

Pathways to a circular economy in cities and regions

A policy brief addressed to policy makers
from European cities and regions



1. What is a circular economy?

In times of decreasing resources and growing responsibilities, many cities and regions are understandably skeptical towards what seems to be yet another buzzword. However, a transition to a circular economy is both a necessity and an opportunity, with the potential to offer long-lasting economic, environmental and social benefits.

From a linear to a circular economy

The conventional understanding of economic activity is based on a linear model: natural resources are extracted and transformed into products; the products are bought and used by consumers who, as soon as the products no longer fulfill their needs, throw them away. However, this model ignores the high economic, environmental and social costs related to the extraction, transformation and disposal of resources, and is therefore unsustainable in the long term. The limitations of the linear model are becoming even more apparent as the availability of natural resources can no longer be taken for granted (e.g. due to water shortages or diminishing fossil fuel reserves).

A circular economy offers an alternative model where the value of products, materials and resources is maintained for as long as possible and waste is significantly reduced or even eliminated. Focused on “closing the loops”, a circular economy is a practical solution for living within our planetary boundaries. The transition towards a circular economy affects different policy areas, ranging from mobility, agriculture, land use and waste management, to business development and consumer education, concerning actors across all sectors and levels of governance. A circular economy is not something that any single institution or company can do alone. By its very nature, circular economy fosters connections across individual stakeholders and sectors.

To reach its maximum potential, it needs coordinated efforts at different levels of governance, from local and regional to national and European.

A circular economy as a transformative opportunity

“Our planet and our economy cannot survive if we continue with the ‘take, make, use and throw away’ approach. We need to retain precious resources and fully exploit all the economic value within them. The circular economy is about reducing waste and protecting the environment, but it is also about a profound transformation of the way our entire economy works. By rethinking the way we produce, work and buy we can generate new opportunities and create new jobs.”

Franz Timmermans,
First Vice-President of the European Commission
http://europa.eu/rapid/press-release_IP-15-6203_en.htm

Confronted with dwindling natural resources, we need to be aware that business as usual is no longer an option and that an economy built on a linear model is simply no longer viable. The transition towards a circular economy is therefore a necessity, but, as with every crisis, it is also a transformative opportunity that can offer long-term economic, social and environmental benefits.

The 2016 EEA study “Circular economy in Europe” identified the following benefits that advancing a circular economy could offer to EU countries:

- Improved resource security and decreased import dependency: thanks to reduced demand for primary raw materials.
- Reduced environmental impact: including a drastic reduction in greenhouse gas emissions.

- Economic benefits: including new opportunities for growth and innovation, as well as savings related to improved resource efficiency.
- Social benefits: ranging from new job creation across all skill levels to changes in consumer behavior leading to better health and safety outcomes.

Circular economy benefits in numbers

Using innovative technologies and resource efficiency improvements along all value chains could reduce material inputs in the EU by up to 24% by 2030.

Switching to a circular economy in the food, mobility and built environment sectors is estimated to generate a prospective reduction in greenhouse gas emissions of 48% by 2030 and 83% by 2050 compared with 2012 levels.

The annual net benefits for EU-27 businesses from implementing resource-efficiency/circular economy measures such as waste prevention, the recovery of materials, changing procurement practices and the re-design of products are estimated to range from EUR 245 billion to EUR 604 billion, representing an average of 3–8% of annual turnover.

The European Commission's impact assessment on a legislative proposal on waste found that increased recycling/preparing for reuse targets for municipal and packaging waste, in combination with reduced landfill could result in the creation of up to 178,000 new direct jobs by 2030.

Source: Circular Economy in Europe, EEA 2016



Transition to a circular economy can save up to £2bn a year in Wales, United Kingdom

The 2013 study by the Ellen MacArthur Foundation, commissioned by the Waste and Resources Action Programme (WRAP) on behalf of the Welsh Government identified benefits of a circular economy and ways to unlock them. The initial analysis suggested that the transition could lead to material cost savings of up to GBP 2 billion a year. In addition to financial gains, the move would also reduce Wales' dependency on raw materials, have a positive impact on the jobs market, as well as increase the value and productivity of agricultural systems.

Source: Interreg Europe CESME project,
www.wrap.org.uk/node/17570

This potential is acknowledged by a growing number of European countries and regions, as well as by European institutions. In December 2015, the European Commission adopted the long-awaited Circular Economy Package, with the ambition to boost global competitiveness, foster sustainable economic growth and generate new jobs. The package includes new and revised legislation with a focus on waste prevention and management, as well as a clear timeline for action and dedicated financial commitments. The Circular Economy Package refers to five priority areas to be addressed in a targeted way: plastics, food waste, critical raw materials, construction and demolition, as well as biomass and bio-based products.

On 30 May 2016, the EU ministers responsible for urban affairs agreed on the Pact of Amsterdam for an Urban Agenda for the EU. In order to realise the full potential of the European Union and deliver on its strategic objectives, the EU Urban Agenda strives to involve urban authorities in achieving better regulation, better funding and better knowledge on twelve priority themes including the circular economy. Twelve partnerships, composed of Member States, cities, NGOs, and other key stakeholders, will address these themes and develop Action Plans. In terms of a circular economy, the EU Urban Agenda argues that the objective is to increase the re-use, repair, refurbishment and recycling of existing materials and products to promote new growth and job opportunities. The focus of the circular economy partnership should be on waste management, the sharing economy, and resource efficiency.

What is often forgotten is that transition towards a circular economy calls for social innovation, as much as (and perhaps even more than) technological innovation. URBACT's "Social Innovation in Cities" report defines social innovation as "innovative solutions, new forms of organisation and new interactions to tackle social issues", with a focus on "innovative solutions in terms of the governance of cities: new forms of collaboration between the city administration, citizens and local stakeholders which can generate more sustainable, resilient and open systems at city level."

If implemented in a collaborative and inclusive manner, a circular economy can strengthen social cohesion and promote strong, solidarity-based local and regional economies.

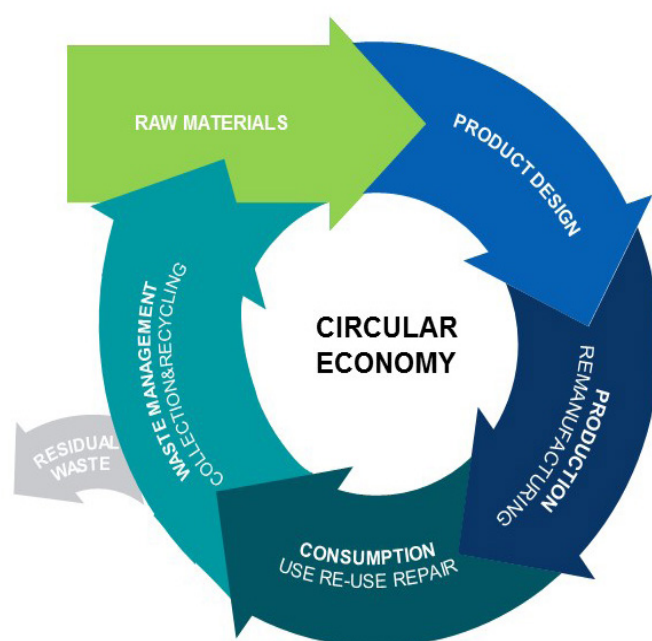
"[Circular economy] is an economy that encourages new forms of production and consumption, as well as sociability, sharing and democracy, as opposed to a short-term profit and consumerist diktat. It also holds the promise of new business sectors with strong regional roots and quality jobs that will not be relocated. It is, necessarily, a social and solidarity economy."

Anne Hidalgo, Mayor of Paris
Source: URBACT BoostInno network,
<https://api-site.paris.fr/images/77050>

The product lifecycle perspective

Moving from a linear to a more circular economy calls for new business models, new modes of consumer behaviour and new solutions for turning waste into resources.

The following diagram illustrates the key steps of the product lifecycle that need to be taken into account when designing new, circular models: (1) product design, (2) production processes, (3) consumption, and (4) waste management.



Source: Graphic based on 'COM(2015) 614 final'

When it comes to the **product design stage**, local and regional authorities can lead by example in purchasing products and solutions that are resource-efficient and durable, can be easily repaired or upgraded and finally recycled or reused. This encourages the market to develop such solutions and makes them not only more accessible, but also more affordable for other actors.

Looking further at the **production stage**, cities and regions can work with other stakeholders to promote sustainable sourcing of raw materials and different modes of resource circulation, such as industrial symbiosis, chemical leasing or remanufacturing.

Local and regional authorities are also well positioned to actively influence **consumption** patterns of households, businesses and organisations. This might include education and awareness campaigns, promoting sharing economy approaches, as well as encouraging reuse and repair.

Finally, **waste collection and recycling** are two of the responsibilities most often associated with the municipal level. Improved waste collection can be a first step towards a circular economy but many cities and regions are also looking into extended producer responsibility or high-quality recycling and biological treatment of waste (e.g. bio-refining, composting or anaerobic digestion).

Maximising the benefits of a circular economy is challenging, since the process involves players from different sectors, such as; the private sector which is the main actor for the design and production of materials; everyday consumers; and cities and regions as consumers and brokers of sustainable local economic models. In many EU cities and regions, the lack of cooperation and awareness among these players can result in cases where, for example, the waste of private companies is systematically thrown away (with economic and environmental impacts), instead of providing valuable raw resources for other private companies in other sectors. Likewise, food produced in the outskirts of a city or within a region has only limited potential for local consumption without systematic local distribution, communication and promotion.

In the case of local food, a complete circular system includes local production of food, local distribution, communication and promotion, local consumption by informed citizens, and organic waste management by consumers themselves through public or individual composting. This transformed waste could then serve again as raw material for food production or as bio-gas for other uses (e.g. fuel for buses).



Alelyckan Re-use Park in Gothenburg, Sweden

Alelyckan Re-use Park, established in 2007, is a place where inhabitants can bring products to be recycled, donate reusable material or buy goods donated by others, which are often repaired or upcycled. The park is owned by the municipality but it houses also specialised thrift shops that pay rent for the use of municipal facilities. All visitors are encouraged to donate or sell items for reuse, and the rest is sorted into different waste fractions for materials recycling or energy recovery. The initiative resulted in the reuse of 5.5% of materials that otherwise would have been discarded.

2. How can local and regional authorities foster a circular economy?

Local and regional authorities have an important role in launching and accelerating the transition to a circular economy, whether by leading by example, setting clear framework conditions or directly supporting local and regional stakeholders.

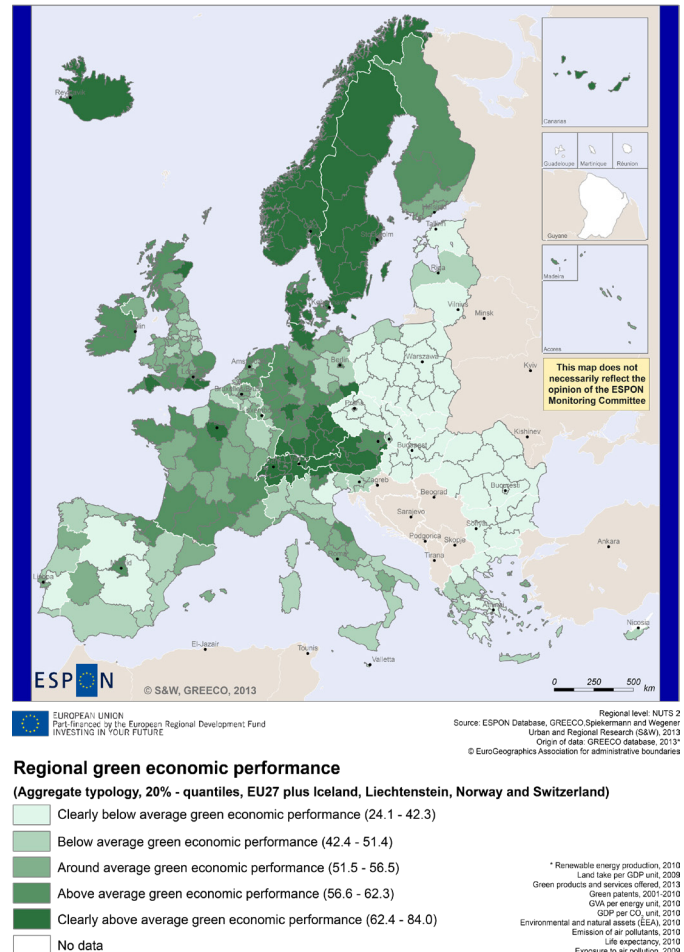
Starting point: analysing the local and regional context

A circular economy may have a different flavour in every European city and region, depending on geographic, environmental, economic or social factors. The industrial profile of a city or region plays an important role, with, for example, service and resource-intensive sectors each calling for different types of support. Factors such as accessibility can play a role as well. For instance, implementing more resource-efficient transport systems, district heating systems or a sharing economy could be a greater challenge for less accessible areas (e.g. islands or peripheral regions) than for territories with large concentrations of inhabitants such as metropolitan areas with a higher critical mass.

The diversity of territorial contexts translates into different needs and opportunities that circular economic approaches should address. Regarding this aspect, the transition towards a circular economy can take valuable lessons from the efforts made by regions and cities to make the economy greener.

Analysing the green economic performance of European regions provides more insight on what a shift towards a circular economy might imply. Regions with a high performance might need less support with the transition to a circular economy than regions with a low green economic performance.

Regional Green Economic Performance, 2010



The ESPON GRECO project looked into the territorial potentials for a greener economy and concluded that the territorial dimension of a region is an important factor in the transition process. For example, the location of a region or city is important from two perspectives: (1) the physical characteristics of a given region, e.g. a Mediterranean region quite naturally has different potentials than a northern or mountainous region, and (2) the region's "connectivity", e.g. whether it is a peripheral or central region. In addition, urban and rural regions have different roles to play: urban regions have a more dominant role in terms of being the production centres but also as having the largest possibility to influence resource efficiency; rural areas have another role, in providing the resource base.

A close-up photograph of a beach covered in various types of marine debris. The foreground is filled with a dense collection of trash, including a red plastic cup, a white plastic bottle, a blue plastic bottle, and numerous small plastic caps and fragments. A large, orange, rectangular piece of plastic is prominent in the center. The debris is scattered across the light-colored sand, with some items partially buried. The background shows more debris extending towards the horizon, where the ocean meets the shore. The overall scene illustrates the impact of litter on the environment.

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Using smart public procurement

The easiest way for local and regional authorities to stimulate the take-up of circular economy approaches and solutions is to lead by example. As consumers, local and regional authorities can include circular economy considerations in their purchasing decisions by using green public procurement criteria and mechanisms such as pre-commercial procurement.

In practice, this means assessing all costs related to the entire lifecycle of the product, including criteria related to maintenance, recycling and sustainable sourcing of raw materials.



Sustainable public procurement for cradle-to-cradle design in Venlo City Hall, The Netherlands

Definition:

The Cradle-to-Cradle (C2C) framework seeks to create production techniques that are not just efficient, but are essentially waste-free. In cradle-to-cradle production, all material inputs and outputs are seen either as technical or biological nutrients. Technical nutrients can be recycled or reused with no loss of quality and biological nutrients composted or consumed.

The Municipality of Venlo used C2C principles in the design and procurement of the new Venlo City Hall. The bidders were requested to take into account the use of appropriate, safe and healthy materials that can be recycled after their lifetime, the enhancement of air and climate quality, the production and use of only renewable energy and the enhancement of water quality. C2C design accounted for 30% of the overall scoring of the bids and a C2C specialist was involved in the assessment body. The 'Total Cost of Ownership' over 10 years accounted for a further 30% of the score, which estimated not only the direct costs of products but also indirect ecological and social costs. Bidders were required to offer a take-back system for their products after a period of ten years and to consider the financial residual value of these products, including maintenance. Over a time period of 40 years, the Municipality of Venlo will have realised a return on investment of around EUR 17 million.

Source: INTERREG IVC Cradle to Cradle Network project

Setting clear framework conditions

Cities and regions should integrate their commitment to a circular economy into relevant strategic documents, setting out local priorities, planned measures and forms of support available. This sends a clear signal to local and regional stakeholders, enabling them to plan their activities in the long term. The documents can include EU regional operational programmes, long-term development plans, environmental strategies, as well as other thematic or sectoral strategies (e.g. waste management or industrial development plans).

All case studies of the ESPON GREECO project have demonstrated that developing a strategic vision of a region is a major driver for making a greener regional economy. This also suggests a promising potential to foster circular economy.

This is especially the case when a wide group of regional stakeholders participate, since then a shared understanding of both the benefits and challenges is guaranteed. It is also important to involve stakeholders in the early stages of developing strategic documents so that they can contribute with their knowledge and experience, making commitments easier to achieve.

The progress made through policy instruments can be measured by introducing specific indicators focusing on the circular economy. An example of this is the indicator 'number of SMEs engaged in industrial symbiosis' which the Italian region Emilia Romagna aims to introduce into its Waste Management Plan (Interreg Europe TRIS project). A circular economy can also be included as a priority in smart specialization strategies (S3), steering regional research and innovation efforts.

Mainstreaming a circular economy in the Basque Country, Spain

The Basque Government has integrated the circular economy in its strategic documents, including the Basque Country Energy Strategy 2030, the Environmental Framework Programme 2020, the EcoEuskadi Strategy 2020, the Ecoefficiency Programme, as well as the Waste Prevention and Management Plan 2020. Most notably, the transition towards a resource-efficient economy, promotion of green growth and eco-innovation have been listed as key priorities under Priority Axis 6 of the Basque Country Operational Programme, with the following measures planned:

- Partnerships leading to the integration of more environmentally efficient processes in the strategies of companies.
- Support in the development of projects focusing on the development and demonstration of new, more efficient technologies, methods and processes.
- Investment support to companies and industries for more efficient industrial approaches.

The S3 strategy of the Basque Country which identifies three spearhead sectors (Advanced Manufacturing, Biosciences and Energy) also shows close links to the circular economy.

Source: Interreg Europe SYMBI project

Supporting local and regional stakeholders

Local and regional authorities can offer support to relevant stakeholders by providing targeted funding, access to knowledge and information, as well as networking opportunities.

Financial support to a circular economy can take different forms, such as grants, loans, tax incentives or investment guarantees, either offered directly by the public sector or channeled via other actors, e.g. business associations or business development agencies.

By sharing knowledge, organising events or setting up exchange platforms, cities and regions can initiate and facilitate activities by other local and regional actors such as businesses and public utilities, universities and research centers, civil society organisations or grassroots initiatives.

However, before setting up new platforms or information channels, it is worth taking a step back to see what is already there. Many actors have limited capacities to engage in extra activities so it is easier to reach out to existing networks, e.g. local sustainability councils, business associations or start-up incubators.



Connecting stakeholders all along the food chain with 'Good Food Brussels', Belgium

'Good Food Brussels' is a platform and a process launched by the Brussels-Capital Region, with the aim to increase local food production and reduce waste. It focuses on the entire food chain, from production to disposal, and is supported by multiple government institutions and social groups. One of 'Good Food Brussels' primary objectives is to increase awareness about what is already there and connect existing initiatives through an online platform, increasing their visibility and inspiring others to take part. Future activities will focus on encouraging local food production and minimising food waste by working with individual consumers but also restaurants, supermarkets or food distributors. Brussels Environment, the region's environmental agency and project coordinator, has commissioned a study that identified some ways to reach a target of 30% of food consumed that is locally produced by 2035.

'Good Food Brussels' builds on the results of the URBACT Sustainable Food in Urban Communities network in which Brussels-Capital Region acted as a Lead Partner.

Supporting circular economy stakeholders in Aquitaine Limousin Poitou-Charentes region, France

The French region Aquitaine Limousin Poitou-Charentes has committed to being a national 'pilot' in implementing a circular economy. Faced with the end of gas exploitation, a system of industrial symbiosis has been established connecting new industrial facilities including fine chemicals, bioenergy and carbon fibre industries. In December 2014, the region adopted a roadmap towards a circular economy which outlines twenty proposed actions to be taken. Among others, the proposals include mobilising stakeholders with a collaborative tool; observing, capitalising on, and sharing data on material flows and waste; promoting the use of recyclable materials and sorting within public procurement; and deploying operational tools aimed at businesses. One important role that the region has taken on is matchmaking and facilitation of cooperation between stakeholders. In April 2016, the region launched RECITA, a regional platform dedicated to the circular economy and its deployment in the territory.

Source: Interreg Europe RETRACE project



3. Funding opportunities for cities and regions

Fund / Programme	Description of instrument
HORIZON 2020	Cross-cutting call: 'Industry 2020 and the circular economy' EUR 650 million initiative supporting increasing resource efficiency through a systemic approach towards eco-innovation and the setting up of a circular economy. InnovFin (Upcoming) Previously only available to innovative industrial and technology enterprises, this instrument could also be used to support the transition to a more circular economy.
LIFE	The Multiannual work programme 2014-2017 focuses in part on supporting resource efficiency and green and circular economy by: • Implementing the circular economy concept through actions spanning the value chain or ensuring the use of secondary resources/scrap materials/wastes in other industries or value chains. • Promoting the take-up of circular business models and showcasing their benefits for SMEs.
COSME	COSME helps address the competitiveness and sustainability of EU enterprises, promote entrepreneurship and improve access to finance and markets.
European Structural and Investment Funds	The European Regional Development Fund finances various programmes supporting EU regions' development: • National/Regional Operational Programmes may support circular economy initiatives depending on the selected thematic objectives. • European Territorial Cooperation programmes support cross-border (Interreg A), transnational (Interreg B) and interregional cooperation (Interreg Europe) projects on the circular economy as well as Targeted Analyses projects (ESPON) and networking, sharing and capacity-building opportunities for cities (URBACT). URBACT will launch a call for good practices in December 2016 which will be followed by a call for transfer networks in mid-2017. ESPON has open invitations to submit proposals for Targeted Analyses throughout the year with bi-annual cut-off dates. Interreg Europe launches regular calls for project proposals. • Urban Innovative Actions is an Initiative of the European Commission promoting pilot projects in the field of sustainable urban development. The circular economy is one of the topics targeted by the 2nd call for proposals to be launched in November 2016.
European Investment Bank (EIB)	The EIB is a major partner for circular economy investments in the EU. During the last 10 years EIB co-financed projects worth EUR 15 billion. The Natural Capital Financing Facility (NCFF) is an instrument that will support green investments, among others. A test phase is planned to last 3 to 4 years, starting in 2014.

Pan-European Territorial Cooperation programmes

ESPON supports the transfer of knowledge, share of experiences and facilitates the use of European territorial evidence through Targeted Analyses.

www.espon.eu



Interact delivers services and products to support cooperation programmes.

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Interreg Europe supports the exchange of experience and transfer of good practices to improve regional policies.

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URBACT enables cities to develop integrated local policies to address their challenges through networking, sharing of good practices, and capacity building of urban practitioners.

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