#)).

2. Urban planning to improve circulation

Johannesburg's Integrated Development Plan 2040 is set improve flows and productivity through strengthening the built environment and mobility systems so that residents reduce commuting times, and have better access to services within a cleaner city ([Ellen MacArthur Foundation, 2019](#)).

3. Open source community engagement

The Institute of Future Living (IFL) and Stop Reset Go (SRG) hosted workshops to discuss the use of open source solutions and methodologies to create circular products that are easy to produce and repair.

4. Reducing waste to landfill

The Separation at Source (S@S) Programme aims to reduce waste to landfill, establish a circular economy with citizen support and participation. The goal is to divert 93% of waste away from landfills by 2040. The municipality supports households and businesses to minimize waste and separate recyclables from non-recyclables. ([Urban Sustainability Exchange, 2018](#)).

5. Green procurement

Building a sustainable society with low environmental loads is a key goal of this initiative and the objectives are stimulating public procurement and providing information as well as incentives on goods and services that contribute to the reduction of environmental loads ([Ministry of the Environment, 2017](#)).

6. Rental and remanufacturing services

More leading global brands are investing into renting not only transport and logistics solutions but also equipment, providing integrated rental, fleet management, product support and reverse logistics solutions. The core divisions of groups comprise equipment (earthmoving equipment and power systems), automotive (car rental, motor retail, fleet services, used vehicles and disposal solutions) and logistics (logistics management and supply chain optimisation). Barloworld Remanufacturing Centre is the main southern African hub for 'as new' Cat component rebuilds (power train, engines and hydraulics) where components are recovered, remanufactured and sold again ([Barloworld, 2020](#)).



ASIA & OCEANIA: SINGAPORE

Singapore is an island city-state in Southeast Asia with a total population of 5.7 million. Key activities propelling circularity include:

1. Designating 2019 the year of zero waste

The Ministry of the Environment and Water Resources (MEWR), in collaboration with the National Environment Agency (NEA), released the “Zero Waste Masterplan” calling on all sectors to contribute innovative plans. The masterplan provides new regulations and governing bodies for the food, electronic, and packaging waste sectors over the next five years ([MEWR, 2020](#)).

2. Extended Producer Responsibility (EPR)

As per the EPR principle, producers are responsible for the end of life of their products. In electronics in particular, an e-waste management system will be in place by 2021, by which producers need to recover e-waste and ensure it gets either reused or recycled. Likewise, companies using packaging will need to collect data on packaged put into the market and present their plans to reduce it ([MEWR, 2020](#)).

3. Financing circularity

Gaining external expertise, for example by an EU led mission to Singapore, to provide recommendations on how to finance circular project, establish the right policies to provide financial incentives to companies, performing risk assessments on supply chains and commercial risks ([Conventus Law, 2019](#)).

4. Urban farming on top of the malls

The Comcrop 600-square-metre (6,450-square-foot) farm on a mall roof uses vertical racks and hydroponics to grow leafy greens such as basil and peppermint. The leaves are then sold to nearby bars, restaurants, and stores. Benefits of such initiative include reducing the urban heat-island effect, where the city is warmer than rural areas. It also avoids the runoff of stormwater and it fixates nitrogen. Reducing the urban heat-island effect could be \$160 billion annually worldwide ([Thomson Reuters Foundation, 2019](#)).

5. Bring-your-own (BYO) school program

The S.E.A. Aquarium supports conservation efforts, educational and public engagement activities to help protect ocean health by decreasing marine litter. With the BYO Schools Programme youngsters are encouraged through assembly talks and exhibitions to reduce plastic disposables and protect the marine environment. This program encourages them to bring their own reusables (bottle, container, utensils or bag) and reduce plastic disposables in the school via a reward card system ([Zero Waste Singapore, 2019](#)).

6. Electricity from waste water and waste food

Used water sludge is mixed with wet organic fractions extruded from food waste. Biogas is produced through anaerobic fermentation where the microorganisms break down the mixtures of sludge and food waste in the absence of oxygen. The biogas is used to produce electricity ([MEWR, 2020](#)).



EUROPE: AMSTERDAM

Amsterdam is the Netherlands' capital and its largest city, with an approximate population of 851,000.

Both The Netherlands and Amsterdam are positioning as pioneers in the circular economy field by testing and scaling new business models, circular initiatives and processes. The featured circular initiatives are:

1. Mapping material flows in the city

Applying the "Circle Scan" methodology meant identifying the top contributing sectors in terms of environmental and economic impact and mapping the material flows of such sectors in the city. That is, organizing the information about the inputs used (energy, water, etc) and the outputs generated (types of waste, where they end up, etc). These mapping exercise allows for a clear understanding of where resources come from and where waste goes to, which actors in specific sectors are key and whether there are empty spaces that can be utilized differently, providing solutions to create closed loops ([Circle Economy, 2018](#)).

2. Creating a Cradle to Cradle business park

Park 20|20 is the world's first full-service working environment where buildings are based on the Cradle to Cradle® design philosophy. In the business park, all buildings are connected to the water purification system, roofs fitted with photovoltaic cells generate solar energy and green spaces account for fruit trees that stimulate biodiversity (e.g., attracting bees) ([Park2020](#)).

3. Buildings as Material Banks (BAMB)

The EU funded BAMB project brings 15 parties throughout Europe together to enable a systemic shift by allowing for the creation of circular buildings. BAMB increases the value of building materials to avoid waste generation and the use of virgin resources. Building Information Modelling (BIM) identifies what materials are applied, the amount of material used and how the building can be dismantled. Each building is a "materials bank" and gets a materials passport, used to calculate the future residual value of buildings ([BAMB, 2020](#)).

4. Turning an industrial plot into a creative hotspot

De Ceuvel is an award-winning workspace for its mission to be fully circular. It includes a cultural venue, a sustainable café, where one can find spaces to rent, and a floating bed & breakfast. Old houseboats have been placed on heavily polluted soil, where phytoremediation plants have been placed to clean the soil ([De Ceuvel](#)).

5. Light as a Service (LaaS)

Philips supplies LED lighting as a services to Schiphol Airport. In this model, the airport pays for the light used and Philips remains the owner of all installations and responsible for maintenance and reutilization of fixtures ([Philips, 2015](#)).

6. Minimizing and recirculating food waste

The startup BuurtBuik collaborated with the municipality to start a project in which they collect waste food from restaurants and supermarkets to prepare free meals for local residents ([BuurtBuik](#)).



NORTH & CENTRAL AMERICA: NEW YORK

New York City (NYC) is the most populous city in the United States with an estimated population of 8.5 million people.

New York's "Zero by 2030" waste goals, coupled with its vibrant economy, offer a significant opportunity to take a global leadership role in fostering the circular economy ([Crain Communications, 2018](#)).

1. Circular city program

New York City Economic Development Corporation (NYCEDC) and New Lab announced the launch of the 2020 edition of the Circular City program to test and pilot solutions designed to address the increasingly complex and urgent challenges facing cities ([NYCEDC](#)).

2. Center for the Circular Economy

The investment firm Closed Loop Partners launched an innovation center for research, analysis and collaboration among brands, investors, NGOs and industry leaders to identify, test and scale solutions that solve material challenges ([Closed Loop Partners](#)).

3. Circular City Week

The first and biggest circular economy festival in the United States. The NY Circular City Week, first hosted in March 2019, is an open collaborative festival for circular economy related events with the aim to inspire professionals across sectors, showcase international pioneers, highlight local change makers and engage students to be the future of circularity ([Circular City Week, 2020](#)).

4. Sponge park to reuse stormwater

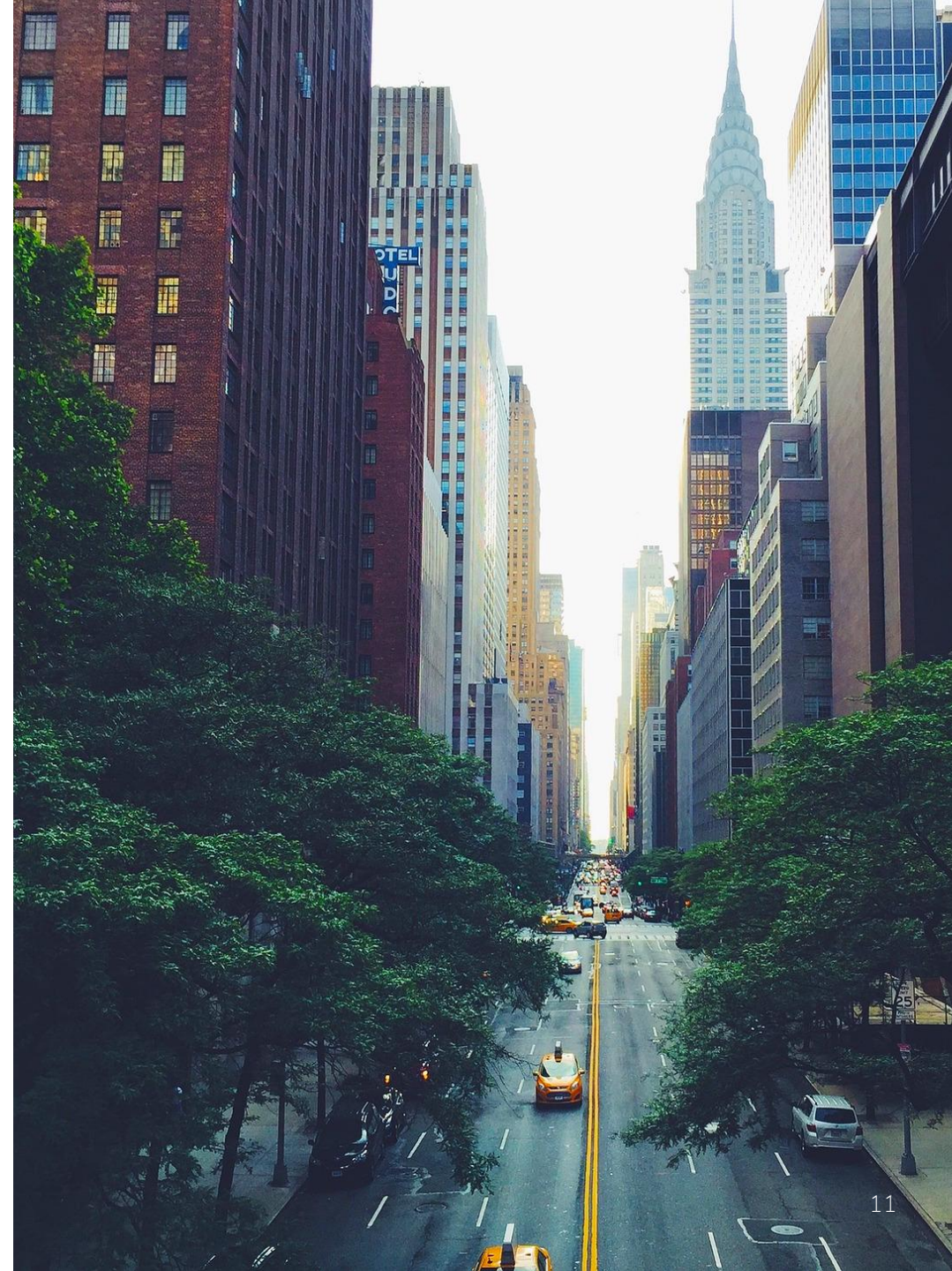
Brooklyn's "sponge park" cleans up the long-polluted Gowanus Canal. The park is made with a special soil that absorbs and filters runoff water through a series of screens. The purified excess is released into waterways and water systems. Through this initiative, green infrastructure acts like a sponge by absorbing and reducing the amount of contaminated runoff water into water and redirecting the components to be recycled for community purposes ([Metropolis, 2016](#)).

5. Enhance collaboration and knowledge transfer

The Grid consists of over 70 organizations that will work to increase public awareness of urban technology, promote tech innovations and host tailored programs for different sectors. The partnership is key to promote the concept of smart cities as a tool to bolster circularity ([Smart Cities Dive, 2019](#)).

6. Smart city tech

A square mile area in New York City's West Harlem neighborhood is positioning itself as the heart of research on wireless and smart city technology. Known as Cloud Enhanced Open Software Defined Mobile Wireless Testbed for City-Scale Deployment (COSMOS) is focused on testing wireless and cloud-based communications. The testbed will help try new technology such as internet of things (IoT), cloud computing at the edge, meaning a vast potential for gathering big data about local environmental impacts and being able to monitor environmental indicators ([Smart Cities Dive, 2019](#)).



SOUTH AMERICA: MEDELLIN

Medellin is the capital of Colombia's mountainous Antioquia province and is Colombia's second largest city with a population of 2,508,452 people. The key learnings extracted from the city are:

1. CE Strategy for Colombia is launched in Medellin

The Ministry of Environment, Housing and Territorial Development and the Ministry of Commerce, Industry and Tourism, launched the National Circular Economy Strategy was launched in Medellin alongside multiple workshops to disseminate the strategy, its implications to businesses and discussions on how to integrate the national goals in the regional and local agendas. The National Circular Economy Strategy aims to increase the rate of recycling from 8.7%, to 17.9% in 2030. ([Ministry of Environment, 2020](#)).

2. Urban Knowledge system

In 2016, the US-led [Secondary Cities](#) platform partnered with their on-the-ground implementation team, Ecocity Builders, to lead 2C Medellín. Their goal is to equip city managers and practitioners with the tools and know-how to build and transition towards low-carbon, resilient, and resource efficient cities using integrated systems approaches such as a urban metabolism scan. Data is gathered through an open source geospatial system and citizen-sourced data as well as government data on waste management and material flows. A specialized app turns data into visualizations that help interpret waste streams from household ([GI-REC, 2020](#)).

3. Zero emission mobility

Medellin purchased 64 zero emission electric buses after, with an estimated saving of 60% in operating costs and 75% in maintenance compared to traditional diesel articulated buses. Medellin's mayor Federico Gutiérrez said: "We will turn Medellín into the capital of electric mobility in Latin America" ([Sustainable Bus, 2019](#)).

4. Promoting efficient use of resources

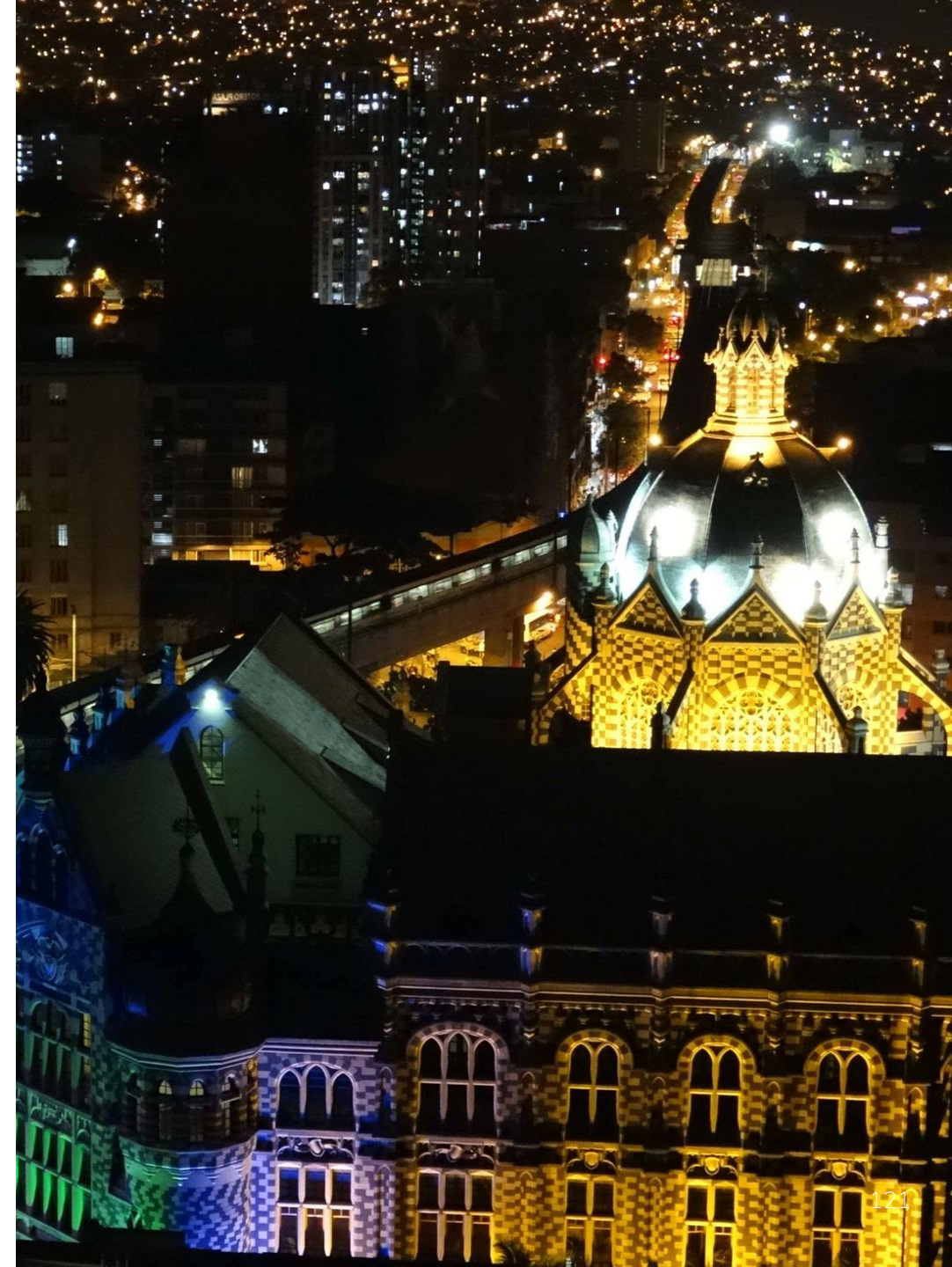
More citizen-led movements as well as organizations are appearing whose purpose is to create innovative solutions promoting efficient use of resources and respect for the environment to generate sustainable development and cleaner production ([incyclo, 2020](#)).

5. More architectures trained in circularity

Having trained architects in circularity is key for every city aiming to create a sustainable built environment. More and more architects in the city are trained to design and build green buildings to optimize the use of resource such as energy and water ([PVG Arquitectos, 2020](#)).

6. Avoiding batteries to end up in landfill

"Recopila" is a program that collects used batteries, take them to a safe place and prevents them from being thrown in the trash. The projects counts with consumer engagement. With more than 6,000 entities linked by 2015, Recopila has managed to collect more than 9 million batteries, preventing more than 200 tons of batteries from being thrown away ([Recopila, 2020](#)).



FINDINGS FROM CEC CHAPTERS

CEC ALICANTE
CEC BARCELONA
CEC BELO HORIZONTE
CEC BIRMINGHAM
CEC BRUSSELS
CEC KAMPALA
CEC KUALA LUMPUR
CEC ORLANDO
CEC PAPEETE
CEC PARIS
CEC PETALING JAYA
CEC PORTO
CEC TEL AVIV
CEC TOULOUSE
CEC VIENNA
CEC YEREVAN

INTRODUCTION

Circular Cities Week encourages a sense of urgency and purpose designed to help stakeholders identify opportunities, challenges and next steps for supporting the development of circularity at the city government level. Over 80 CEC Chapters committed to bring this project to their cities and around 30 CEC Chapters have already done so by February 2020.

CEC provided a very detailed toolkit to support organizers to run their workshops which includes the Canvas that guides them on how to focus on each top sectors in their city and to investigate challenges, opportunities and next steps with their participants during the workshop.

Apart from exploring the barriers and opportunities for each sector, it is also significant to convince and support city governments to publish a local circular economy strategy plan with clear goals for their city. For this reason, CEC Organizers will send a letter containing the takeaways from their workshops to create and commence a connection with their city councils.

In the next section we summarize the findings of the CEC Chapters that have organized the workshop and have sent their results to the CEC global team.

It is worth recognizing that some CEC Chapters followed a different format to their sessions but are still committed to bringing circularity to their city. For example:

CEC Stuttgart focused on how can they bring together CE – by corresponding laws – to recycling and waste-management and how to raise awareness of the circular economy as a concept. They were glad to find the raising demand to learn more about the transparency of waste and recycling management, utilizing IOT to track the process and adjust eco-design.

CEC Reading found that focusing on the Tech and Food & Drink sectors was appealing to their audience and they plan to create a community and events to educate people and showcase local circular initiatives, support developing the circular business models and connect with the large range of businesses working regarding those sectors both on an initial design and leadership level.

CEC Perth has kicked off a space for community through events and meetups to quantify circularity and sustainability by showcasing circular organizations and their circular business models, improving the knowledge and changing mindsets, quantifying the benefits to move towards circularity.

CEC ALICANTE OUTCOMES

Workshop participants discussed how to leverage big data and artificial intelligence (AI) to embed circularity in the sectors below.

Agriculture:

- Challenges:
 - Need for circular training among producers
 - Unclear benefits from waste management
 - Distrust of the public administration and waste management services
- Opportunities:
 - New products made from agricultural waste
 - Sensorization for environmental control and optimization of crop management, storing and transporting stock
 - Optimize processes through AI by providing data of use of water, energy and fertilizers
 - Blockchain to provide transparency of environmental impacts across the supply chain
 - Waste minimization bonus/incentives

Construction and tech:

- Challenges:
 - Non-existing known platform for selling and buying waste or used materials
 - High cost of reverse logistics and transporting waste to new construction sites
 - Separating and tracking waste efficiently
- Opportunities:
 - Material passports to quantify footprint and know where each material is
 - Modular buildings to increase the use of current empty buildings

Plastics and metals:

- Challenges:
 - Cheap when compared to greener options
 - Lack of consumer demand for circular options
 - Circular certifications are expensive for SMEs
- Opportunities:
 - Selling, communicating and training companies about circular materials (e.g., bioplastics)
 - Legislation that incentivizes circular materials

Shoe sector:

- Challenges:
 - Scarce R&D funds from SMEs
 - Negative externalities are not reflected on prices
- Opportunities:
 - AI could process and analyze big data to improve processes
 - Blockchain can certify products after products are traced along supply chain and life cycle
 - Marketplace of waste and industrial symbiosis

Tourism:

- Challenges:
 - Lack of incentives to reuse, sort and recycle
- Opportunities:
 - AI to measure who is a clean vs. not clean tourist
 - Leverage Alicante's local government experience in reforestation with recycled water

CEC Alicante Organizer:

Laura Cárdenas Lorenzo, 20 years of communications and research experience for UNICEF and FAO, among others. Join CEC Alicante chapter [here](#).



CEC BARCELONA OUTCOMES

The workshop focused on the food & beverages, buildings, fashion & textile and mobility sectors, It gathered 40 participants representing the City Council of Barcelona, The Catalonia Administration, multinationals, SMEs, startups, technological institutes, academia among other stakeholders. Access to the full report and list of participants can be found [here](#).

The participants in the workshops identified the main impacts and challenges of their sectors in the city of Barcelona:

- Intensive consumption of water, energy, raw materials, materials and chemicals, among other resources
- Waste generation
- Air, water and acoustic pollution
- Toxicity to people and the environment
- Inefficiencies such as the loss of urban space or congestion caused by the current mobility system

Over 100 circular solutions and opportunities were identified by participants. Here we present a list of them:

Food & Beverages:

- Intuitive labelling system that communicates environmental impact of products
- Foster collections systems and reverse logistics to increase the reuse and recycling of packaging
- Promote innovation in new materials and their use, facilitate access to rPET, while also destigmatizing the use of plastic in functions and products where it makes sense to be used

Buildings:

- Designing for deconstruction
- Designing for climate resilience (that generate O2 rather than CO2)
- Pre-manufactured modular buildings
- Refurbishing existing buildings
- Building handbook/passport explaining what materials the building contains and its impact

Fashion/Textiles:

- Design is central to a circular fashion strategy. It is necessary to incorporate in the design concepts of durability, health and recovery of materials and components
- Marketplace that facilitates selling surplus Implementing a traceability system to allow for recirculation of materials
- Putting in place effective collection and sorting systems

Mobility:

- Promoting shared electric vehicles
- Promoting bicycle tracks between towns/cities
- Exclusive parking space for green vehicles Funding circular mobility startups and helping embed solutions in automobile supply chains

CEC Barcelona Organizers:

Dolores Naharro de Martins and Marc Torralba have over 15 years of experience in business development and communications and are passionate about circularity. Join CEC Barcelona chapter [here](#).



CEC BELO HORIZONTE OUTCOMES

Participants in this workshop focused on the fashion & textiles sector. The aim was primarily to understand the negative environmental impact of the sector in Belo Horizonte and analyzing new opportunities from circularity.

Fashion/Textiles:

- Challenges:
 - Largest water consumption occurs in the dyeing and finishing stages, generating approximately 50-100 liters of waste water per kilogram of fabric produced
 - Plastic embedded in fabrics makes it hard to recover
 - Plastics embedded in fabrics end up in seas
 - High rate of impact in biodiversity
 - Scarce effort in forming green alliances and agreements across the textiles supply chain
 - Incentives for providers to compete on price rather than providing greener materials
 - Uninformed population about the environmental impacts of the fashion industry
 - Amount of packaging
 - Unawareness of the meaning of circular fashion among general population, companies and policy makers
- Opportunities:
 - Policies to incentivize the use of bio-dyeings
 - Policies that incentivize correct disposal or circulation of textile waste
 - Sharing platforms for clothes and accessories
 - Renting business model
 - New investments in circular fashion
 - Reusable packaging
 - Catalog and disseminate circular local initiatives
 - Community mobilization to work in groups and move forward the circular agenda
 - Promoting the circular fashion concept among the general population with very practical implications
 - Trainings of the concept of circular fashion to SMEs
 - New technologies to make materials easier to be tracked, cleaned, recovered and reused or recycled
 - Partnerships for utilizing waste among companies

CEC Belo Horizonte Organizer:

Áurea Lúcia, 23 years of experience in fashion, focusing on producing sustainable and socially responsible products. Join CEC Belo Horizonte chapter [here](#).



CEC BIRMINGHAM OUTCOMES

The workshop focused on identifying challenges, opportunities and next steps for the built environment, manufacturing, universities, technology, leisure (including hotels and events) and retail in Birmingham.

Built Environment, Manufacturing, Universities, Technology, Leisure (including hotels and events) and Retail:

- Opportunities:
 - CEC members to drive circular economy themes within sector conversations
 - Collaboration: identify key influencers/advocates across the greater Birmingham area and bring them together to identify actions and attribute responsibilities
 - Power of digital tools to enable engagement and consumer awareness
 - Importance of storytelling, identifying an effective circular narrative for the region
 - Develop a circular economy blueprint for the region (city flows of inputs and outputs and opportunities for synergy)
 - Co-location: in line with the model of Telford's BESST programme to enhance local business
 - Buying power/ procurement processes – this is something we can all change almost immediately, setting out new parameters regarding the desired circular, sustainability credentials of suppliers and their products and services

- Share successful leverage points for change and exemplars of circular economy in the region through CEC events and LinkedIn
- Share frameworks and processes regarding planning and implementation to become a circular business
- CEC members to add their voice and increase pressure on local councils and LEPs to include circular economy principles in policy and guidance (eg everything from the Local Industrial Strategy to SME 'how to' guides)
- Kumu map showing connections and joining the dots – could the relevant attendees share details of their name and CE role and organisation (however small or large the role is in their company, network or social group) for us to get the ball rolling?

CEC Birmingham Organizer:

Debbie Ward and Lydia Dutton. Debbie is a Business Development Manager at Gleeds and Lydia is a Business Consultant at International Synergies. Join CEC Birmingham chapter [here](#).



CEC BRUSSELS OUTCOMES

The workshop focused on identifying challenges, opportunities and next steps for the food, packaging and textile sectors in Brussels.

Food:

- Challenges:
 - Less space available and raising prices of field for crops as a consequence
 - Hidden impact of food supply chain
 - Low price paid to farmers
 - High demand for processed food
- Opportunities:
 - Urban farming
 - Empowering networks of urban producers and producer coops
 - Training to farmers and food supply chain
 - Giving access to urban farming to local producers

Packaging:

- Challenges:
 - Plastics made from mixed materials so very difficult and costly to recycle
 - Waste is legally stored generating emissions
 - Levels of ground and water pollution
- Opportunities:
 - Reusable packaging
 - Packaging as a Service
 - Selling anything in bulk to eliminate packaging
 - Implementing take-back logistics
 - Lower VAT for products packed with circular packaging

Fashion/Textiles:

- Challenges:
 - Mixed materials in textiles (e.g., polyester, cotton, etc)
 - Dying polluting water
 - Chemicals being used
 - Low paid salaries and unfair practices in supply chain
- Opportunities:
 - Incentivizing circular brands use of mall and shopping space (e.g., lowering rents for circular brands, etc)
 - Clothes rental services
 - Target luxury sector and low-cost sector separately, rather than associating circular brands to luxury only
 - Supporting local economies and production close to consumption
 - Increase upcycling
 - Decreased taxes for circular products

CEC Brussels Organizer:

Adeline Michaux and Vanessa Wabitsch. Adeline is a social and environmental innovation consultant. Vanessa is implementing and communicating circular innovation locally and globally. Join CEC Brussels chapter [here](#).



CEC KAMPALA OUTCOMES

The workshop focused on identifying challenges, opportunities and next steps for the agriculture, energy, transport and manufacturing sectors in Kampala.

Agriculture: :

- Challenges:
 - Amount of waste water produced
 - Fertilizers being used and degrading soils
 - Agrochemicals being used at larger scales
 - Emissions from transport
- Opportunities:
 - Recirculation of water
 - Wastewater treatment
 - Biofertilizers
 - Clean technology
 - Setting up data bank for impacts
 - Training farmers on circular practices
 - Building awareness among consumers
 - Investing in clean transport alternatives

Energy:

- Challenges:
 - Polluting emissions
 - Inorganic inputs and pollutants such as cement, sand, aluminium, steel, copper being used
- Opportunities:
 - Clean technologies
 - Restoration of sites
 - R&D to clarify impacts of different energy sources
 - Data bank of energy sources and usage

Transport:

- Challenges:
 - Fossil fuels used
 - Emissions
- Opportunities:
 - Green procurement
 - Policy reform to incentivize clean transport

Manufacture:

- Challenges:
 - Fossil fuels used in energy consumption
 - Synthetic materials and inputs
 - Emissions
- Opportunities:
 - Clean technologies
 - Investment in clean alternatives
 - Training to SMEs
 - Training government agencies
 - Incentives to clean alternatives

CEC Kampala Organizer:

Dean Tashobya is a trainer and practitioner on circular economy models, life cycle assessment and environmental footprint. Join CEC Kampala chapter [here](#).



CEC KUALA LUMPUR OUTCOMES

The workshop focused on identifying challenges and opportunities in the following sectors:

Agriculture (Palm Oil Upstream Plantation & Food):

- Challenges:
 - Deforestation and soil degradation
 - Amount of packaging involved
 - Palm Oil Mill Effluent (POME) pollution
 - Empty Fruit Bunches (EFB) waste
- Opportunities:
 - Using POME & EFB to create biomass products
 - Biogas plants at mills to generate biofuels
 - Use EFB waste as organic fertilizers at plantations
 - Food composting in neighborhoods and schools
 - Growing organic fruit and vegetables in urban permaculture farms
 - Pilot community projects on edible gardens

Education:

- Challenges:
 - Usage of plastic cutlery and packaging in-campus
 - Energy powered by fossil fuels
 - Consumption of paper and print documentation
- Opportunities:
 - Reward students involved in circular activities
 - Grow circular entrepreneurs on campus
 - Banning single use plastics in campus cafeterias
 - Encouraging bring-your-own (e.g., bottles, tupperware, cutlery)
 - Embed circularity in the curriculum

Fast manufacturing consuming goods (FMCG) (e.g. Shampoo):

- Challenges:
 - Cheap raw materials
 - Wastewater produced in production
 - Industry set for single use plastic packaging
- Opportunities:
 - Converting reclaimable vegetable oil from restaurants into biodiesels, eco-shampoo, soap
 - Converting used cardboards from retailers and restaurants into recycled packaging
 - Increase reusability in advertising to create a shift in consumer mindset

Fashion/Textiles:

- Challenges:
 - Dyeing and chemical colouring
 - Energy intense machinery
 - Amount of discarded textiles due to fashion cycles
- Opportunities:
 - Upcycling discarded clothing
 - Reusing discarded hangers
 - Upcycling hangers into bricks
 - Reward points given to retail customers that donate used clothes from any brand to the shop, resulting in retaining current customers and attracting more
 - Fashion associations to promote hiring circular professionals

CEC Kuala Lumpur Organizer:

Jacqueline Chang is a seasoned leader with board expertise in global strategy, consulting, legal oversight and portfolio management.

Join CEC Kuala Lumpur chapter [here](#).



CEC ORLANDO OUTCOMES

The workshop focused on the construction sector with a specific interest in solar energy. Education initiatives were also discussed as well as how to design circular education institutions.

Construction:

- Challenges:
 - Cheap non circular materials in comparison to more sustainable alternatives
 - Waste and demolition
 - Difficulty to think about end of building lifetime as buildings are usually long term projects
 - Lack of training in modularity
 - Modularity perceived as less robustness and quality
 - Waste water
 - Lack of infrastructure to use storm water
- Opportunities:
 - Solar energy
 - Natural pool heating
 - Community engagement and use of common spaces
 - Design modular rooms
 - Ensure circular end of life for materials
 - Material traceability and material passports
 - Connect building waste to those buying materials
 - Youth apprenticeship programs on circularity

Education:

- Challenges:
 - Amount of office supplies and furniture that is thrown away after every renovation
 - Storm water that is lost
 - Books that are wasted at the end of every year
 - Outdated cleaning services with chemicals
 - Wasteful activities for children with cutting paper
- Opportunities:
 - Green building standards for academic institutions
 - Reusable water bottles
 - Marketplace and sharing platform for for used books and other materials
 - Multi-purpose design in construction of academic institutions
 - Biochemicals as cleaning materials
 - Light as a Service
 - Sensors for lighting and water usage
 - Zero-waste food vendors and cantines
 - Erasable and reusable notebooks for kids
 - Printers with erasable ink so that the content of written paper can be digitized and then erased to be printed again

CEC Orlando Organizer:

Ana Maria Leal Yepes is a sustainability consultant who certifies C2C products and produces environmental assessments. Join CEC Orlando chapter [here](#).



CEC PAPEETE OUTCOMES

The workshop focused on identifying challenges, opportunities and next steps for embedding circularity in the following sectors:

Tourism:

- Challenges:
 - Waste water produced
 - Disposable amenities, cutlery, cups, etc
 - Plastic packaging
 - Aluminium waste
- Opportunities:
 - Reuse to minimize need for imports
 - Facilitate micro recycling facilities. For example turning glass into sand for construction needs
 - Generating infrastructure so that hotels can easily recycle equipment and products
 - Industrial composters
 - Glass shredders

Construction:

- Challenges:
 - Metals and plastic pellets
 - Wood energy
 - Chemicals embedded in the process
- Opportunities:
 - Improve industrial symbiosis between companies
 - Circular audits to find opportunities for improvement in companies and government
 - Improve efficient use of resources within factories

Pearl:

- Challenges:
 - Plastic accessories such as baskets, ropes, etc
 - Plastic ends up in marine environments where it is difficult to pick up
- Opportunities:
 - Replacing plastic items for compostable or reusable ones
 - Collect plastics from sea and recycle
 - Traceability of pearl materials and accessories
 - Training pearl farmers on circularity
 - Organize logistics to collect sank plastics

CEC Papeete Organizer:

Lou Tamaehu-Plovier launched Fenua Data, a Polynesian accelerator of the circular economy. Join CEC Papeete chapter [here](#).



CEC PARIS OUTCOMES

The following sectors were discussed in the CEC Paris workshop:

Tourism:

- Challenges:
 - High water consumption (baths, showers, cleaning, laundry)
 - High electricity consumption (corridors and reception areas lit up all night long)
 - Amount of food waste and single use products such as toiletries
- Opportunities:
 - Dry washing for linens
 - Tax single use products

Fashion/Textiles:

- Challenges:
 - Garments contain high amounts of plastic
 - Polluting supply chain in every step
 - Heavy transport
 - Amounts of plastic wrapping and cardboard boxes
 - Increasing trend of online shopping and associated one use packaging
 - Unsold stock is wasted after the season
- Opportunities:
 - Promoting local businesses
 - Raising awareness about sustainable fashion amongst consumers
 - Encouraging buying second-hand items
 - Business using reusable and returnable packaging

Mobility:

- Challenges:
 - Fuel consumption
 - Use of regular cars more spread than use of electric cars
 - Unclear impact of electric cars as they can be fueled by electricity generated from fossil fuels
 - Saturation of roads around and in Paris
 - Urban pollution
- Opportunities:
 - Vertical gardens and green walls to purify the air
 - Investing in greener transport
 - Encourage teleworking
 - Incentivize carpooling with fast lanes for public buses and shared cars
 - Incentivizing bike riding and walking
 - Creating a pedestrian Paris city center

CEC Paris Organizer:

Justine Laurent is Associate at Wiithaa, a French design agency dedicated to foster the circular economy framework. Join CEC Paris chapter [here](#).



CEC PETALING JAYA OUTCOMES

The participants of the CEC Petaling Jaya workshop discussed the implementation of the circular economy in the food and beverages (F&B) sector:

F&B:

- Challenges:
 - Packaging used in food, drinks and cleaning products
 - Daily solid waste (food waste, coffee grounds, fruit waste from drinks, plastic plates, straws, detergents, etc)
 - Habits and behavioral defaults from SMEs
 - Lack of clarity of short term gains of becoming circular
 - Consumers' preference for convenience and ease for single use packaging for take-away food
 - Health and safety regulations sometimes incentivise single use packaging
 - Opportunities:
 - Recirculate food that is edible by selling it or donating it via "Food Lost Project"
 - Repurposing prep waste by turning it into soup before throwing it
 - Changing menu to offer special of the day and using leftovers without compromising standards
 - Turning food waste into compost for community gardens
 - Replacing plastic materials such as plates and coffee cups with reusable materials
- Redesigning waste room to enable recirculation
 - Collaborate among establishments to have the same deposit scheme so that reusable dishes and cups can be used in different establishments in the city
 - Deposit scheme for takeaway food and drinks to encourage users to bring back their own containers
 - Local governments to incentivise business who use reusable schemes
 - Grow local associations, hubs and clubs that work to implement industrial symbiosis, circular economy, and reverse logistics
 - Present solutions to hotels, restaurants and coffee shops on how to reduce waste and recirculate waste
 - New cleaning materials made from bio sources
 - Ease the calculation of costs of investments and savings produced by circular initiatives
 - Revisiting how solid waste is collected and paid for (i.e., if waste management companies are paid by amount of waste produced then revisit how to pay them so that their incentive is that the city has less waste to collect)

CEC Petaling Jaya Organizer:

Jacqueline Chang and Sudy Yeo. Jacqueline is a senior project management expert and Sudy is a researcher on food waste. Join CEC Petaling Jaya chapter [here](#).



CEC PORTO OUTCOMES

The CEC Porto chapter worked on identifying opportunities in the food, textiles and construction sectors although the tourism sector among others is also a relevant sector for the city.

Food:

- Challenges:
 - High energy demand of equipments
 - Fertilizers being used for food production
 - Amount of packaging involved
 - Frequency of logistics and transportation
 - Genetically modified crops
- Opportunities:
 - Packaging designed to be used again and again
 - Community gardens growing crops
 - Education programs for better nutrition
 - Taxes system to incentivize circular food
 - Buying local
 - Sharing markets for equipments and furniture
 - Specialized bio-waste collection system for composting
 - Food upcycling to create for example textile fibers

Fashion/Textiles:

- Challenges:
 - Transportation of raw materials
 - Microplastics in garments end up as waste in oceans
- Opportunities:
 - Making the second hand clothes market look nicer
 - Workshops to visit sustainable retailers

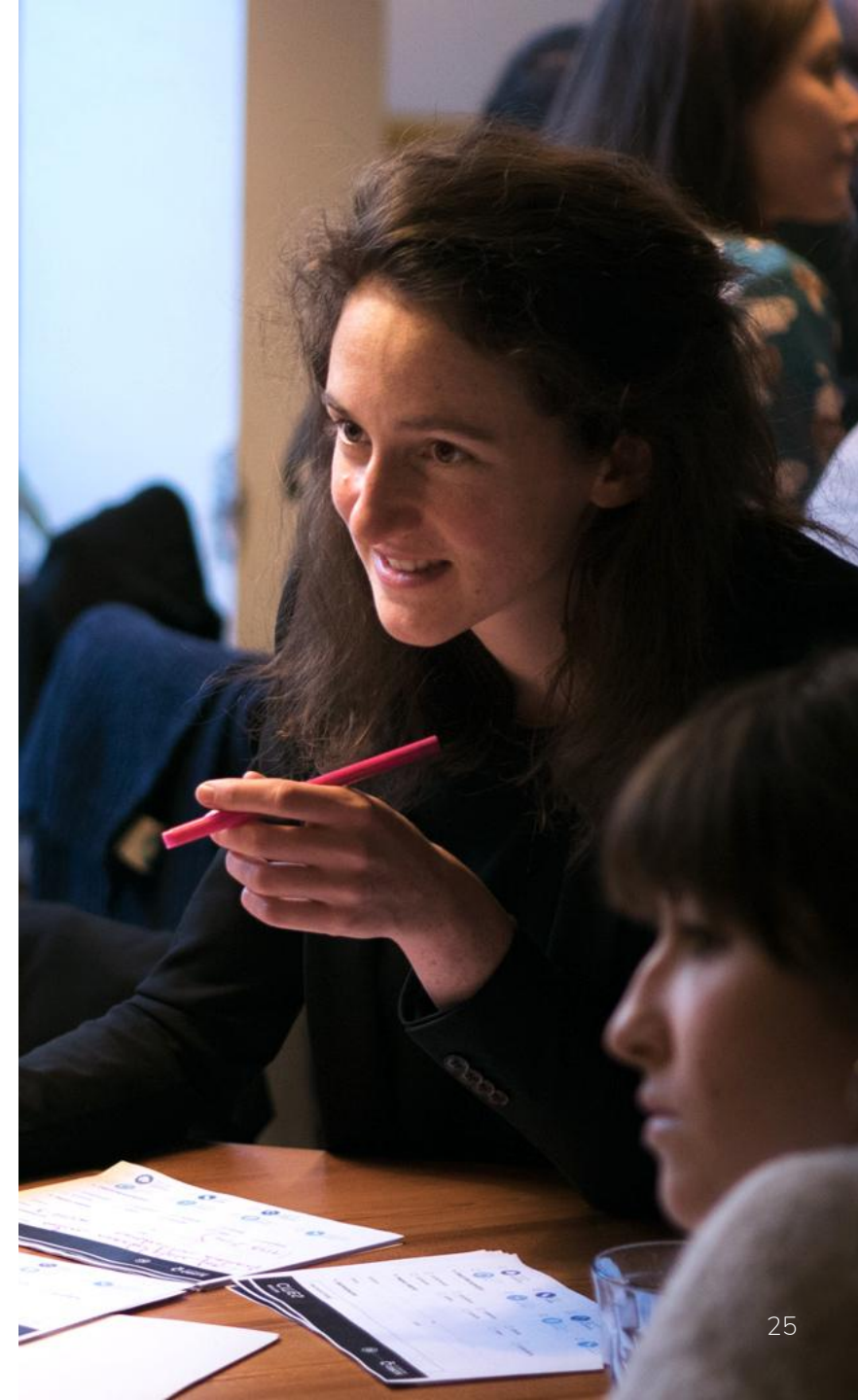
Construction:

- Challenges:
 - The default is to extract raw materials
 - Intense water and energy consumption
 - Illegal landfilling
 - Demolition
- Opportunities:
 - R&D for bio construction materials
 - Facilitating financing for circular projects
 - Promoting circular procurement in construction
 - Legislate for a minimum of recycled inputs in buildings
 - Municipal material bank
 - Digital platform/marketplace to monetize municipal material bank
 - Price waste so that there is a market for it
 - Tax relieves for buildings using recycled materials that can be traced
 - Require the use of AI and BIM (building information modelling) for information traceability
 - Specialized material collectors that can organize waste and resell it
 - Incentivize SMEs to reuse materials by offering picking up waste for free from their demolition or construction sites

CEC Porto Organizer:

Helena Silva is the Founder and CEO of the circular fashion brand Vintage for a Cause..

Join CEC Porto chapter [here](#).



CEC TEL AVIV OUTCOMES

The workshop targeted increasing the understanding of circular opportunities in the textiles, transport, food and hospitality industries.

Fashion/Textiles:

- Challenges:
 - A complete product is made in multiple and very different places
 - High transportation and import of different materials and pieces for garment production
 - No established system to redistribute used textiles
- Opportunities:
 - Knowledge hub for circular design
 - Industrial symbiosis
 - Marketplaces and databases for manufacturers and consumers
 - Renting and sharing platforms for textiles
 - Waste redistribution app
 - Open recycling and upcycling centers
 - A short film on the current state of the issue
 - Collaboration with the College of Innovation and Design

Transport:

- Challenges:
 - Not enough public transport
 - The most convenient transport is not the cleanest
- Opportunities:
 - Fully electric and green vehicles
 - Digitiz and monitor traffic flow to avoid jams

Food:

- Challenges:
 - Accounts for 40% of the garbage in the city
 - Disposable dishes and other tableware
- Opportunities:
 - Compost facility center
 - Biogas from food waste
 - Food waste management app
 - Restaurant that make food out of food waste, shop for waste food
 - Sharing platform and app for food waste
 - Donation platform of food waste from industrial kitchen
 - Reusable tableware

Hotels:

- Challenges:
 - Plastic toiletries
 - Polluting equipment
 - Food waste
- Opportunities:
 - Circular in house system for making biogas from food waste
 - Kitchen garden on the roof
 - Refill bottles and containers for shampoo and soap
 - Renting or leasing equipment.

CEC Tel Aviv Organizer:

Limor Landau is the Founder of Re-Key, which aims to inspire and encourage people to implement a circular economy. Join CEC Tel Aviv chapter [here](#).



CEC TOULOUSE OUTCOMES

The workshop focused on identifying challenges, opportunities and next steps for services, the packaging and construction sectors in Toulouse.

Packaging:

- Challenges:
 - Industrial pallets
 - Plastic fillings
 - Logistics and transportation
- Opportunities:
 - Designing products without packaging
 - Biobased materials
 - Compostable materials
 - Selling in bulk
 - Deposit scheme to collect packaging and use it again
 - Enforce reusable amenities rather than disposable
 - Clear environmental labelling
 - Changing plastic packaging for wooden
 - Tax relieves for circular solutions

Services:

- Challenges:
 - Office materials and furniture
 - Paper
 - Coffee and other dispensable machines with single use cups
- Opportunities:
 - Furniture as a service
 - Erasable paper for printers where paper can be digitized and then erased to print again

Buildings:

- Challenges:
 - Concrete
 - Cables and electronic materials
 - Energy intensive heating systems
 - Asbestos and metals to avoid fires
 - Wastewater systems ending up in natural waters
 - Some architects working on long term projects and may not always have incentives to be thinking about end of life but have budget pressures
- Opportunities:
 - Low footprint concrete
 - LED lighting as a service
 - Green roofs
 - Municipal collective heating system
 - Reusing materials after proper deconstruction
 - Reusing furniture
 - Modular spaces that can be disassembled
 - Disseminating case studies on circular construction that utilize low cost alternatives

CEC Toulouse Organizer:

Lucas Lassegnore has eight years of various experiences around sustainable development.

Join CEC Toulouse chapter [here](#).



CEC VIENNA OUTCOMES

The CEC Vienna workshop focused on identifying how the construction and textiles sectors could embed circularity as well as the opportunities for urban innovation, recycling and digitalization to play a key role in the process.

Buildings:

- Challenges:
 - Perceived expensive cost and low quality of biomaterials
 - Lack of market for waste materials as it is usually “not worth the effort” selling waste materials
- Opportunities:
 - Storing data about all materials in a building and creating a register
 - Making biomaterials more accessible
 - Testing ecological insulating materials
 - Keeping current materials in circulation
 - Nudging grantors so that they include circular principles in procurement

Fashion/Textile:

- Challenges:
 - Fossil fuels used in the process
 - Landfilling and incineration practices
 - Mix of materials in every garment
- Opportunities:
 - Create garments so that they are easily repaired
 - Transparent supply chains
 - Measuring and labelling of negative impacts
 - Reusable packaging
 - Easy and quick repairs

Recycling

- Challenges:
 - Recyclability of buildings and materials
 - Design for and from recycling
 - Education for correct waste separation
- Opportunities:
 - Depot for good components for reuse
 - Design for recyclability of materials

Urban innovation and digitalization:

- Challenges:
 - Getting lost in data and losing scope
- Opportunities:
 - Urban farming
 - Digital labels that enable for transparent data on supply chains and impact of materials
 - Energy positive houses
 - Home roofs and gardens that supply for fruit and vegetables

Water:

- Challenges:
 - Outdated infrastructure
 - Amount of water that gets polluted daily
- Opportunities:
 - Reducing water losses by using proper fixtures
 - Social acceptance of using gray water for certain uses
 - Substance recovery from sewage sludge

CEC Vienna Organizers:

Michael Boyle, Andreas Ellenberger and Vanessa Wabitsch run and implement circular economy solutions. The event was organized jointly with ARA Innovation Space and Marina Luggauer, Sustainability Manager at ARA.

Join CEC Vienna chapter [here](#).



CEC YEREVAN OUTCOMES

The workshop focused on how to embed circularity in the textiles, agriculture and food and beverages sectors.

Fashion/Textiles:

- Challenges:
 - Finding local designers who are expert on how to design for circularity
 - Low number of circular initiatives already in the market
 - Finding new ways of revenue generation through circular solutions along the supply chain
- Opportunities:
 - Design with the principle of keeping materials in use for as long as possible
 - Designing for disassembly and easy repair
 - Interface for tracking material flows from garments

Agriculture:

- Challenges:
 - Fossil fuel usage
 - Fertilizers in crops
- Opportunities:
 - Biogas to replace fossil fuels usage
 - Focus on regenerating natural ecosystems
 - Upcycle agricultural waste for producing new products
 - Aquaponics through which plants are watered, water is filtered through the plants roots and goes to fish tanks to then water plants again

Food & Beverages:

- Challenges:
 - Lack of case studies and numbers to provide specific examples of what profits can be generated from circular initiatives
 - Leftovers generated and thrown
- Opportunities:
 - R&D to investigate what products can be made from food waste
 - Paper made from food waste
 - Lean management systems implemented to cut on food inputs
 - Measuring food waste accurately so that restaurants know what to order less of
 - Composting
 - Redistributing spare food to population

CEC Yerevan Organizer:

Tatev Petrossian is a founder of REVOLVE Consulting which raises awareness on circular economy business models..
Join CEC Yerevan chapter [here](#).



KEY LEARNINGS

The key learnings after summarizing the top circular initiatives in cities committed to embed circularity, as well as the findings from the CEC Chapters that already hosted the Circular Cities Week are summarized below.

1. Role of new technologies: Use big data and map the material flows of the city (e.g.: Amsterdam Circle Scan). A Circle Scan develops an understanding of the main components and impact areas within an organization's broader system and quickly assesses and identifies opportunities to implement high-impact circular projects. Circle Scan enables cities to establish a tangible direction for setting up circular projects by mapping the various value flows amongst stakeholders such as money, materials, energy, products, and brand value. Example of application in Amsterdam ([Circle Economy](#)).

2. Creating new markets: Create a platform for collaboration so that waste can be reused across sectors (e.g.: Circular Peterborough in the UK). Within Circular Peterborough, the public platform Share Peterborough is an online, resource sharing platform for businesses and other organisations in Peterborough. Whether you have a meeting room to spare, or you need some office chairs; as a member you can use this site to share equipment, skills, spaces and services ([Future Peterborough](#)).

3. Top challenges:

- Unclear benefits from implementing CE and waste management
- Lack of incentives for companies and consumers to shift their mindset towards CE
- Demand for circular training among producers

4. Top opportunities:

- Policies that incentivize circulation and legislation of the waste
- Research & innovation and set up data bank to nudge farmers, consumer associations, energy, transport associations and regulators or government.
- Optimize processes through AI by providing data (e.g. use of water, energy and fertilizers) and Blockchain to provide transparency of environmental impacts across the supply chain

5. Infrastructure for reverse logistics: Reverse logistics is for all operations related to the reuse of products and materials. It is the process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal. For example, the Council of Logistics Management (CLM) defines RL as the "term often used to refer to the role of logistics in recycling, waste disposal, and management of hazardous materials; a broader perspective includes a relating to logistics activities carried out in source reduction, recycling, substitution, reuse of materials, and disposal". Reverse logistics has to do with reuse of products and their remanufacture or refurbishment.

“ As the CEC Organiser for Kuala Lumpur & Petaling Jaya, Circular Cities Week 2019 had participation from government & agencies, private sector, not for profits, members of academia and the civil society acting on the urgency to strengthen multi-stakeholders call in designing the Circular City Canvas. We are now looking forward to Malaysia's Circular Roadmap which will be launched by the Ministry of Energy, Science, Technology, Environment & Climate Change at the end of this year.”

Jacqueline Chang
CEC Kuala Lumpur Organizer

MORE RESOURCES

Circular Economy Club (CEC), “Route Maps & Strategies” Web section with all local and national circular economy strategies launched to date - [link](#)

Circular Economy Club (CEC), “Global Database” of 3,000 initiatives identified during the CEC Circular Economy Mapping Week - [link](#)

C40, “Municipality-led Circular Economy Case Studies” - [link](#)

Ellen MacArthur Foundation, Learning Hub - [link](#)

European Investment Bank, “15 Steps for Circular Cities” - [link](#)

ICLEI, “Public Procurement for a Circular Economy” report - [link](#)

OECD, “Circular Cities” Case Studies and Resources - [link](#)

WEF, White paper “Circular Economy in Cities” - [link](#)

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Zero Waste Singapore (2019), [Reduce, Reuse and Recycle Your Waste](#).

For more information visit
www.CircularEconomyClub.com





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The Circular Economy Club (CEC) is the largest international network of circular economy professionals with over 260 CEC local chapters worldwide.

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